

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

-between-

**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 “CHIP” GORDON C. GILL

CER-03

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I. Personal Background

1. I am an individual with experience with the seismic industry and as such have personal knowledge of the matters hereinafter deposed to, except where based upon information and belief, and where so based, I verily believe the same to be true, to the best of my recollection.

A. My Information, Background and Experience

2. I have worked for more than 35 years in the oil and gas exploration and production (E&P) industry. I graduated in 1979 from the University of Texas at Austin with a Bachelor's of Business Administration in Petroleum Land Management, with a coursework emphasis in geology. I got my start in the oil and gas business in 1977 as a rig hand working for Ard Drilling Company. In 1979 I joined Atlantic Richfield Company in the Land Department of their ARCO Oil and Gas Company subsidiary. I worked in various land roles for the next 10 years, including managing oil and gas leasing endeavors and negotiating, drafting and administering complex E&P contracts and agreements.

3. In 1989 I moved to Atlantic Richfield Company's government relations department as Director - State Government Relations for the southeast United States. After serving for four years in that role, I joined ARCO's new spinoff company, Vastar Resources, Inc., a large US based independent E&P company, as its Manager, Government Relations. In that role, I helped set up and manage Vastar's government relations efforts on the state and federal levels in the US until Vastar was acquired by BP in 2000. In 2000, I joined the Independent Petroleum Association of America, the federal lobbying trade association of the independent oil and gas producers in the US, as its Vice President – Membership and Strategic Planning.

4. In 2001, I joined the International Association of Geophysical Contractors (IAGC) as its President, a role in which I continued until, and from which I retired, in late 2014. IAGC, founded in 1971 and headquartered in Houston Texas USA (and until 2010 with offices in London UK), is the international trade association of the geophysical industry. [Note: in January 2022

IAGC rebranded itself as EnerGeo Alliance.¹ For consistency, I will continue to refer to the organization as IAGC throughout.] The geophysical industry, of which GSI is a part, is the industry that provides geophysical services (geophysical data acquisition, seismic data ownership and licensing, geophysical data processing and interpretation, and associated services) and products to the global oil and gas E&P industry.

5. As the geophysical industry's global trade association, IAGC is the place where industry participants come together to pool their resources and work on common issues – issues that are most efficiently and effectively worked together rather than individually. IAGC's service and value to its members fall primarily in three category areas: representation of the industry with governments around the world; standards and best practices, especially around workplace safety and environmental stewardship; and the commercial health of the industry, including model license agreements and contracts, and statements of industry recommended licensing and contracting principles.

6. The business of non-exclusive data, sometimes also called speculative data; spec data; multi-client data, has always been one of the most valuable practice areas within IAGC to its members. Therefore this area has always been one of IAGC's top priority areas. This practice area at IAGC includes: the acquisition of the data in the field, including government regulation and permitting (where applicable); the business model under which the data is financed, owned and licensed; the commercial terms and conditions under which is licensed, including the actual license agreement under which non-exclusive data is generally licensed.

7. From 2001 to 2006 IAGC's staff resources were very limited, therefore during that time I personally staffed this practice area. While staffing this practice area we undertook a major rewrite and update of IAGC's model Master License Agreement, developed IAGC's data licensing statements of principles, developed an industry code of practice for the use of licensed geophysical data, engaged with governments in Australia, Canada, the UK and the US on major data licensing

¹ C-057, EnerGeo Alliance, 2022.

regulatory and permitting issues, and developed and implemented a major communications/educational initiative with non-exclusive data licensees (clients).

8. In my day to day dealings with issues surrounding the business of non-exclusive data, I interacted with top executives and other senior managers of geophysical data companies, interacted with client representatives, developed our key messaging and communicated directly with government stakeholders, and communicated extensively on a variety of data licensing topics, including giving presentations at industry conferences, authoring articles on the subject and interacting with the trade press on the subject.

9. In the years after 2006, due to staff training needs and personnel turnover, I stayed closely involved in the practice area, including closely supervising those staffing it thereafter. Thus my background and expertise on non-exclusive geophysical data was developed in my time at IAGC.

10. Since leaving IAGC, I continue to network extensively with those in this industry, to closely follow the filings and disclosures of the public Geophysical Data Companies, and to participate in relevant industry events and conferences. Thus I have maintained as current my in depth knowledge of the non-exclusive data business, its trends, challenges, etc. that I developed over those 13 years while at IAGC.

B. My relationships relevant to the matter at issue

11. I do not have any past or current relationship with any members of the Arbitral Tribunal or this court.

12. I have agreed with GSI and Borden Ladner Gervais LLP to provide witness testimony in this matter. In that agreement, I receive a fee for my time spent on this matter, none of which payment is contingent on the outcome of this matter. Other than that agreement, I have no relationship with Borden Ladner Gervais LLP, although I previously provided an expert report in Court of Queen's Bench of Alberta proceedings related to the Common Issues Decision in 2015.

13. I have a long-standing interaction with GSI through my work at IAGC, which I describe above. GSI was a core member of IAGC. GSI ceased its IAGC membership sometime around 2009 or 2010.

14. To help ensure I have an adequate understanding of the issues involved in this Action, I was provided with a copy of the Notice of Arbitration and the Statement of Defence of Canada.

C. History of Oil Regulation

15. Prior to World War II, the approach to resource development was one where the oil companies, on an international basis, owned the resource they had discovered with only minimal compensation going to the country within the borders of where the resource was discovered. During WWII, it became obvious to countries and companies alike that hydrocarbons were a critical source of energy. By the 1950s, many countries began to regulate hydrocarbon development in order to supervise it. By 1960, the Organization of Petroleum Exporting Countries (OPEC) had been formed by several countries in order to increase revenues for themselves. Environmental issues began to spotlight after the Santa Barbara oil spill in 1969, contributing to greater government scrutiny over the oil industry. With these events came increasing regulation of the oil industry, which included geophysical reporting obligations in order for countries to supervise their oil and gas resources.

II. Industry Standards and Practices

D. What is geophysics and geophysical exploration (with emphasis on reflection seismology)?

16. Geophysics is a major discipline of the Earth sciences and is a sub discipline of physics, including the study of the whole Earth by the quantitative observation of its physical properties. Geophysical data are used in academics to observe tectonic plate motions, study the internal structure of the Earth, supplement data provided by geologic maps, and to non-

destructively observe, measure and analyze deposits of oil and natural gas and the rock in which they exist. Geophysical survey data are used to analyze potential oil and gas reservoirs and mineral deposits, to locate groundwater, to locate archaeological finds, to find the thicknesses of glaciers and soils, and for environmental remediation. The theories and techniques of geophysics are employed extensively in the planetary sciences in general, and are even used in medical imaging (such as ultra-sound imaging).

17. The main purpose of geophysical exploration is to render the most accurate possible graphic representation and other measurements of specific portions of the Earth's subsurface geologic structure. This is accomplished by acquiring, processing, reprocessing and analyzing geophysical data, and specifically seismic data.

18. Both the oil and gas exploration and production (“E&P”) industry and the geophysical industry employ professionals pursuing geophysical exploration. These professionals are comprised of earth scientists, mostly geophysicists and geologists, who use modern, ultra-high technology non-intrusive measurements to produce detailed depictions of the earth’s interior. Some of the largest super-computers in the world are utilized to process and reprocess geophysical data.²

19. The images produced in geophysical exploration, for example, allow E&P companies to accurately and cost-effectively evaluate a promising target (prospect) for its oil and gas yielding potential. Once a prospect has been drilled and oil and gas has been discovered, the images are then used to most efficiently and effectively develop the oil and gas in place. Once developed and producing, the images can then be used to fine tune the production parameters for maximum efficiency, and ultimately to apply additional techniques to extract the maximum amount of oil and gas in place. Geophysical data such as seismic data are the primary tools used in oil and gas exploration, development and production. As such, these data are critical to the successful discovery and efficient development and production of hydrocarbons around the world.³

² C-058, top500.org, 2015.

³ C-059, Elrod et. al., 2002; C-060, Enachescu, 2007a; C-061, Enachescu, 2007b; C-062, IAGC, 2002; C-063, IAGC, 2003a.

E. Types of Geophysical Data, and Seismic Data Specifically

20. The various types of geophysical data for geophysical exploration include seismic, gravity, magnetic and electromagnetic data. These data can be acquired onshore, in the transition zone (made up of the marshes, bays, lagoons, surf zone and shallow water environments) and in the oceans (regardless of depth). Seismic data has been universally recognized among the E&P industry as being the most important technological contribution of the two decades beginning in the 1990s towards improving the E&P industry's success rate and reducing its risk. As a result it is the most widely acquired type of geophysical data. In this report I will focus on seismic data.⁴

21. Generally, two types of seismic data are acquired and made available to the exploration geophysicist: two-dimensional (2D) data, or three-dimensional (3D) data. 2D seismic data are displayed as a single vertical plane or cross-section sliced into the Earth beneath the seismic line's location. 2D is generally used for regional reconnaissance or for detailed exploration work where economics may not support the greater cost of acquiring 3D seismic data.

22. 3D seismic data are displayed as a three-dimensional cube that may be sliced into numerous planes or cross-sections. More expensive than 2D data, 3D data produces spatially continuous results which reduce uncertainty in areas of structurally complex geology and/or small stratigraphic targets. As technology and the availability of increasingly powerful computing power has increased, the acquisition techniques to acquire 3D seismic data have continued to advance at an unprecedented rate, resulting in increasingly sharp and fine scale resolution images of the subsurface.

23. A much more rare type of seismic data is acquired when two or more 3D seismic surveys are acquired at different times, which can be compared in order to search for changes in the fluids within the rock formations. The use of this type of 3D seismic survey data is known as 4D, where elapsed time is the fourth dimension of information.

⁴ C-064, CGG, 2015.

F. General Description of Seismic Business

24. Generally, the geophysical industry can be broken down into three core businesses. While there are a number of types of geophysical data acquired and used by the E&P industry, the vast majority of it is seismic data, so it is that to which I refer. The core businesses are: seismic data acquisition services; data processing and reprocessing; and the financing, acquisition, licensing and ownership of non-exclusive seismic data.

G. Seismic Data Acquisition Services

25. Seismic data used by the E&P industry is acquired by geophysical companies, which in the offshore provide the vessels, equipment and crews to acquire the data. While there are exceptions, virtually all of the seismic data acquired for use by the E&P industry is funded and owned in one of two ways.

H. Acquisition of Proprietary or Exclusive Data

26. One way seismic data is acquired for the E&P industry is on a proprietary, exclusive basis, where an E&P company will contract a geophysical contractor to acquire the data solely for it. The E&P company will pay the cost of the seismic data acquisition project, and the E&P company will own and have exclusive use of the data.

I. Acquisition of Non-Exclusive Data For Licensing

27. The other way seismic data is acquired for the E&P industry is through the non-exclusive data ownership and licensing business model. Non-exclusive data is often also called “speculative,” “spec” or “multi-client” data. Under this model, a data owner, which is almost always a geophysical company, will develop, acquire, process and often reprocess the seismic data acquisition project bearing all of the risk and paying all of the costs. They will own the data and will grant restricted, non-exclusive use of the data by entering into license agreements and collecting licensing fees.

J. The Cost of Acquiring Seismic Data, Particularly in the Offshore, Varies Significantly

28. Large regional 2D seismic surveys will cost tens of millions of dollars, while the cost of a much smaller 3D seismic data acquisition project focusing in on an exploration prospect can cost more than twice as much. (All costs quoted in US dollars)⁵

29. When seismic data is acquired, and regardless of whether acquired exclusively for an E&P company or non-exclusively for license, the geophysicists and other experts designing and executing the seismic data acquisition project tailor the project to the specific location, the timing of acquisition, the imaging and commercial objectives and other relevant factors. In doing so, they will specify the optimal equipment and acquisition parameters. When acquiring seismic data offshore, acquisition parameters often include the depth of the source array and the receiver cables, the spacing of the acquisition lines, the length of the acquisition cable, the time spacing of the samples, and the orientation of the survey.⁶

K. Data Processing and Reprocessing

30. Seismic data must be processed in order to make sense of the recorded raw seismic data to produce an image of the Earth's sub-surface geologic structure. Reflected seismic response is a mixture of the output pulse, the effect of the Earth upon that pulse, and background noise, all convolved together. Exploration geophysicists must remove the output pulse and the noise, and adjust for the effects of the differences in travel time through various rock layers to leave just the 'Earth model'. Significant knowledge, training and experience are required to accurately and reliably process seismic data.⁷

5 **C-060**, Enachescu, 2007a; **C-061**, Enachescu, 2007b; **C-065**, ExxonMobil, 2002; **C-066**, GeoPursuit, 2002; **C-067**, WesternGeco, 2002a.

6 **C-068**, API, 2002; **C-065**, ExxonMobil, 2002; **C-059**, Elrod et. al., 2002; **C-060**, Enachescu, 2007a; **C-061**, Enachescu, 2007b; **C-066**, GeoPursuit, 2002; **C-062**, IAGC, 2002; **C-069**, IAGC, 2014a; **C-070**, IAGC, 2014b; **C-071**, IAGC, 2014d; **C-072**, IAGC, 2014f; **C-073**, IAGC, 2014g; **C-074**, IAGC, 2014h; **C-075**, Ng, et. al., 2002; **C-076**, PGS, 2002; **C-077**, Shell, 2002; **C-078**, Smith, 2013; **C-079**, TGS, 2002; **C-080**, TGS, 2013; **C-107**, WesternGeco, 2002b.

7 **C-068**, API, 2002; **C-064**, CGG, 2015; **C-059**, Elrod et. al., 2002; **C-060**, Enachescu, 2007a; **C-061**, Enachescu, 2007b; **C-065**, ExxonMobil, 2002; **C-066**, GeoPursuit, 2002; **C-075**, Ng, et. al., 2002; **C-076**, PGS, 2002; **C-077**,

31. A geophysicist will reprocess data to focus the image on a different target or horizon from the original focus, to incorporate newly available subsurface data such as that acquired when logging wellbores, or to apply advanced skills, experience, knowledge and technologies. Although quite expensive, reprocessing costs are relatively minor when compared to the original cost of acquiring the data.⁸

32. Like when seismic data is acquired, when seismic data is processed and reprocessed, and regardless of whether acquired exclusively or non-exclusively for license, the geophysicists and other experts carrying out the work will select and order the processing and reprocessing schemes to tailor the results based on input from the acquisition project itself, the imaging and commercial objectives and other relevant factors. For instance, they will choose among a variety of possible velocity models for migration, choose specific and detailed migration techniques and select specific gain parameters for the processing and reprocessing. Thus, the acquired and processed seismic data, whether the data is to be owned exclusively or non-exclusively and made available for license, is tailored, unique and original to its owner.⁹

L. Other Derivative Products are Often Created From Seismic Data

33. Derivatives of seismic data use specialized methods to combine processed and reprocessed seismic data to develop extrapolated derivative products and reports. These include outputs that provide detailed descriptions of the rock strata and fluid distributions, that predict pore pressures and rock temperatures, and that identify near surface hazards.¹⁰

Shell, 2002; **C-078**, Smith, 2013; **C-079**, TGS, 2002; **C-080**, TGS, 2013; C-067, WesternGeco, 2002a; **C-107**, WesternGeco, 2002b.

8 **C-068**, API, 2002; **C-065**, ExxonMobil, 2002; **C-059**, Elrod et. al., 2002; **C-060**, Enachescu, 2007a; **C-061**, Enachescu, 2007b; **C-066**, GeoPursuit, 2002; **C-062**, IAGC, 2002; **C-069**, IAGC, 2014a; **C-070**, IAGC, 2014b; **C-071**, IAGC, 2014d; **C-072**, IAGC, 2014f; **C-073**, IAGC, 2014g; **C-074**, IAGC, 2014h; **C-075**, Ng, et. al., 2002; **C-077**, Shell, 2002; **C-078**, Smith, 2013; **C-079**, TGS, 2002 **C-107**, WesternGeco, 2002b.

9 **C-068**, API, 2002; **C-065**, ExxonMobil, 2002; **C-059**, Elrod et. al., 2002; **C-060**, Enachescu, 2007a; **C-061**, Enachescu, 2007b; **C-066**, GeoPursuit, 2002; **C-062**, IAGC, 2002; **C-069**, IAGC, 2014a; **C-070**, IAGC, 2014b; **C-071**, IAGC, 2014d; **C-072**, IAGC, 2014f; **C-073**, IAGC, 2014g; **C-074**, IAGC, 2014h; **C-075**, Ng, et. al., 2002; **C-076**, PGS, 2002; **C-077**, Shell, 2002; **C-078**, Smith, 2013; **C-079**, TGS, 2002; **C-080**, TGS, 2013; **C-107**, WesternGeco, 2002b.

10 **C-071**, IAGC, 2014d; **C-078**, Smith, 2013.

M. Non-Exclusive Seismic Data for License

34. The business case supporting investment in non-exclusive data is created and priced based upon complex financial models that take advantage of economies of scale by spreading the cost of data acquisition and processing over a period of time, which is generally lengthy, and among many licensees. The models, and indeed this business, all depend on the non-exclusive data owner's ability to enter into a sufficient number of future licenses with prospective E&P company licensees to recoup its initial investment and secure a reasonable financial return by licensing the data under non-exclusive use-licenses.

35. These models rely on the rule of law and specifically intellectual property laws that protect valuable intellectual property such as non-exclusive seismic data. They also consider other factors such as E&P industry interest, advanced licensing to reduce upfront project risk (often called "pre-funding"), competition, prospectivity of the area, political and regulatory stability and predictability, the costs of data acquisition and their predictability and risk, the ability and method of financing and in the case of offshore data, the permit conditions under which the data will be acquired.

N. History of Non-Exclusive Seismic Data For License

36. The geophysical industry was founded on proprietary 2D seismic surveying — a single contractor acquiring and often interpreting seismic data for a single E&P company. The E&P company then owned the seismic data exclusively. This early E&P company funded seismic exploration was focused on identifying possible geologic features or trends that were prospective for oil and gas, and then high grading individual prospects associated with the feature or trend to be drilled, and was not acquired in a manner or on a scale designed to understand an entire basin. Such large-scale regional surveying was beyond the reach of individual E&P companies.

37. Offshore seismic exploration only came into widespread use around 50 years ago. By the mid-1980s, meaningful quantities of modern non-exclusive 2D data started being acquired, and E&P companies started becoming accustomed to its attractive price, good design, and high

quality. As a result, by the end of the 1980s, more and more geophysical business shifted from the proprietary model to the non-exclusive model, particularly in the major offshore basins (e.g., Gulf of Mexico, the North Sea, and offshore West Africa). As non-exclusive data libraries grew and 2D grids were in-filled (augmenting original sparsely spaced grids of 2D seismic lines with new lines in between them to create a denser grid), the density of data coverage increased to the point that E&P companies could use them for either large-scale regional or smaller scale prospect-specific work. For the first time, E&P companies could generate prospects across an entire basin and relate them to another in detail via a regular, consistent grid of high-quality data.

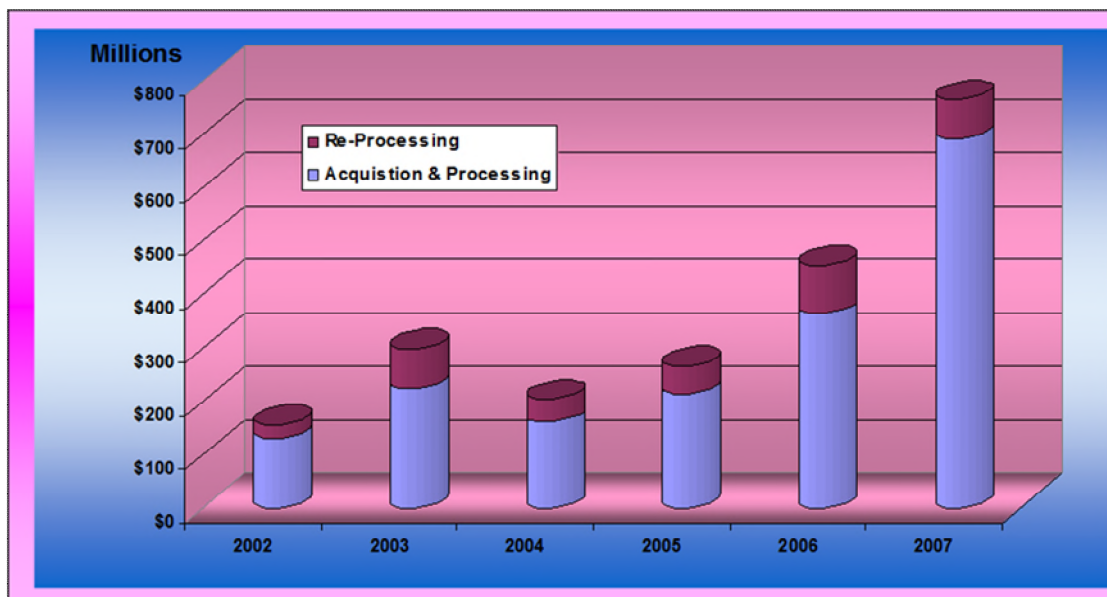
38. Today, non-exclusive data has continued to grow on the successful foundation and has become an integral part of the exploration, development and production of hydrocarbon resources and is utilized in the preparation and decisions made by E&P companies. While geophysical company data owners own the vast majority of non-exclusive data, E&P companies are also owners, particularly of older data.¹¹ E&P companies generally license their seismic data through data brokers.¹²

39. Non-exclusive data now covers many of the world's oil and gas provinces, allowing E&P companies to purchase and use this data to prospect across entire basins and geologic regions. In areas such as the US Gulf of Mexico, almost all of the 3D seismic data acquired there is non-exclusive data. As shown in Figure 1, in such an area, this investment is significant, with annual investment in 2007 for the first time approaching \$1 billion.

11 **C-081**, Richie, 2006a; **C-082**, Richie, 2006b.

12 **C-059**, Elrod et. al., 2002; **C-060**, Enachescu, 2007a ; **C-061**, Enachescu, 2007b.

Figure 1



Non-Exclusive Seismic Investment – 2002 thru 2007 US - Gulf of Mexico¹³

40. The investment in non-exclusive seismic data represents capital invested by data owners which do not compete with the E&P industry in finding, developing and producing oil and gas. As such, it is capital that the E&P industry itself does not have to invest thus freeing up their capital for acquiring licenses and leases, drilling wells and building development and production infrastructure. As such, euphemistically speaking, this capital infusion primes the carburetor of the economic engine that drives the oil and gas E&P industry in its critical endeavor of supplying energy.

O. Benefits of Non-Exclusive Seismic Data for License

41. As earlier stated, under this model the geophysical company initiates and conducts projects of general industry interest at its own financial risk. Restricted non-transferable data user licenses are then sold to individual E&P companies for a fraction of the cost of acquiring and

¹³ Extracted from an IAGC presentation to HGS/GHS/SIPES Ethics Luncheon, June 17, 2009, Houston TX.

processing the data. Used properly, this model offers significant economic benefits to all stakeholders in the process.

42. E&P companies are afforded access to high quality, modern seismic data for a fraction of the cost of exclusive proprietary ownership. This makes the ability for any E&P company to prospect on a trend, basin wide or regional basis affordable, and, when necessary, allows them to “ramp up” their knowledge base in a new area very quickly using available “off the shelf” data. Experience shows that access to high-quality seismic data facilitates higher exploration and development success rates and reduces exploration and development risk.¹⁴

43. For host governments, non-exclusive data helps to realize the value of national resources by lowering entry barriers for E&P companies, providing information about potential prospects, promoting licensing rounds, encouraging competition in the development of reserves and by providing subsurface information with which to help them steward their country’s natural resources. It also minimizes the chances of seismic data being acquired multiple times in the same area, thus minimizing any potential negative environmental effects.

44. For the broader E&P industry, as described above the capital non-exclusive data owners invest represents an additional capital infusion by a non-competitor into the E&P economic engine. By making this high-quality, modern seismic data available at a fraction of its cost, the economic hurdles faced by smaller E&P companies are lowered thus affording more E&P players access to high-quality, modern seismic data and often more expensive exploration plays. Overall, this improves the efficiency of the E&P investments, resulting in more such investments.

45. For the data owners, which are most often geophysical companies, the non-exclusive data business model provides the opportunity to go beyond the business of data acquisition and processing of exclusive seismic data as a service for E&P company clients, and to invest in non-exclusive seismic data as well. Thus they are able to produce and license more data to more clients, and when circumstances allow, produce higher revenues and higher profits than

14 **C-083**, APEGGA, 2002; **C-084**, APEGGA, 2010; **C-068**, API, 2002; **C-085**, CAPP, 2006; **C-059**, Elrod et. al., 2000; **C-061**, Enachescu, 2007b; **C-065**, ExxonMobil, 2002; **C-066**, GeoPursuit, 2002; **C-086**, Gill, 2003. **C-067**, WesternGeco, 2002a.

historically possible. It also provides the opportunity to showcase new technology to a broader client base, and offers greater flexibility and control over deploying corporate assets.¹⁵

P. Commercial Life of Non-Exclusive Data

46. As stated, the continued viability of this business depends on the non-exclusive data owner's ability to recoup the original investment and earn a reasonable economic return through licensing for a fee the non-exclusive data to multiple E&P companies over a considerable period of time. These non-exclusive data, its various processing and reprocessing products and its derivatives constitute valuable intellectual property for the data owners throughout the commercial life of these non-exclusive data. The commercial life of non-exclusive data continues so long as revenue, or the expectation of revenue, from fees earned by the ongoing licensing of the data exceeds the cost of maintaining (storing) the data.

47. The length of the commercial life of non-exclusive data can vary greatly. Offshore seismic exploration only came into widespread use around 50 years ago. As such, data owners have limited experience with which to accurately judge when to expect the useful commercial life of many offshore non-exclusive seismic data survey projects will end. Because the cost of maintaining the data is generally very low, most data owners find that even the oldest data in their libraries has not yet reached the end of its commercial life.

48. Exploration is often not an activity that is only attempted once in an area. New technologies, information, regulations or ideas can prompt E&P companies to return to an area that was initially unsuccessful, and use the seismic data that was initially created in that area. It can often take many years before an area is successful, which means that non-exclusive data can be licensed again and again by different E&P companies exploring the area over a long period of time. In many cases the seismic data will retain its value over time, and is often used later with enhanced reprocessing.

¹⁵ C-069, IAGC, 2014a.

Q. There Are Many Factors That Will Extend the Commercial Life Of Non-Exclusive Data

49. The single most important is the maintenance of confidentiality of the data by all parties in its possession. Additionally, advancing technology creates new and unforeseen demands for use of the data, and thus opportunities for licensing revenues for the data continue for many decades. Other factors include: adherence to the sanctity of contracts; strong intellectual property laws and adherence thereto and enforcement thereof; license agreements that are clear, well-constructed and practical; a client/user community that is well-educated on and respectful and supportive of the non-exclusive data business model; governments that recognize the value of and thus support the underlying foundations for a healthy non-exclusive data business model; and the area underlying the data being a successful area for oil and gas exploration and production.

50. Factors that will shorten or, practically speaking, end the commercial life of non-exclusive data are factors that are substantially opposite to those extending factors described above. I will leave it to the reader to transpose them. An additional factor that in some circumstances may shorten commercial life is the acquisition of additional seismic data in the same location.

51. The widespread public availability of non-exclusive seismic data in its most useful and valuable digital format will effectively eliminate the commercial life of that data.¹⁶

R. Non-Exclusive Data User License Agreements

52. The terms of the restricted data user licenses are typically governed by “Master License Agreements” between the data owner (the licensor, usually a geophysical company) and the licensee (the E&P company). The basic premise of these license agreements is that the geophysical data (as well as certain products derived directly from the data) is exclusively owned by the data owner, and constitutes their valuable intellectual property subject to copyright and

¹⁶ C-085, CAPP, 2006; C-060, Enachescu, 2007a; C-061, Enachescu, 2007b; C-066, GeoPursuit, 2002; C-062, IAGC, 2002; C-078, Smith, 2013; C-079, TGS, 2002; C-067, WesternGeco, 2002a; C-107, WesternGeco, 2002b.

trade secret protection.¹⁷ For a fee, the agreements grant certain usage rights to the licensee to conduct internal business with the data, but the licensee is prohibited from disclosing, transferring, assigning or copying the data to other parties, including by means of corporate acquisitions or mergers. E&P company acquisitions and mergers change the future assumptions in the financial models which were used to create the fee structure by diminishing the pool of prospective licensees and thus eliminating the possibility of those future licensing fees. A contractual mechanism in standard data-use license agreements was developed to address this risk and requires the payment of transfer fees in the event of merger or acquisition. These fees are designed to mitigate the financial exposure of the data owner, and provide the acquiring E&P company an opportunity to license the non-exclusive data under very favorable pricing terms. This contractual mechanism is fundamental to the successful economics of the non-exclusive business.¹⁸

53. In standard data license agreements there are also exceptions for limited disclosure of the data to address basic business realities of licensees while generally requiring that the data be maintained as confidential. In this way the license agreement seeks to ensure the confidentiality of the data and prohibit certain types of disclosure which could erode the demand for future license purchases and thus damage the future economic potential of the data for its owner. Further, the license agreement ensures that the data owner has the sole right to license the data, and that it is only through the contractual licensing of data that it may be used.¹⁹

54. Most owners of non-exclusive data use an agreement comparable to the model data licensing agreement created through and updated periodically by IAGC. There is no requirement that this model be followed, however. As a result, this IAGC Model Data Licensing Agreement, the development and updating of which has always been a collaborative endeavor of IAGC's membership, is an excellent example of the form of such agreements. [Note: IAGC created its Model Data Licensing Agreement in the early 1990s. It subsequently issued new updated versions

17 C-084, APEGGA, 2010; C-085, CAPP, 2006; C-059, Elrod et. al., 2000; C-060, Enachescu, 2007a; C-061, C-061, Enachescu, 2007b; C-066, GeoPursuit, 2002; C-062, IAGC, 2002; C-069, IAGC, 2014a; C-079, TGS, 2002; C-080, TGS, 2013.

18 C-087, IAGC, 2014e.

19 C-059, Elrod et. al., 2000; C-060, Enachescu, 2007a; C-061, Enachescu, 2007b; C-066, GeoPursuit, 2002; C-062, IAGC, 2002; C-069, IAGC, 2014a; C-070, IAGC, 2014b; C-071, IAGC, 2014d; C-072, IAGC, 2014f; C-073, IAGC, 2014g; C-074, IAGC, 2014h; C-075, Ng, et. al., 2002; C-076, PGS, 2002; C-077, Shell, 2002; C-078, Smith, 2013; C-079, TGS, 2002; C-080, TGS, 2013; C-107, WesternGeco, 2002b.

in 1998, 2001, 2003, 2009, 2014 and 2018. The 2014 IAGC Model Data Licensing Agreement is attached as **Exhibit C-102** to show, among other things, how ownership and confidentiality are treated.]²⁰ IAGC promotes the routine review of the model agreement to ensure that it addresses the changes in seismic business, the evolution of technology and changes in other external factors.²¹

S. Loss of Confidentiality Of Non-Exclusive Data

55. The single largest factor undermining the financial foundation of investments in non-exclusive data is the loss of confidentiality and control of reproduction of the data. When this happens, users of the data are able to access and use the data without involving the data owner, and without having to pay a licensing fee and enter into a license agreement (under which a statement of ownership is made, confidentiality is required and restrictions on data use are set out to protect confidentiality and intellectual property). Without a contract being in place where a statement of ownership is made, confidentiality is required, and restrictions are put on its use, experience shows that free dissemination of the data proliferates, further exacerbating the damage. By choosing to obtain and use the data, the user demonstrates that he or she finds it useful, and therefore valuable. His or her free use of the data represents the loss of a licensing opportunity and its associated revenue.²²

T. Efforts to Protect Non-Exclusive Data Confidentiality And Ensure Adherence To Data License Agreements

56. Data owners generally go to great lengths to protect their intellectual property and the opportunity for ongoing licensing of the data throughout its commercial life. Data owners have consistently found that licensees of non-exclusive data assume rights not granted in the license

²⁰ **C-074**, IAGC, 2014h.

²¹ **C-059**, Elrod et. al., 2000; **C-060**, Enachescu, 2007a; **C-061**, C-061, Enachescu, 2007b; **C-069**, IAGC, 2014a; **C-074**, IAGC, 2014h.

²² **C-068**, API, 2002 ; **C-065**, ExxonMobil, 2002; **C-059**, Elrod et. al., 2000; **C-060**, Enachescu, 2007a; **C-061**, Enachescu, 2007b ; **C-066**, GeoPursuit, 2002; **C-062**, IAGC, 2002; ; **C-069**, IAGC, 2014a; **C-070**, IAGC, 2014b; **C-071**, IAGC, 2014d; **C-072**, IAGC, 2014f; **C-073**, IAGC, 2014g; **C-074**, IAGC, 2014h; **C-075**, Ng, et. al., 2002; **C-081**, Richie, 2006a; **C-082**, Richie, 2006b; **C-076**, PGS, 2002; **C-077**, Shell, 2002; **C-078**, Smith, 2013; **C-079**, TGS, 2002; **C-067**, WesternGeco, 2002a; **C-107**, WesternGeco, 2002b.

agreements, or they do not adhere to, intentionally or otherwise, restrictions or prohibitions in those agreements. This chronic situation erodes data library owners' ability to deliver financial returns commensurate with risk undertaken in making the investment to acquire the data in the first place. At its core, when licensees do not adhere to license terms and conditions, it frequently results in giving parties who have not paid a licensing fee and entered into a license agreement (under which a statement of ownership is made, confidentiality is required and restrictions on data use are set out to protect confidentiality and intellectual property) access to the data. With free access to the data, these users have no need to purchase a license agreement, a potential licensing opportunity is lost and the chances for proliferation of free and unrestricted dissemination of the data grow, further exacerbating the damage.²³

57. As the non-exclusive data business model developed, data owners recognized that the protection of non-exclusive data from unauthorized release was an issue data owners had in common with other data owners – their competitors, and thus recognized the importance of being able to collaborate with them on ways to ensure the confidentiality of all data is protected and to minimize instances of its unauthorized release, dissemination and use. Data owners came to realize that IAGC, their trade association, was the logical and recommended (relative to antitrust and competition laws) vehicle for competitors to pool their resources and collaborate on common issues. They also found there were significant advantages to speaking through the association with a single industry voice. By speaking with a single industry voice and delivering a consolidated, unified message or position supported by the entire industry, the message or position carried greater weight than if delivered by the individual data owners. It also provided them with a degree of anonymity, and thus protection from retribution by individual E&P clients who may not like the position or message. As a result, data owners invested time and resources in ensuring IAGC was adequately resourced and functioning efficiently and effectively on their behalf. Developing the Model Master License Agreement in 1990 was the first collective effort. Data owners, through

23 **C-068**, API, 2002; **C-085**, CAPP, 2006; **C-065**, ExxonMobil, 2002; **C-059**, Elrod et. al., 2000; **C-060**, Enachescu, 2007a; **C-061**, Enachescu, 2007b; C-066, GeoPursuit, 2002; **C-062**, IAGC, 2002 ; **C-069**, IAGC, 2014a; **C-070**, IAGC, 2014b; **C-071**, IAGC, 2014d ; **C-072**, IAGC, 2014f; **C-073**, IAGC, 2014g; **C-074**, IAGC, 2014h; **C-075**, Ng, et. al., 2002; **C-076**, PGS, 2002; **C-078**, Smith, 2013; **C-079**, TGS, 2002; **C-107**, WesternGeco, 2002b.

IAGC, have constantly revised and issued updated revisions of this agreement to address evolving business conditions, technology and other external factors.

58. Other IAGC efforts mentioned below (statements of principles, code of practice, broad communication and education efforts, etc.) have likewise developed and evolved over the years. One other important effort undertaken through IAGC is described below: engagement with host governments that have supported or pursued aggressive policies regarding changes in the confidentiality term and policies regarding if and how non-exclusive seismic data is released to the public.

59. IAGC has developed at the request of and, through a collaboration of its membership, and made freely available Statements of Principles for Non-Exclusive Seismic Data Licensing, which offers the data owner's perspective on the most contentious areas between licensors and licensees. These statements of principles provide background and context for each area, describe the data owners' perspective on the current situation and often provide examples of why an area is contentious and difficult. Statements of principles have been developed to specifically address confidentiality of data and the confidentiality of government held non-exclusive data and its release, disclosure of data to third parties, derivative products, transfer fees, the confidentiality of non-exclusive data when it involves virtual access and e-commerce and a glossary of terms. 24A related document, IAGC's Industry Code of Practice for the Use of Licensed Geophysical Data, was prepared by IAGC members to clearly set out rights and obligations around those areas of data license agreements most commonly misconstrued or violated. It is in a form which can clearly be understood and can readily be disseminated.²⁵

60. In addition, through their own individual efforts as well as through IAGC, data owners have sought to communicate the nature of, benefits of and threats to the non-exclusive data business model broadly among the E&P industry. This broad communication effort also seeks to educate individuals working in the E&P industry with non-exclusive data about the common rights and restrictions attached to most data through the licensing agreements. In this manner, data

24 **C-069**, IAGC, 2014a; **C-070**, IAGC, 2014b; **C-088**, IAGC, 2014c; **C-071**, IAGC, 2014d; **C-087**, IAGC, 2014e; **C-072**, IAGC, 2014f; **C-073**, IAGC, 2014g.

25 **C-089**, IAGC, 2012.

owners hope to minimize the unauthorized disclosure of data through licensees. These communication efforts have been sustained since 2002 and have included articles in industry trade press, correspondence with individual E&P company licensees and the delivery of numerous presentations and speeches at industry trade shows, seminars, continuous education seminars and professional society meetings on the subject.²⁶

61. Taken together, IAGC's recommended Model Master Data License agreement and statements of principles provide the basic framework for both data owners and licensee users in structuring practical non-exclusive data use licenses that will help protect existing non-exclusive data investments and ensure a healthy ongoing investment climate.

U. Industry Concerns and Relations With Government Entities

62. As has been noted above in discussing the traditional business model of the seismic industry, confidentiality is paramount to maintaining the value of non-exclusive seismic data.

63. When governments grant permission to acquire seismic data offshore they often require the data to be submitted to their regulatory bodies to satisfy requirements for their due diligence and stewardship of resources, as the governments are unable to afford the expensive seismic data to do so. The submitted seismic data enables government regulatory bodies to, among other things, assess the resource base to inform policy decisions, conduct technical studies and assess applications from E&P companies for licenses to explore and develop in the territories of that country.

64. Due to declining offshore oil and gas activities in some countries in favor of other offshore areas of the world which were found to be cheaper to explore and develop or which have more abundant resources, the concept of government promoting offshore development began. It was quickly realized that seismic data was elemental to modern offshore exploration, but concern emerged that the cost of licensing seismic data, either proprietary or non-exclusive, would prove cost prohibitive for jump-starting exploration activities. Thus to address the concern the concept

²⁶ C-063, IAGC, 2003a.

evolved to include the idea to change policy and disclose submitted non-exclusive seismic data. Canada and some of its provinces were among those that took up this concept.

65. Government disclosure and/or release of non-exclusive seismic data to third parties undermines the confidentiality of the data that data owners work to protect. Some technological advances, such as vectorizing, have resulted in third parties taking the government disclosed and/or released seismic data and processing it to a form which competes with the same licensed data. When this occurs, licensing logically declines or disappears. When this happens, unless the disclosed data has already recouped the initial investment prior to disclosure, the traditional business model is no longer able to recoup the initial investment in seismic data because its opportunities to license the seismic data are dramatically reduced or altogether eliminated.

66. Governments' disclosure and/or release of non-exclusive seismic data undermine confidentiality of the data which reduces or eliminates opportunities to license non-exclusive seismic data. Data owners make non-exclusive seismic data available to the E&P companies and others interested in using it when both parties enter into a restricted use licensing agreement and the data owner collects a licensing fee. Data owners generally go to great lengths to protect the confidentiality of their non-exclusive data, and thus to preserve the opportunity for ongoing licensing of the data throughout its commercial life. Confidentiality of non-exclusive seismic data ensures that E&P companies and others interested in using the data and deriving the benefits therefrom can only access the data for use from one place – the data owner. When governments release (or liberally disclose) non-exclusive seismic data into the public domain, they generally make it easily and widely available, and thus the data is no longer confidential. When non-exclusive seismic data is no longer confidential, any party interested in using the data can now do so anonymously and for free, and without having to enter into a license agreement (under which a statement of ownership is made, confidentiality is required and restrictions on data use are set out to protect confidentiality and intellectual property). By choosing to access and use the data, the user demonstrates that he or she finds it useful, and therefore of value. With free access to the data for use, these users have no need to purchase a license agreement, therefore they do not. His or her free use of the data represents the loss of an opportunity for licensing the data and its associated revenue, a loss which is often repeated multiple times. As free, unlicensed data spreads among

the E&P industry, the chances for proliferation of free and unrestricted dissemination of the data grow, further exacerbating the damage. The best example of which I am aware globally has been in Canada, where changing policies have in some cases resulted in the digital release of non-exclusive data. As a result of the data being available for free, the value of the data to the data owner is eliminated or dramatically reduced because of the elimination or significant reduction of future licensing opportunities.

67. For some government disclosed and/or released data, some technological advances have exacerbated loss of confidentiality and reduced licensing. Traditionally, data was archived and manipulated as black-and-white films and paper copies. The quality of these significantly decreased over time, and not all the data value existed in that form (for example some further processing, reprocessing and analyses was not possible in that form). Some governments chose to limit disclosure of the data to the public under controlled conditions at one government office. In such instances, accessing the data was time-consuming, tedious and of limited value. Other governments chose to release the data, but only as paper copies or in large-scale, letter-size (low resolution) PDF files. The value of data released in this manner was limited by the medium and extracting that value was tedious.²⁷ In time, experience showed that even this cumbersome means of data disclosure and release caused meaningful loss of confidentiality and thus meaningful loss of opportunities for licensing the data. This was the case especially because companies emerged which made a business out of digitizing and vectorizing released paper copies of 2D seismic data, processing it in a reverse engineering way and offering the digitized results for license or use in competition with the data owner.²⁸

68. Data owners are particularly concerned with the length of the confidentiality period, the time at which such a policy is implemented (and whether it is retroactive and/or prospective), how public disclosure and/or release are effected and how transparent the procedures are for implementing public disclosure and release. If policies (and the detailed procedures to implement them) are made before a data owner develops and undertakes a non-exclusive data project, the data owner is able to factor in the effects of such change on the elements of the underlying business

27 **C-108**, CAGC, 2004; **C-085**, CAPP, 2006; **C-061**, Enachescu, 2007b.

28 **C-090**, Canesis, 2015; **C-091**, Harrison, 2003; **C-092**, LynxScan, 2000; **C-093**, Spectrum, 2008 - Slide 11.

model and proactively decide whether or not to proceed with the investment. If policies (and the detailed procedures to implement them) are made after investment in the project, such policy changes can undermine important assumptions in the model which supported the investment, and thus represents new, unanticipated risk. The realization of this risk is most egregious when the data owner of that non-exclusive data has yet to recoup their initial investment, much less make a reasonable profit for having invested. In such cases, unfortunately of which there are far too many examples, such policies can effectively kill any future chances of recouping that investment, and thus locks in any existing loss.²⁹ Unless other factors outweigh this new risk, like the Australia example mentioned below, it will become “what kills the goose that lays the golden eggs.”³⁰

69. Australia provides a clear example of how government policies made new investments in non-exclusive seismic data projects unsupportable, and thus resulted in halting all such investments for more than five years. In this example, on which the references elaborate, Australia had adopted an impractically short confidentiality period, after which its government required liberal release of the data into the public domain. It became clear to data owners that under Australia's policy, for new investments in non-exclusive data surveys, there was little chance of licensing data for a fee enough times to recoup the initial investment, much less earn a reasonable return on it. Data owners ceased to invest in new non-exclusive seismic data projects for five years. Once Australia changed their permit conditions, most importantly which included a longer confidentiality period to support the non-exclusive data business model and investments thereunder, investment resumed.³¹

V. Non-Exclusive Data Owners' Interaction with CNSOPB

70. By way of an example of the issues discussed in the preceding section, the release of non-exclusive seismic data into the public domain, and the proposed expansion of released data in digital image formats, emerged as an issue for industry offshore Nova Scotia around 2000.³²

29 **C-068**, API, 2002; **C-065**, ExxonMobil, 2002; **C-066**, GeoPursuit, 2002; **C-062**, IAGC, 2002; **C-094**, IAGC, 2006a; **C-070**, IAGC, 2014b.

30 **C-062**, IAGC, 2002; **C-094**, IAGC, 2006a; **C-070**, IAGC, 2014b.

31 **C-095**, IAGC, 2002b **C-096**, IAGC, 2003c; **C-097**, PESA, 2007a; **C-099**, PESA, 2007b.

32 **C-108**, CAGC, 2004.

Although data owners disputed the practice, the Canada-Nova Scotia Offshore Petroleum Board (CNSOPB) (and possibly other government entities) had or started to release publicly non-exclusive seismic data after the period of confidentiality.

71. In May 2006, the CNSOPB brought the issue to a head when it published a notice regarding their plan to move forward with the implementation of delivering seismic and well log data in digital image format (as opposed to the above described hard copy format)³³ IAGC and CAGC disputed CNSOPB's right to release any data to any third parties under the laws of Intellectual Property. IAGC filed an appeal with CNSOPB disputing their position, and received the response that, while CNSOPB understands IAGC's concerns, they planned to uphold their decision.³⁴ At that time, it was felt NEB and CNLOPB had strong communication with the CNSOPB. The assumption was that both the NEB and CNLOPB would be informed of deliberations with CNSOPB, and that any agreements to resolve data confidentiality and data release issues with CNSOPB would likely facilitate similar future resolution of related issues arising with NEB and CNLOPB. Many of the data owners' positions were shared by the E&P industry.³⁵

72. IAGC member companies objected to CNSOPB's proposed 2D, 3D seismic image viewing scenario and working with the Canadian Association of Geophysical Contractors (CAGC - a Canadian-based sister organization with significant common membership, especially on the non-exclusive data issue), an effort was made to come to an agreement through a Memorandum of Understanding (MOU) between CNSOPB and the non-exclusive data owners regarding the public release of non-exclusive seismic data. Negotiations continued for the better part of two years, during which time CNSOPB's position on release of digital seismic data evolved to a more aggressive position – one increasingly likely to destroy remaining commercial life of existing non-exclusive seismic data offshore Nova Scotia.

73. The negotiations, while in hindsight served for a time to stall CNSOPB from pursuing more aggressive data disclosure and release, themselves eventually stalled without

33 C-099, CNSOPB, 2006a; C-100, CNSOPB, 2006b.

34 C-094, IAGC, 2006a.

35 C-085, CAPP, 2006; C-103, CAGC, 2006; C-104, IAGC, 2006b.

conclusion. With the benefit of hindsight this was largely due to CNSOPB's initiation in 2009 of the Nova Scotia Play Fairway Analysis and Geoscience Data Package program which was designed to examine the hydrocarbon potential of offshore Nova Scotia and to demonstrate reduced risk to industry so as to encourage exploration of the remaining hydrocarbon resources. Through IAGC, data owners were approached to support this comprehensive technical geoscience analysis by allowing their data to be utilized in the analysis while maintaining its confidentiality. Given that the analysis supported the shared goal of encouraging exploration of offshore Nova Scotia and did so without risking confidentiality, IAGC members agreed to support the analysis. Satisfactory terms were negotiated for maintaining seismic data utilized in the analysis as confidential throughout the process. In keeping with industry practice confidentiality was assured through the execution of Confidentiality Agreements, which also spelled out the limitations on how the seismic data and interpretations could be presented and shared publically. Most, but not all data owners contributed their seismic data, and the contributed data was more than sufficient to meet the technical needs of analysis. In the end CNSOPB eased up on their aggressive pursuit of seismic data release because as it progressed, it became increasingly apparent that the Play Fairway Analysis would meet the goals CNSOPB sought to meet with the seismic data disclosure and release.³⁶

III. Conclusion

74. An alphabetic list of the references noted in the footnotes follows, along with **Exhibit C-102** noted in Paragraph 54.

³⁶ C-101, NS DNR, 2011.

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

76. I swear this witness statement in English.

Signed at Houston TX USA on September 13, 2022

[Signed]

Gordon C. "Chip" Gill
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