PUBLIC VERSION

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

BETWEEN:

THEODORE DAVID EINARSSON, HAROLD PAUL EINARSSON, RUSSELL JOHN EINARSSON, GEOPHYSICAL SERVICE INCORPORATED

(the "Claimants")

AND

GOVERNMENT OF CANADA

(the "Respondent", and together with the Claimants, the "Disputing Parties")

(ICSID Case No. UNCT/20/6)

REJOINDER EXPERT REPORT OF ROBERT HOBBS

November 1, 2024

I. PURPOSE OF THIS REPORT

1. This supplemental Expert Report is filed in response to the Claimants' Reply submission.

2. I have been retained by the Government of Canada as an independent expert in this arbitration to opine on matters related to the global offshore seismic industry, including my experience with investments in multi-client ("MC") seismic surveys, submission and public disclosures of seismic data by government regulators and industry standards for the valuation of MC seismic data companies. I have no other relationship with the disputing parties in this matter. I refer to my original expert report for my career background. For the past 8 years, I have been an independent consultant in the seismic industry with my own firm Live Oak Exploration. I also currently serve (since November of 2019) as an independent Director and Chairman of the Board for Shearwater Geoservices ("Shearwater"), the world's largest offshore marine geophysical contractor. Shearwater is a privately owned offshore geophysical contractor based in Bergen, Norway and founded in 2016. It has the largest fleet of seismic vessels in the industry. It conducts exclusive seismic surveys for oil and gas companies and operates as a contractor to MC seismic companies on a project-by-project basis. Shearwater, through a partnership with the Australian seismic company Searcher, has since 2023 started investing on a limited basis in MC surveys in Africa, Brazil and India.

3. I originally submitted an expert report on January 14, 2023 in support of the current NAFTA arbitration case between the Claimants ("GSI") and Respondents (Government of Canada). In response to my original report (RER-02), the Claimants have filed 3 replies from witnesses in response to the conclusions made in my report. These witnesses included Mr. Russell Einarsson (CWS-11), Mr. Chip Gill (CER-05), and Mr. Paul Sharp (CER-06). This

report will address some of the points made in these witness replies. The format of the report is such that each Claimants reply to my original report will be addressed in the sequence indicated above. In addition, the Claimants have submitted a report on the valuation of GSI's data assets by Mr. Victor Ancira (CER-07), which I respond to below.

II. INTERACTIONS WITH GSI

4. Mr. Russell Einarsson's reply to my original report seems to focus primarily on my past interactions with the Claimants prior and during the current dispute. In his report, he implies that I have had direct involvement with litigation and aggressive competitive behavior between TGS Nopec ASA ("TGS") and GSI. I will address each of his points individually.

5. As stated in my original report, I have had no direct involvement with GSI during my career.[1] Throughout Mr. Einarsson's witness statement, he claims that given my role as Chief Operating Officer ("COO") from 2008-2009 and Chief Executive Officer ("CEO") from 2009-2016 of TGS, that I must have had direct involvement with litigation and aggressive competitive behavior between TGS and GSI.[2]

6. As stated in my original report, other than being aware that TGS and GSI were involved in litigation around 2014, I had no direct involvement in this litigation.[3] This litigation was handled by TGS' legal department and external counsel and lead by TGS' internal General Counsel. As CEO, I was not informed of specific details regarding the litigation, only that there was a process ongoing.

[1] **RER-02**, Expert Report of Robert Hobbs, 14 January 2023 ("Hobbs First Report"), paragraph 5.
[2] **CWS-11**, Witness Statement of Russell John Einarsson, 24 May 2024, paragraphs 12-13.
[3] **RER-02**, Hobbs First Report, paragraph 5.

7. While this litigation may have been important to GSI, it did not rise to a level of importance for the CEO to be actively involved.

8. Mr. Einarsson states that "dealings" between TGS and GSI from the period of 1992-2013 were "mostly adversarial and negative".[4] As to this statement and numerous other items described in Mr. Einarsson's witness statement, TGS and GSI were competitors in the MC seismic business in Canada. During my tenure at TGS, TGS took great care to not engage or appear to engage in anti-competitive practices with any competitor company. We were a publicly traded company that was conscious of its reputation with both clients and competitors.

9. In Mr. Einarsson's witness statement, he describes an incident involving a "former TGS employee".[5] I am unaware of this event and Mr. Einarsson does not provide sufficient details for me to comment further. In any event, it is unclear to me how the alleged actions of an unnamed "former TGS employee" during an unspecified incident would at all reflect on my impartiality in this arbitration.

10. At paragraph 7 of Mr. Einarsson 's witness statement, he states, "*In this industry, marine seismic contractors are forced to operate their seismic vessels at cost or very low margins due to over capacity or low oil prices."* He goes on to state that behavior of TGS towards vessel operators somehow reduced income by 10% and how that behavior could be "devastating" to a marine seismic contractor.[6] Again, Mr. Einarsson does not provide enough

[4] **CWS-11**, Witness Statement of Russell John Einarsson, 24 May 2024, paragraph 4.

[5] **CWS-11**, Witness Statement of Russell John Einarsson, 24 May 2024, paragraph 6.

[6] **CWS-11**, Witness Statement of Russell John Einarsson, 24 May 2024, paragraph 7.

detail for me to respond to the accusation, including how TGS supposedly accomplished this "10% reduction" or what the reference "income" was compared to this reduction.

11. Regardless, Mr. Einarsson's statement describing the general unprofitability of the vessel-owning part of the industry is not universal to all contractors. Shearwater, the largest marine seismic vessel operator in the world, operates profitably with only half of their 23 vessels active. It is true that many vessel owners have operated at a loss or with low margins for long periods of time, but in my professional experience, that is usually attributed to the lack of management discipline and/or the accumulation of significant debt that cannot be serviced.

12. TGS is an example of a company that has remained profitable in the seismic industry due to its asset-light business model which involved not incurring debt and being able to adjust its cost basis very rapidly during economically challenging periods such as the regular downturns in the seismic industry. TGS' cost was the investment into its seismic data library, not buying/building and operating seismic vessels. This financial management model can be contrasted with GSI's, which relied upon the purchase of two seismic vessels in the early 2000s (the Admiral and Pacific) and, after spending substantial amounts of money on upgrades in 2007 and 2008 just as the global financial crisis hit,[7] resulting in the company having to sell both ships in 2011 and 2012.[8]

[7] Claimants' Notice of Intent to Submit a Claim to Arbitration, 10 October 2018, ¶ 99.

[8] **R-567**, Amendment and Assignment Agreement between GSI, SDP Services Limited and Newbury Holdings Two Limited (unexecuted), August 2011; **R-568**, Draft Bill of Sale between GSI and Newbury Holdings Two Ltd. (unexecuted), August 2011; **R-569**, Memorandum of Agreement between Geophysical Service Incorporated and Maintenance Gear Rebuilders, 26 March 2012; **R-570**, Agreement of Purchase and Sale between Geophysical Service Incorporated and Ocean Marine Contractors, LLC, 17 October 2012.

13. Mr. Einarsson mentions an "agreement" between GSI and TGS for the two companies to cooperate and not acquire data on top of each other's survey in Nova Scotia.[9] Again, Mr. Einarsson does not provide any details about the alleged incident (when, where, with whom, etc.), so I can only say that I do not recall being part of the alleged meeting or "agreement". Given that GSI only acquired new non-exclusive seismic data in Nova Scotia between 1998 and 2003,[10] it appears that this incident occurred before I became COO of TGS in 2008.

14. It is alleged in Mr. Einarsson's witness statement that TGS treated its suppliers poorly and that they engaged with their vessel suppliers in bad faith.[11] Again, Mr. Einarsson does not provide any support or details for his accusations, but I can say that in order for TGS to continue to invest in a high-quality seismic data library, it was essential to maintain healthy relationships with its vessel suppliers. TGS would not have a business if it could not get ready access to vessel supply, so I disagree with Mr. Einarsson's general statement that TGS was "abusive". In the seismic industry, reputation is very important and while I was at TGS, I was careful to maintain the company's positive working relationships with its vessel suppliers.

III. RESPONSE TO MR. CHIP GILL'S COMMENTS ON THE SEISMIC MC INDUSTRY

15. In the Claimants' Reply, Mr. Gill has submitted an expert report which comments on my observations on the global MC seismic industry in my original report.[12] The following is a response to his comments.

[9] **CWS-11**, Witness Statement of Russell John Einarsson, 24 May 2024, paragraph 8.

[10] **RWS-03**, Witness Statement of Carl Makrides, 14 January 2023, paragraph 36 and accompanying exhibits.

[11] **CWS-11**, Witness Statement of Russell John Einarsson, 24 May 2024, paragraphs 5-7.

[12] **CER-05**, Second Expert Report of Gordon C. "Chip" Gill, 1 April 2024 ("Gill Second Report").

16. Mr. Gill spends a significant amount of time in his report pointing out the differences between GSI and the other MC data companies that it competed against in the global market. In paragraph 16 of CER-05, he states that,

> *GSI never was a global public offshore seismic company, but rather was a privately held seismic company the vast majority of the MC part of whose business and seismic database inventory was situated in Canada.*

17. Despite this statement, Mr. Gill earlier states,

> *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****."*[13]

18. These two statements demonstrate the tension in Mr. Gill's views. While it is true that GSI's business was focused mainly in Canada, the reason why more than half of its seismic database was in the Canadian offshore was because it was purchased from Halliburton in 1993. It was only between 1997 and 2009 that GSI competed with publicly-listed MC seismic companies within Canada, which was an important market at the time. Furthermore, I note that GSI's single largest dataset was from the Falkland Islands and GSI also engaged in seismic surveys in Africa and Central America.[14] GSI's attempt to be a global player is not surprising: the seismic MC business is a portfolio game and it is wise for companies to

[13] **CER-05**, Gill Second Report, paragraph 4 (emphasis added).

[14] **R-159**, Geophysical Service Incorporated, Acquired Data website, also available at: https://www.geophysicalservice.com/index.php?mode=webpage&id=620

diversify their MC libraries to manage their investment risks. GSI seems to have recognized this with investments outside of Canada. While GSI's investments in its two ships turned out to be ill-timed given the state of the seismic industry at the time and the 2008 global financial crisis, it shows that Mr. Gill is not correct to assert that comparing GSI to global seismic companies is like "apples and oranges".[15]

19. In paragraph 14 of CER-05, Mr. Gill states that GSI was a core member of the International Association of Geophysical Contractors ("IAGC"), of which Mr. Gill was President from 2001-2014. He further describes that the IAGC is the international trade association of the geophysical industry "*where industry participants come together to pool their resources and work on common issues"*.[16]

20. Mr. Gill further points out that the business of non-exclusive data (MC data) was one of the IAGC's "top priority" areas.[17] Therefore as a core member, GSI presumably was well familiar with what practices were followed by the other MC companies that were also part of the IAGC. In addition, as a core member of the IAGC, GSI would certainly have participated in dealing with the common global commercial challenges that the industry faced and that were the core function of the IAGC to address. From this close association that GSI seems to have with the global MC industry, it seems strange that Mr. Gill disassociates GSI with the same global industry throughout his report.

[15] See **CER-05**, Gill Second Report, paragraph 16.

[16] **CER-05**, Gill Second Report, paragraph 5.

[17] **CER-05**, Gill Second Report, paragraph 6.

21. Mr. Gill criticizes paragraph 31 in my original report (RER-02) where I describe consolidation in the marine seismic industry as having mostly "global relevance".[18] As stated previously in this response, and in fact highlighted by Mr. Gill through GSI's core participation in the IAGC, GSI was a participant in the global MC marketplace. The purpose of this section of my original report was to describe the players and industry participants in the offshore MC industry of which GSI was a part. The fact that GSI was not shown in Figure 1 of RER-02 (which extends back to 1999) is that the companies shown on the figure were and are publicly listed companies.

22. Mr. Gill also seems to want to highlight that GSI dominated an isolated Canadian market and owned the "largest inventory of MC data available for license in Canada".[19] While that is true, as noted above, the reason is primarily because GSI purchased Halliburton's seismic data library in 1993. As for new seismic data acquisitions once GSI decided to start competing in the multiclient business around 1998, GSI's competition in Canada was very active. For example, TGS has over 270,000 km of 2D data offshore Newfoundland and Labrador acquired between 1998-2003 and 2011-2019.

23. In paragraph 17 of CER-05, Mr. Gill states that "*Mr. Hobbs' Expert Report was focused on the global seismic data industry and more recently as opposed to matters relevant to this Arbitration".* I disagree: actions of other MC players in the Canadian market had significant impact on the value of GSI's data and therefore the value of that company. Other players were investing in that market as early as 1970, whereas GSI ceased new investment after

[18] **CER-05**, Gill Second Report, paragraph 17.

[19] **CER-05**, Gill Second Report, paragraph 17, footnote 3.

2009. The expansion of competition in the Canadian market with more modern, more technically advanced data, essentially devalued GSI's assets.

24. Mr. Gill further seems to want to differentiate GSI from the rest of the industry in paragraph 19 of CER-05. He claims that paragraph 44 of my original report is irrelevant as GSI's data inventory should not be compared to other major industry players. As stated extensively above, GSI certainly can be compared with other MC players in the industry including the fact that due to their ownership of 2 seismic vessels, it appears that they certainly had ambitions that were outside of a "Canada-only" MC company.

25. In paragraph 19 (a) of CER-05, Mr. Gill points out that GSI should not be compared to other global MC companies due to the fact that those companies are publicly traded versus GSI's status as a private company. It is difficult to understand how this different capital status would impact the valuation of GSI's primary assets (their data library) in comparison to the rest of the industry. He states that this differing capital status leads to the use of "hyper conservative" amortization policies of the public companies with respect to their data acquisition investments.[20] Even though GSI may have chosen not to follow standard accounting practices in the industry (Mr. Gill implies that it is because they were not pressured to do so by the public markets), their data library would have experienced the same devaluation over time that is typical of nearly all MC data collected by the industry. GSI is in the same basic business as these publicly traded companies, and GSI cannot escape basic industry drivers of value for MC seismic companies. It is simply not realistic to insist that GSI's seismic MC library carries its initial value into perpetuity. The data becomes obsolete over time from both a technical and competitive position. Reports completed for GSI by

[20] **CER-05**, Gill Second Report, paragraph 34.

[redacted] in fact demonstrate the commonly accepted concept that the valuation of a seismic data library will decrease with the age of the library.[21] In their [redacted] report [redacted] describes his methodology of depreciating the data by age.[22] While his depreciation factor is not as aggressive as industry standard for marine geophysical data, it nevertheless demonstrates the importance of depreciation in the value of data libraries.

26. In paragraph 19 (c) Mr. Gill contrasts GSI from the other global MC companies as those companies being able to invest and operate their businesses as a global portfolio. It is irrelevant as to whether the companies' portfolios are global or Canada-focused. The MC industry is a portfolio management business and it is wise to diversify your MC library to manage risk. It was GSI's choice not to further increase their diversification outside of Canada. This was a management decision and each company that GSI can be accurately compared to, also makes those various diversification decisions. However, in my experience all seismic MC companies are generally considered to operate in the global MC industry and tend to be affected by similar global trends in the market.

27. In paragraph 19 of CER-05, Mr. Gill further criticizes the table on page 17 of my original report, comparing the various inventories of data from MC companies as being irrelevant. He accurately states that GSI's library has a different risk profile from the other players in the industry. The table, however, is very relevant when considering the damages claim from GSI. The much smaller volume of data owned by GSI relative to the other MC players should be valued as such considering: 1) GSI's library is too focused on one particular region

[21] **C-560**, Bundle of Seismic Data Valuations Reports for [redacted].

[22] **C-560**, [redacted]

(relative lack of diversification), and 2) it is relatively older than the other data volumes shown in the referenced table, which in turn diminishes the potential for late sales (due to the fact that the data has already being licensed by customers or superseded by newer data), contrary to Mr. Gill's suggestion.

28. Mr. Gill, in paragraph 19 (c) of CER-05 tries to further differentiate GSI from "all the other global MC companies" that invest globally. He states that to be able to do this, the other companies have the "significant scope and scale" that is afforded by having capital structures provided by public listings. Because of this, he dismisses the comparisons of GSI with the rest of the global MC industry that are made in my original report.[23] While owning a larger, more diversified database as well as benefitting from the greater breadth in supplier and customer exposure is a benefit to the larger companies, these companies are still impacted by the same global seismic data market trends and economics of smaller companies like GSI.

29. In paragraph 20 of CER-05, Mr. Gill criticizes the inclusion of my description of the optimal conditions for MC project investment in my original report.[24] Mr. Gill states:

> *By giving so much focus to new investment in new MC data projects, this paragraph (and Mr. Hobbs report in general) seems to downplay a significant part of the MC data business that has been most important to GSI during the period in question in this matter: generating the most revenue possible from "late sales" of the MC data already in its seismic database inventory.*[25]

[23] **CER-05**, Gill Second Report, paragraph 19(c).

[24] See **RER-02**, Hobbs First Report, paragraph 76.

[25] **CER-05**, Gill Second Report, paragraph 20.

30. Late sales are a critical revenue stream for all multi-client companies (whether GSI or the other, more global MC companies). In addition, late sales are important regardless of how the MC company accounts for the cost of acquisition of the value of the library over its sales life. However, Mr. Gill does not seem to recognize that all of the conditions listed in paragraph 76 of my original report are essential to maintaining a healthy late sales revenue stream (whether the subject company is public or private). Late sales of a data library decline over time due to a number of reasons discussed in my original report.[26] All of the items are essential to assuring a long and healthy late sales revenue stream. If GSI did not adhere to the conditions described in my report, then that would likely inhibit late sales. For example, if GSI invested in surveys that are in areas of low exploration (e.g., Labrador), are subject to exploration and drilling moratoriums (e.g., Arctic) or in areas where oil companies are less likely to invest (e.g., Nova Scotia), there would have been little customer interest for such data and thus few or no late sales.

31. Similarly, in paragraph 22 of CER-05, Mr. Gill criticizes my identification of various factors that are critical for a successful MC seismic company (such as sound investment decisions, the application of appropriate technology and the willingness to continue investing in promising regions) in paragraph 87 of my original report as being irrelevant for a private MC seismic company like GSI. He goes on to describe that measures of success and what motivates a company to reach that success are different for publicly listed companies than for private companies.

[26] **RER-02**, Hobbs First Report, paragraph 76.

32. Whether the company is public or private should not influence the negative impact of investing in the wrong place, at the wrong time, with the wrong or obsolete technology. If a private company does not do what is necessary to build a successful seismic data library, then it will not be able to "maximize revenues" on that library which Mr. Gill says is key for the private companies like GSI. In other words, the principles for a successful seismic business that I outlined in my original report apply to both private and public companies. Publicly traded and privately held businesses compete in the same marketplace and are subject to the same underlying drivers of value.

33. Next, in section C of CER-05, Mr. Gill argues that my report is incomplete in several aspects.

34. In paragraph 23 of CER-05, Mr. Gill refers to my failure to mention GSI in the section of my report that discusses other seismic MC players.[27] However, the purpose of these paragraphs were to describe existing MC players. GSI has not been a presence in the market since about 2011.

35. Mr. Gill also points out that I did not mention two other companies, Fairfield and Jebco. He is correct that I did not mention these companies, largely because I am not familiar with Jebco and Fairfield is largely an onshore United States MC player and the focus of my report was for predominantly offshore MC players given the focus of GSI's business.

36. Mr. Gill points out in paragraph 24 of CER-05, that I omitted discussion of GSI's marine acquisition business and vessel ownership. He is correct, in this omission in that again, my report was a description of companies that played a role in the modern configuration of the industry. GSI only had ownership of 2 vessels and ceased operating those vessels before

[27] **RER-02**, Hobbs First Report, paragraphs 23-26.

2011. Mr. Gill also points out the advantage that GSI had given Canadian Maritime laws requiring Canadian flagging for operations. That was true during the 2000s when GSI had the ability under Canadian law to block foreign flagged ships from collecting seismic data, but that law changed after 2011 when Canada authorized the use of foreign flagged vessels for the acquisition of seismic data off the east coast of Canada,[28] by which time GSI had already sold its ships. In other words, even if GSI had been able to financially afford to keep its Canadian-flagged vessel after 2011, it would have had to compete on equal footing for business with companies like CGG, WesternGeco, PGS and other vessel owners which had superior technology on their ships.

37. Mr. Gill points out in paragraph 25 of CER-05, that I did not mention GSI in my discussion of Consolidation in the Marine Seismic Industry at paragraph 31 of my original report. Outside of the purchase of the Halliburton data, GSI did not play a role in consolidation. The company effectively ceased to be a player in the industry by 2011 and was not acquired or did not acquire any other significant industrial player.

38. In paragraph 26 of CER-05, Mr. Gill claims that I failed to mention GSI's database inventory in Canada and that I ignore GSI in the table preceding paragraphs 45-46 of my original report. GSI's library is clearly listed in the referenced table and he fails to recognize that the purpose of these paragraphs is to describe the competing libraries to GSI in Canada.

39. In paragraph 28 (b) of CER-05, Mr. Gill highlights the value of older 2D data when oil and gas exploration and production ("E&P") companies are seeking critical information in regard to exploration risk prior to further investments. In general, I agree with Gill's observations

[28] **R-571**, Transport Canada, "Coasting Trade Act and Seismic Activities", 2012.

in this paragraph, however it remains that if more technically advanced competitive data is available in the same location and with similar coverage, then E&P companies will almost always select that data rather than the older more technically-obsolete data. The image improvement from the more technically advanced data almost always justifies the increased cost to the E&P and therefore, the impact of the presence of better and newer data at the same location is to devalue the older data.

40. In paragraph 28 (d) of CER-05, Mr. Gill criticizes my statement in RER-02 paragraph 87, that it is important for an MC company to have the latest and best technology in a particular area. He states:

> *In my experience an E&P Company will not always license "the best geophysical technology," even when it is available. Among the factors which come into play are higher cost (the best technologies are often more expensive)…*

41. In my experience, this is an incorrect statement. The cost of a seismic license to an oil company is an insignificant portion of the total offshore E&P value chain where the cost of acreage acquisition, drilling and production will exceed hundreds of millions of dollars. E&P companies will look at test examples of the various available data volumes over an area of interest (with little to no cost) and almost always will buy a license to the data that provides the best image of the subsurface regardless if it costs a bit more. E&P companies will not want to be working with a substandard product to what their likely competitors will be using if they are in a competitive situation in acquiring the exploration acreage. Higher quality seismic data improves the ability to image subsurface structures and enhances the ability to assess exploration risk.

42. In paragraphs 33-35 of CER-05, Mr. Gill discusses the origin of amortization practices in the MC seismic industry. Mr. Gill's description of the history of standard MC accounting principles may be correct, but it misses the point.

43. GSI may have chosen not to follow standard accounting practices in the industry (because they were not pressured to do so by the public markets), but the value of their data library will still generally experience a significant reduction in value over time. The public offshore MC companies chose to use a standard 4-year amortization period as it was felt that on average, the life of a MC survey was 4 years (I am aware that TGS amortizes its onshore data over 7 years, again because of a longer average revenue stream). Mr. Gill is correct that sales can occur well after that 4-year period, however on average, the amortization period was chosen based on the observation that the vast majority of revenues occurred during the amortization period. Some companies have had to take impairments of their survey assets as sales did not extend throughout the full amortization period. These are offset by some surveys that see sales extend past that period. Once more, I refer to analysis completed by Boyd for GSI that demonstrates that depreciation for age of data is important in calculating the value of a data library.[29] [redacted]

44. Seismic data becomes obsolete over time from an age, technical, and competitive position. Furthermore, the pool of customers significantly diminishes after the initial years of data availability because, if the data was of interest, most of the available customers will purchase licenses as soon as it is available. Indeed, GSI's own valuation of its seismic data library [redacted]

[29] **C-560**, [redacted]

[redacted] proves that GSI itself recognizes that its main asset will decrease in value over time. [redacted] it may be because his valuation was intended to represent a maximum possible value in order to, as Mr. Paul Einarsson states, "support GSI financings."[30]

IV. RESPONSE TO MR. VICTOR ANCIRA OF TROIKA USA'S COMMENTS ON GSI'S SEISMIC MC LIBRARY AND REPLACEMENT COST VALUATION

45. The following are my comments from a review of CER-07, an expert report from Victor Ancira of Troika USA ("Troika"). The purpose of Mr. Ancira's report is to provide a valuation of GSI's MC seismic library.

46. Mr. Ancira generally describes the condition of the GSI MC seismic library in paragraph 10 of CER-07. He states that all of the processed data (through Pre-Stack Time Migration or "PSTM") has been saved on Digital Linear Tape ("DLT") tapes and that GSI had maintained gathers and velocity files for all of this processed data. However, Mr. Ancira does not address how the original field data for the library is stored and maintained.

47. When leading TGS, I recall an initiative around 2010 to consolidate and relocate the company's tape library. As part of this exercise, it was determined that much of the original field tapes of our library were old and needed to be remastered to new tape formats for preservation, or discarded. Magnetic tapes tend to get "sticky" with age and often some or all of the data becomes unrecoverable. I recall that we made the decision to discard a significant amount of the original field data tapes as it was too costly to convert it to new tape and because of its age, the data had little remaining potential to generate revenue. Much of this data that was discarded was 1990's vintage. The rationale for this scrapping of field

[30] **CWS-12**, Paul Einarsson Second Witness Statement, 31 May 2024, paragraph 146.

data was that late sales had virtually ceased on this data and that if we did have a sales enquiry on this data, we could access a processed version from one of our clients who had licensed the data. While doing this, however, we did recognize that there was some risk that we would not be able to access the original field data for full reprocessing. Due to our cost/benefit analysis and recognizing that our potential reprocessing steps could be limited, we accepted this risk because of the limited revenue potential associated with this older data – it had ceased selling after about 10-15 years. Furthermore, the vast majority of this obsolete data was offshore GOM 2D data that had been covered with later 3D MC data.

48. It does not appear that Mr. Ancira engaged in any similar inspection of GSI's seismic data library, but I would expect the same issues to arise given the substantial age of GSI's library, as well as its geographic concentration in areas of no or limited exploration (Arctic, Beaufort, Labrador) and in areas with substantial amounts of newer data (Eastern Newfoundland).

49. I note that in Mr. Paul Einarsson's Second Witness Statement (CWS-12) he states that all of the GSI library field data has been transcribed onto DLT.[31] Mr. Ancira however makes no observations as to what the status of GSI's inventory of field data is. In fact, he states that Troika only reviewed a "sample" of the data to assure that it was readable.[32] He makes no statement as to the size of that sample or if the sample included field data or processed data. It is not clear that Mr. Ancira checked the DLT tapes that held the field data to ensure its integrity. While I understand that GSI had emphasized the importance of being able to reprocess their library in order to enhance sales, the lack of field data might limit their ability to do so. It is my understanding that while PSTM gathers and velocities might allow for the

[31] **CWS-12**, Paul Einarsson Second Witness Statement, 31 May 2024, paragraph 154.

[32] **CER-07**, Expert Report of Victor Ancira, Troika USA, 3 May 2024 ("Troika Expert Report"), paragraph 16.

demigration and then depth migration of the data, the existence of field tapes and navigation files are needed to make substantial improvements through reprocessing of the data (often preprocessing steps make the most improvement in data quality through processing). It is not clear from Troika's analysis how much of this field data is still available for GSI's library.

50. In paragraph 13 of CER-07, an example from the CSEG Recorder (Enachescu, C-366 fig 8) is cited as an example of the benefits of reprocessing 2D data and then relicensing it from older libraries. Mr. Ancira seems to imply that such reprocessing gives significant economic life to older data. While this is perhaps true, there would have to be interest in paying to reprocess the data. This would not be likely in a basin that is extremely frontier (e.g., Labrador) or off limits for exploration for regulatory reasons (e.g., Beaufort Sea and elsewhere in the Arctic). Also, there may be more modern, technically superior data from a competitive dataset also publicly available for license in the area of GSI's data.

51. Moreover, it is difficult to assess the benefit of the Enachescu reprocessing example (fig 8 of C-366) as he only publishes the reprocessed version and not the original version to compare it against. If the reprocessing improvement is minor, yet a newer dataset covers the same area, then the E&P company may rather license the newer data rather than pay to have a reprocessed version of the older data.

52. While reprocessing of multi-client data can extend the economic life of the data, it is not clear if Mr. Ancira has included the cost of this reprocessing in his valuation calculations in the report.

53. In paragraph 14 of CER-07, Mr. Ancira states:

> *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." Imaging a major structure may pinpoint where a 3D survey should be carried out.*

54. In my experience, while operators may "look" at the 2D data in an effort to quality control the data in a geophysical company's office, it is rare for an operator to license older 2D if there is already newer existing and available MC 3D in the same location as the older 2D. The increase in value of 3D is significant enough that almost always a serious E&P company will license it over older 2D data. Mr. Ancira's statement is true if there is not already 3D in the area. An interested E&P would license the older 2D prior to investing in a new proprietary 3D or prefund a new MC 3D dataset.

55. Mr. Ancira's attempts to value GSI's library in Section B of CER-07 is quite flawed. Mr. Ancira admits that he was unsuccessful in looking at other companies' data as a guide to valuation as he was unable to obtain accurate pricing information.[33]

56. In the Replacement Cost section of Mr. Ancira's report (Section C of CER-07), he attempts to calculate a replacement cost value for GSI's library. In paragraphs 17-18, Mr. Ancira uses numbers supplied by GSI for the amount originally spent to acquire and process the data, and argues that the valuation of the library should be in the range of USD $761.6 to 870.4 million. It should be noted that Mr. Ancira did not do his own independent analysis to confirm this amount. He admits that GSI supplied these numbers to him[34] but I have not seen any actual evidence of such numbers to assess whether they are real or realistic.

[33] **CER-07**, Troika Expert Report, paragraph 15.

[34] **CER-07**, Troika Expert Report, paragraph 17.

57. In paragraph 19 of CER-07, Mr. Ancira admits that this replacement cost method is flawed in that it ignores the impact that competitive surveys would have on the value of the library. I fully agree and also believe that the replacement cost method exercise is of no relevance. He goes on to detail the multiple companies that have acquired competitive datasets in GSI's prime regions, but again this is irrelevant for reasons I have already explained. For example, the hypothetical "replacement value" would necessarily have to be adjusted to account for data acquired in a region that has very little exploration value and/or is off limits for exploration due to regulatory reasons (e.g., Beaufort Sea, Arctic, Labrador). The same is true if the area's known geology is such that it is no longer deemed to have oil and gas potential. In addition, Mr. Ancira would need to account for the smaller customer base that would remain as many E&P companies would have already licensed and used the data. In other words, the replacement cost method is an unrealistic and unreasonable exercise with no basis in reality.

58. In paragraphs 20-22 of CER-07, Mr. Ancira claims that a more reasonable approach to valuing GSI's library is to use the estimated cost of replacing the data with new acquisition at costs that he references from examples that occurred in 2010-2015 – well after GSI ceased acquiring data for their library. It is my opinion that these more modern costs bear no resemblance to the actual costs that GSI (and Halliburton) paid for the acquisition of their library which Mr. Ancira rightly cited as being acquired between 1971-2009.

59. In addition, as noted in paragraph 57 above, data over non-prospective or off-limits regions should be heavily discounted under Mr. Ancira's methodology. It makes no sense to use Ancira's favored methodology of utilizing current acquisition costs to value the library if in

many regions, you would never acquire the data now due to added competition, non-prospectivity, or areas where oil and gas exploration are not permitted.

60. In summary, I find Mr. Ancira's valuation analysis flawed and over-simplified for the reasons stated above.

V. RESPONSE TO MR. PAUL SHARP OF PRICEWATERHOUSECOOPERS LLP'S VALUATION OF GSI

61. Mr. Sharp's report (CER-06) is a response to the Expert Report by The Brattle Group, dated January 16, 2023 (RER-04, "Brattle Report"), and my original report (RER-02). In this section, I have focused most of this report on Mr. Sharp's critiques of comments made in my original report pertaining to Mr. Sharp's valuation approach to GSI, however I have also commented on some aspects of Mr. Sharp's criticism of the Brattle Report where my more than thirty-five years of experience in the seismic industry can provide further insight.

62. In regard to Mr. Sharp's comments regarding the pricing of Board Data and the use of that pricing in the calculation of "normalized revenues" in his valuation methodology,[35] Mr. Sharp states that his understanding from GSI is that volume discounts were limited and not offered to GSI's customers at all from 2008 onwards.[36] This is contrasted by his statement in the same paragraph that such volume discounts were a well-accepted business practice in the industry.

63. From my experience, volume discounts for customers that license multiple surveys are a common practice in the MC seismic industry. The Claimants do not provide any explanation as to why GSI did not follow industry custom in regard to volume discounts, and [redacted]

[35] **CER-06**, Second Expert Report of Paul Sharp, 30 May 2024, paragraphs 47-48.

[36] **CER-06**, Sharp Second Report, paragraph 47.

[redacted].[37]

64. In paragraph 48 of CER-06, Mr. Sharp states that price discounting has not been reflected in the Claimants' "but-for" historical revenue normalization. Because of this, in my opinion the calculated normalized revenues likely could be too high as surely there would be some multiple-survey volume discounts offered (as per industry custom) should the sales have taken place without the Alberta court decisions at issue in this arbitration (the "Alberta Court Decisions"). To the extent that GSI ceased offering volume discounts, one would expect that it would have lost sales, but Mr. Sharp does not appear to account for this in his analysis.

65. In paragraph 55 of CER-06, Mr. Sharp addresses the presence (or absence) of competitor data in offshore Canada, referencing a statement in my original report that describes the TGS/PGS partnership that commenced on or around 2011. He further goes on to state that he is not aware of any other holders of significant libraries of competing data in offshore Canada.[38] Mr. Sharp does not provide any analysis showing his efforts to determine whether there were any other holders of significant libraries.

66. In fact, SLB (formerly Schlumberger/Western/Geco/WesternGeco), and TGS (formerly Digicon/CGG/Spectrum data) acquired significant 2D library as early as 1998.[39] CNLOPB's

[37] *See e.g.*, **R-572**, [redacted] **R-573**, [redacted] **C-357.2**, [redacted] **C-357.11**, [redacted] **C-558.1**, [redacted]; **C-558.3**, [redacted]

[38] **CER-06**, Sharp Second Report, paragraph 55.

[39] **R-574**, SLB (formerly Schlumberger/Western/Geco/WesternGeco), Newfoundland and Nova Scotia Marine Data Screenshots, also available at https://experience.arcgis.com/experience/fe9757110f4e47cf9063f23601cd5ee9; **R-575**, TGS (formerly Digicon/CGG/Spectrum data) Marine Data Screenshot, also available at https://www.tgs.com/seismic/multi-client/north-america/canada.

data records indicate that non-exclusive data was acquired by and Digicon (later Veritas) as early as 1970.[40] Also CGG's Nova Scotia 3Ds Phases I and II were acquired in 2000 and 2001.[41] The presence of this early competition negates Mr. Sharp's argument that competition only arose due to GSI ceasing operations after the Alberta Court Decisions. Mr. Sharp also does not take into account that until 2012, GSI benefitted from the ability to block foreign-flagged vessels from carrying out non-exclusive programs in Canada.[42]

67. At paragraph 56 of CER-06, Mr. Sharp claims that E&P companies accessing available data for free from the Boards is an indication that these E&P companies would have otherwise licensed all of the accessed data from GSI if it were not available from the Boards. However, in my experience, as oil companies build relationships with the host government and that government agency makes available data for free (at reproduction cost), then these companies are likely to pull data from the government databases. After all, that is the purpose for the government to make the data available, to attract interest in exploring the resource. If the oil company must otherwise pay for a license, then they are going to be much more selective of the data that they pick. Therefore I do not think that it is valid to assume that all data accessed from the Boards would have otherwise resulted in a license purchase from GSI.

[40] See 2D surveys listed on CNOPB's website, available at https://home-cnlopb.hub.arcgis.com/.

[41] **R-576**, CGG (Viridien) Nova Scotia Phase I; **R-577**, CGG (Viridien) Nova Scotia Phase II, also available at: https://earthlibrary-geostore.viridiengroup.com/#/

[42] *See e.g.*, **R-578**, Canada Transportation Agency, Decision No. 261-W-2002, Application by P.F. Collins Customs Broker Ltd. on behalf of TGS-NOPEC Geophysical Company, 17 May 2002; **R-355**, Canada Transportation Agency, Decision No. 253-W-2009, Application by TGS-NOPEC Geophysical Company, 22 June 2009.

68. In paragraph 57 of CER-06, Mr. Sharp makes the argument that the value of old data can extend for an indeterminate amount of time, citing the following statement made in Mr. Gill's first expert report:

> *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.*[43]

69. This statement ignores other factors such as regulatory limits on exploration and the lack of exploration success after the MC survey investment that can devalue seismic surveys. As noted above, [redacted] that Mr. Gill and Mr. Sharp both seem to ignore in their assessment of the value of GSI's seismic data library. Further, Mr. Gill's statement that the "50-year history" of seismic exploration is not enough for seismic companies to develop judgment on the life of surveys is unrealistic. As noted above, TGS discarded its old tapes of 1990's 2D data to save space because of a total lack of sales after many years.

70. In paragraph 61 of CER-06, Mr. Sharp cites the existence of scanning and vectorization technology that would make digital interpretation of data accessible through the Boards equal to the processing and digital interpretation of original data still in the possession of

[43] **CER-03**, First Expert Report of Gordon C. "Chip" Gill, 13 September 2022, paragraph 47.

[44] **C-560**, Bundle of Seismic Data Valuations Reports for [redacted].

GSI. In my experience as an interpreter of seismic data, I have never seen a result where the vectorization of paper or film copies of data results in a better solution than processing of the original digital data. Mr. Sharp's statement also assumes that GSI had possession of readable tapes of original digital data at the time of the public disclosures of its seismic materials. However, as discussed above, it is not clear from Mr. Ancira's report how much of the original digital data GSI actually possessed at that time. Based on my experience, I find it very unlikely that an E&P company would spend the significant money necessary entering into an exploration concession utilizing only copies of data produced by vectorization if the original data was available to license and reprocess.

71. In the "Maintainable Revenue" section of CER-06,[45] Mr. Sharp attempts to defend his use of global offshore rig count as a proxy for GSI's revenues in the period from 2012 and the valuation dates. He explains that the Canadian offshore rig count is too low to provide a meaningful correlation coefficient, but does not address why it is appropriate to rely on the moderate correlation coefficient of R=0.5 between his calculated "normalized revenues" for GSI and his preferred proxy of global offshore rig count.[46] In addition, while mentioning the Brent Crude pricing data provided in my first report,[47] he makes no statement as to why that proxy should not be used. No reason is provided as to why data on the spending trends of GSI's industry's customer base would not be a more accurate proxy for the estimate of revenue trends for GSI.

[45] **CER-06**, Sharp Second Report, pages 20-24.

[46] **CER-06**, Sharp Second Report, paragraphs 79-80.

[47] **CER-06**, Sharp Second Report, paragraph 80.

72. There are several reasons why global rig count might not correlate well with a seismic company's revenue. First, offshore rigs are used both for exploration drilling as well as production (development) drilling. Once an exploration well has discovered a reservoir that is of the quality and size that will attract production investment, then development of the field is sanctioned. After sanctioning, the E&P company will then typically drill several development wells. This development drilling (where a rig similar or identical to the exploration rig is used) may occur several years after the drilling of the exploration well. Multi-client seismic however, is primarily used for exploration where an oil and gas company is looking for targets for the drilling of an exploration well. This is particularly true for 2D multi-client data (of which 85% GSI's library is primarily composed).[48] While not clear from his report, it appears that the global rig count data that is used for Mr. Sharp's normalization does not differentiate between exploration and production drilling. Second, regional multi-client data (like GSI's library) is often used by E&P companies prior to bidding work programs and bonuses for exploration concessions. In frontier offshore regions, an E&P company will not be required to drill an exploration well for many years after the government grants the concession. Therefore it is difficult to tie the timing of drilling with the purchase of seismic as the drilling will typically occur several years in the future, if at all (an E&P company might decide not to invest in the exploration well after studying the seismic).

[48] **CER-07**, Troika Expert Report, paragraph 11.

73. In paragraphs 104-105 of CER-06, Mr. Sharp criticizes the observation from Brattle that his calculated "Maintainable EBITDA" margin as a percent of revenue is significantly higher than other similar companies in the MC seismic industry. According to Mr. Sharp:

> *[…] with respect to our normalizations related to the Board Data, it's our understanding that it is not likely that they would have incurred material incremental expenses in order to realize such revenues; the data had been a part of GSI's database of seismic data and it would have been a simple, straightforward exercise to provide such materials to paying customers.*[49]

74. But this is also true of several of Mr. Sharp's comparison companies: CGG, PGS, TGS, and Pulse also have very old libraries that would also yield sales that would also incur very low associated costs. Therefore his statement does not provide a reason to believe that GSI would have much higher profit margins.

75. In paragraph 155 of CER-06, Mr. Sharp notes that revenues declined substantially for GSI in 2008. He connects this decline to the "Litigation Period" and implies that the litigation was the primary source for GSI's decline.

76. In my first report I explained how the entire industry declined due to a decline in oil price associated with the 2008 financial crises.[50] This was a very well-documented event for the entire E&P industry and, in my opinion was most likely the main reason for the 2008 revenue decline for GSI as well. GSI's auditors noted for the 2009 financial year end that "[redacted]

[49] **CER-06**, Sharp Second Report, paragraph 105.

[50] **RER-02**, Hobbs First Report, pages 11 and 12.

[redacted][51]

77. In paragraph 179 of CER-06, Mr. Sharp points out the statement in my original report that Mr. Sharp's revenues on the valuation dates of 2017 and 2022 are likely overestimated by at least 2 times, due to seismic market collapse after 2013,[52] Mr. Sharp claims that there is no quantitative basis for this conclusion.

78. My conclusion was based on the analogy illustrated in paragraph 96 of my first report. The comparison illustrated how TGS" revenue decreased by 50% between 2017 and 2012. During this period, TGS continued to invest over USD $1.9 billion. Despite this substantial investment, TGS' revenue decrease was caused by a significant drop in marine seismic demand related to reduced E&P activity due to oil overproduction and related oil price declines, that commenced in 2014 and continued through 2022.[53] Mr. Sharp has given no reason to explain why GSI would not have been affected by this significant financial impact as badly as TGS, a company with far more resources than GSI to weather market declines.

79. In paragraph 180 of CER-06, Mr. Sharp criticizes my argument that the 2X multiplier for E&P customers he used to calculate a "normalized" revenue stream were excessive.[54] Mr. Sharp states that GSI had specific arrangements in their license agreements that may not have followed custom in the industry.[55] He points to Mr. Gill's first report, which describes

[51] **R-579**, [redacted]

[52] **RER-02**, Hobbs First Report, paragraph 97.

[53] **RER-02**, Hobbs First Report, Part III, Section C.

[54] **RER-02**, Hobbs First Report, paragraphs 99-100.

[55] **CER-06**, Sharp Second Report, paragraph 180.

GSI's licensing agreements that "*provide the acquiring [exploration and production] company an opportunity to license the non-exclusive data under very favourable pricing terms."*[56]

80. Mr. Sharp, however does not provide any explanation of what these "favorable pricing terms" are. In normal MC license agreements, there are typical transfer fees that allow for an acquiring company to purchase a license to the data at a discount. This principle was described in my original report, at paragraph 72. In fact, documents produced by the Claimants in this arbitration indicate that in at least three cases, GSI offered substantial discounts to customers to grant the transfer of licenses and to settle claimed breaches of license agreements.[57] Moreover, Mr. Sharp does not describe how the 2X multiplier is valid if a discount is honored for the acquiring company to gain access to the data. Instead, it appears that Mr. Sharp was instructed by the Claimants (without support) to utilize the 2X multiplier.

81. In paragraphs 182-183 of CER-06, Mr. Sharp tries to support the 3X multiplier that was used for calculating his "normalized" revenue for seismic companies that accessed the Board Data. Mr. Sharp makes it clear that this multiplier was supplied to him by GSI and fundamentally still does not supply a specific explanation as to how the multiplier was calculated.

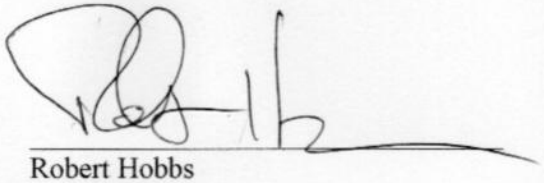
[56] **CER-03**, First Expert Report of Gordon C. "Chip" Gill, 13 September 2022, paragraph 52.

[57] **R-580**, Letter to Anadarko Canada Corporation from GSI, 2002-200001-10; **R-581**, Letter to Devon Energy Corporation from GSI, 29 May 2002; **R-582**, Letter to Devon Energy Corporation from GSI, 20 June 2002; **R-583**, Letter to Devon Energy Corporation from GSI, 02 July 2002; **R-584**, Letter to Husky Oil Limited from GSI, 22 March 2010.

VI. CONCLUSION

82. Upon review of comments from Messrs. Russell Einarsson, Chip Gill, Victor Ancira, and Paul Sharp, I do not believe that any adjustments to my first report in this arbitration are appropriate. To my knowledge, Mr. Einarsson's comments are not an accurate reflection of TGS' business practices and my interactions with GSI. Despite Mr. Gill's comments, I also remain of the view that GSI operated in the global MC industry. Accordingly, the company would have been subject to similar market factors as outlined in my original report. Specifically, taking into account these factors, it would be appropriate to depreciate the value of GSI's MC library over time, as is consistent with industry practice. Furthermore, Mr. Ancira's report is not instructive as Troika's analysis of GSI's MC library appears to have been limited. For the reasons explained above, Mr. Ancira's "replacement cost" valuation method and Mr. Sharp's valuation methodology are both unrealistic and unreasonable as they fail to take into account relevant market factors. Notably, it appears that Mr. Sharp was instructed by the Claimants to rely on critical assumptions without any rational explanation or support.

Signed this 22nd day of October, 2024



Robert Hobbs