

Theodore David Einarsson, Harold Paul Einarsson,
Russell John Einarsson and Geophysical Service
Incorporated v. Government of Canada

(ICSID CASE NO. UNCT/20/6)

Expert Report of Darrell Chodorow and Alexis Maniatis

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I. Introduction

1. We have been engaged by the Government of Canada (“Respondent” or “Canada”). We have been asked to review and comment on the expert report of Mr. Paul Sharp of PricewaterhouseCoopers LLP, dated 26 September 2022 (the “Sharp Report”), submitted by the Theodore David Einarsson, Harold Paul Einarsson, Russell John Einarsson and Geophysical Service Incorporated (together, the “Claimants”) as part of their Memorial submission on 27 September 2022. Mr. Sharp purports to value Geophysical Service Incorporated (“GSI”) as of 30 November 2017 and 30 June 2022, assuming that “certain actions on the part of the Government of Canada did not occur.”¹
2. We understand that the Claimants have asserted that decisions by the Canadian courts (the “Alberta Court Decisions”) breached provisions of the *North American Free Trade Agreement* (“NAFTA”).² We refer to these claims as the “alleged breaches.” The Claimants assert that the alleged breaches of NAFTA Articles 1110 and 1106 (expropriation and prohibited performance requirements, respectively) have destroyed GSI’s business.³ The Claimants argue that, whether the alleged violations of NAFTA arises from breaches of NAFTA Article 1110 or 1106, the quantum of damages is identical.⁴
3. We explain why Mr. Sharp’s valuations are not meaningful and do not quantify the fair market value (“FMV”) of GSI absent the alleged breaches.
4. We also have been asked to determine the “but-for” value of GSI, which is the value of GSI on 30 November 2017, immediately prior to the alleged breaches. We explain that GSI ceased to be a going concern long before the alleged breaches. The but-for value of GSI is therefore a function of the net proceeds that could be received from a liquidation of the business on 30 November 2017, when its primary asset was its seismic data library. The documents we consider in preparing our analysis are listed in Appendix A.

¹ CER-02: Sharp Report, p. 5.

² Claimants' Memorial, ¶ 481.

³ Claimants' Memorial, ¶ 481.

⁴ Claimants' Memorial, ¶¶ 489–491.

5. In assessing damages, we are instructed to assume that:
 - a. The challenged measures (the Alberta Court Decisions) expropriated GSI's business on 30 November 2017, although we understand that the Respondent disputes this proposition.
 - b. The compensation standard for quantifying the Claimants' losses related to expropriation is the value of GSI immediately prior to the alleged breaches.
 - c. The Boards' disclosure of seismic materials pursuant to the Regulatory Regime⁵ and prior to the Alberta Court Decisions is not challenged as a breach of NAFTA.
 - d. The Alberta Court Decisions do not prevent GSI from continuing to pursue lawsuits against licensees for alleged violations of their licensing agreements.

II. Qualifications

6. Mr. M. Alexis Maniatis is a Principal at The Brattle Group ("Brattle"), an international economic consulting firm with offices in Australia, Belgium, Canada, China, France, Italy, Spain, the United Kingdom, and the United States ("US"). He has served as Brattle's President and Chief Executive Officer from 2005 to 2008 and 2012 to 2020. He served as its Chairman from 2011 to 2012. He has more than thirty years of experience providing consulting and expert witness testimony and advising clients on valuation and damages issues in expropriations, contract disputes, competition-related litigation, asset and merger transactions, and regulatory proceedings. He has addressed issues including development of expected cash flows, discount rates, control premia, country risk adjustments, prejudgment interest, and interpretation of acquisition transactions and publicly traded company values. In the energy sector, he has advised clients building and operating pipelines, oil & gas, natural gas, and electricity projects on a range of issues that include damages from expropriation, breaches of alliance and concession, royalties, and regulation.
7. Mr. Maniatis has been recognized as a leading expert and Global Elite Thought Leader by Global Arbitration Review's The International Who's Who of Commercial Arbitration. He has submitted

⁵ For the purposes of this Report, we have been instructed that the term "Regulatory Regime" means the Canadian provincial and federal regulatory framework governing ability to conduct seismic surveys on the Canadian frontier and its use thereafter, including the deposit of the material, the term of confidentiality and public access to it. This includes all of the legislation listed in Schedule B "Regulatory Regime in Chief's Order" in **BR-1**: Geophysical Service Incorporated v. Encana Corporation, 2016 ABQB 230, dated 21 April 2016, p. 66.

expert reports and testified on damages issues in proceedings before federal, state, and bankruptcy courts, and before international and domestic arbitration panels. He works with clients in the US, Europe, Latin America, Asia, the Middle East, and Australia.

8. Mr. Maniatis received a B.A. in Economics from Wesleyan University and an M.B.A. from Yale University, where he served as a teaching assistant in Accounting and earned letters of distinction in Corporate Finance and International Finance. He has published on environmental economics, country risk, interest, and valuation methods. Mr. Maniatis's resume is attached as Appendix B.
9. Mr. Darrell Chodorow is a Principal at Brattle. He has over 25 years of experience evaluating economic damages, with a focus on international arbitration. He has provided expert testimony in breach of contract, intellectual property, antitrust, and valuation disputes in a variety of industries. He has acted as an expert on damages in AAA, BCCC, ICC, ICDR, ICSID, LCIA, PCA, UNCITRAL and ad-hoc arbitrations as well as court proceedings in US District Court, US Tax Court, the Delaware Court of Chancery, and the District Court of Cyprus. *Who's Who Legal* has identified Mr. Chodorow as a leading expert witness in Arbitration, Financial Advisory & Valuation, and Construction Quantum and Delay. Mr. Chodorow holds an M.B.A. from Yale University, where he served as a teaching assistant for a graduate-level course in financial accounting. He holds a B.A. in economics from Brandeis University, where he served as a teaching assistant for economics. Mr. Chodorow's resume is attached as Appendix C.

III. Executive Summary

10. First, we explain that Mr. Sharp's valuation of GSI's but-for value cannot be used to estimate damages reliably. Mr. Sharp's analysis lacks independence, is built on unreasonable assumptions, is methodologically unsound, and fails to comport with the expropriation compensation standard set under NAFTA. We then address the appropriate manner to value GSI and estimate the potential harm from the alleged breaches. Finally, we explain the flaws in Mr. Sharp's analyses of losses related to the shareholder loans, the Einarssons's employment earnings, and pre-award interest.

A. Review of the Sharp Report

11. Many fundamental problems make the Sharp Report valuation unreliable and inconsistent with the Claimants' NAFTA claim.
12. **Mr. Sharp's valuation does not identify the but-for scenario.** Mr. Sharp purports to value GSI but for "certain actions" by Canada, but his report does not identify the "certain actions" to which he refers.⁶ This is a fundamental flaw. Without specifying the actions and how those actions relate to the alleged breaches of NAFTA, it is impossible to analyze and isolate the impacts of those alleged breaches on GSI.
13. **Mr. Sharp's valuations are not independent.** Mr. Sharp's valuations are based almost entirely on assumptions from the Claimants and their counsel that were not tested for reasonableness. Collectively, they take the place of the expertise that a valuator should bring to bear. For example, the allegedly lost cash flows are not derived from Mr. Sharp's understanding or analysis of the offshore multi-client ("MC") seismic data business, GSI's seismic data library, or market conditions during the relevant time periods. Instead, almost every important element is provided as an assumption by Mr. Paul Einarsson or counsel for the Claimants. Several of these assumptions are unrealistic or entirely implausible. For instance, Mr. Sharp assumes, in effect, that more than [REDACTED]
[REDACTED]
[REDACTED] – not only would have been paid absent the alleged breaches, but would have in turn formed the basis of a perpetual revenue stream thereafter. Mr. Sharp bypasses the responsibility to test the assumptions given to him by offering a caveat: "[f]or the purposes of this Report, we have assumed these assumptions to be reasonable."⁸ While it is standard for valuation experts to rely on certain assumptions, accepting unreasonable assumptions undermines independence and credibility.
14. **The Sharp Report is not fully transparent and cannot be audited.** For example, the Sharp Report assumes that certain lost revenues are a multiple of specific licensing fees assigned to each access of GSI seismic materials from the Respondent. The multiplier that Mr. Sharp applies depends on the type of entity that is alleged to have accessed the seismic materials. However, the Sharp Report does not disclose which multiple was applied to each entity. Moreover, we understand that the Claimants have not provided the native electronic files in which Mr. Sharp

⁶ CER-02: Sharp Report, p. 5.

⁷ C-112: Unpaid GSI Invoice Listing.

⁸ CER-02: Sharp Report, ¶ 30. Emphasis added.

performed this calculation. In the absence of this information, we have attempted to reconstruct his calculations for verification, but the lack of transparency has hindered that effort. Similarly, the Sharp Report relies on allegedly unpaid invoices totaling more than [REDACTED]. These invoices, however, cannot be verified because the underlying license agreements, price lists, and the alleged invoices themselves have not been produced to the Respondent (or even corroborated by Mr. Sharp).

15. **The Sharp Report does not value damages from the alleged breaches.** The Claimants allege two specific ways by which the alleged breaches on 30 November 2017 harmed GSI: (1) the lost ability “to pursue any...[intellectual property] claims in the Domestic Actions” and (2) the rendering of “the Secondary Submissions (the majority of which included the Seismic Works in SEG-Y format) accessible to the public for free.”⁹
16. Those claims require two forward-looking analyses: (1) an evaluation of the value of GSI’s current and future intellectual property damages claims against defendants in the “Domestic Actions” both before and after the alleged breaches (akin to litigation-risk analyses); and (2) the fair market value of the Seismic Works at the date of the alleged breaches. Mr. Sharp performs neither.
17. The Claimants recognize that the standard of compensation is “equivalent to fair market value immediately before the expropriation took place...”¹⁰ Through an economic lens, the reason for that standard is that it recognizes that the asset value immediately before an expropriation cannot have been affected by the expropriation itself, unless it had been anticipated. The standard creates an immediate tension with the Sharp Report, because Mr. Sharp does not value GSI immediately prior to the alleged breaches at all. Instead, he premises his analysis on a scenario that assumes counterfactual actions of GSI, its customers, and Canada over more than a decade prior to the alleged breaches.¹¹ These include the assumptions that: (1) the seismic material disclosures under the Regulatory Regime never would have been made, or that the disclosures were a copyright infringement and that GSI was entitled to compensation; (2) that GSI would have retained the customer goodwill it lost over time; (3) that it would have invested successfully in new seismic data acquisition to build its library; and (4) that GSI’s customers would have paid all invoices sent to them by GSI for a variety of alleged license violations. None

⁹ Claimants' Memorial, ¶¶ 109-110. Footnote omitted.

¹⁰ Claimants' Memorial, ¶ 475.

¹¹ CER-02: Sharp Report, ¶¶ 81, 89, and 92 and Schedule B2.1.

of these reflects the forward-looking impact from the Alberta Court Decisions.¹² This means that the Claimants' alleged damages compound (and confound) different alleged sources of injury, not just those that arise from the alleged breaches. Indeed, we show that virtually none of the alleged damages quantified by Mr. Sharp result from the alleged breaches on 30 November 2017.¹³

18. While Mr. Sharp values GSI assuming it was a going concern, GSI had ceased to be a going concern long before the alleged breaches, and its equity had little or no value. What value it had immediately before the alleged breaches would derive primarily from any remaining value of its aging seismic data library,¹⁴ but Mr. Sharp was unable to value GSI's seismic data. The Sharp Report made no attempt to consider how the alleged breaches could have affected or did affect the value of GSI's seismic data library.
19. ***Mr. Sharp's counterfactual scenario confuses the impact of the alleged NAFTA breaches with other alleged losses claimed against other parties.*** Mr. Sharp estimates GSI's but-for revenues in November 2017 based on the revenues that he assumes GSI *should have* collected from customers during the period from 2000 to 2012. Mr. Sharp starts with GSI's actual revenue from 2000 to 2012 and adds to it purported lost revenues from two overlapping sources: (1) allegedly lost license revenue from all third parties that accessed GSI seismic materials made available by the Boards;¹⁵ and (2) revenues from unpaid invoices issued by GSI to its customers. According to Mr. Sharp, this purported lost revenue – which flows almost entirely from assumptions provided by Mr. Paul Einarsson – accounts for nearly 80% of GSI's total but-for revenue from 2000 to 2012.¹⁶
20. The invoices allegedly issued by GSI to its customers contain two types of charges. First, they contain charges for equalization and transfer fees for use of the seismic data licensed by the client (we refer to this as "further use"). Second, they include charges to GSI licensees for accessing other GSI seismic materials from the Board, which we understand GSI claims is a

¹² CER-02: Sharp Report, ¶ 71.

¹³ The Claimants alleged that the Alberta Court Decisions affect the possibility or likelihood of successful recovery prospectively from customers of awards for alleged copyright violations, but no analysis of such harm (for example a litigation-risk analysis) is presented in the Sharp Report.

¹⁴ Again, it is possible that GSI's lawsuits for license violations may have value, but Claimants have not valued them.

¹⁵ The Boards include the National Energy Board, Canada-Newfoundland Labrador Offshore Petroleum Board, and Canada-Nova Scotia Offshore Petroleum Board.

¹⁶ CER-02: Sharp Report, Schedule B2.1, the sum of revenues from the access of disclosed data and unpaid invoices from 2000 to 2012 is C\$ 1,168,498,199. This value is about 78% of the sum of Sharp's but-for revenues during this same period, which is C\$ 1,494,056,092.

violation of the license agreement. Possibly to avoid double-counting, Mr. Sharp's analysis of unpaid invoices includes only the fees for further use that were allegedly due under the license agreements (we therefore refer to these amounts as the "Unpaid Invoices"). However, Canada is not a party to those agreements. We understand that GSI has continued to pursue recovery of Unpaid Invoices (*i.e.*, the contractual claims) in Canadian and US courts. We understand also that courts have found that in some cases, the licensee did not owe these amounts, and in others, courts have awarded damages. Thus, Mr. Sharp's analysis explicitly incorporates lost revenue amounts that the courts have already ruled were not owed to GSI, and amounts that were not lost at all after courts awarded them.

21. A full accounting is not possible, because the invoices were not provided and cannot be verified. It is clear that they are not restricted even to Canadian data: the invoices include claimed revenues for seismic data collected in the Falkland Islands.
22. ***The Sharp Report methodology skirts any time bar limitations.*** To value the but-for value of GSI, Mr. Sharp first assumes that revenues allegedly lost from 2000 to 2012 are "cured" and then forecasts them to continue to 2017 and beyond.¹⁷ In this way, damages allegedly arising well before the relevant time limitation become the basis for a forecast of perpetual future revenues used to value GSI in November 2017 (or indeed at any date at all after the alleged damages occurred). That method fails to account for any relevant time limitations periods.
23. ***The Sharp Report's assumption that any access of seismic materials from the Board displaced a license sale by GSI is unreasonable.*** Mr. Sharp assumes that, if GSI's seismic material had not been available from the Boards, each commercial entity that accessed paper or mylar copies of GSI's seismic materials from the Boards would have instead licensed the corresponding full set of seismic data directly from GSI at full price. However, much of this seismic material was already in the public domain by the time it was acquired by GSI from Halliburton in 1993 and long before the alleged breaches. Moreover, many of the customers that accessed GSI seismic materials through the Boards may not have been willing to license the data from GSI at the price assumed by Mr. Sharp because:
 - a. Some of the GSI seismic material may have had limited commercial value because it covers areas where hydrocarbon exploration and production prospects are limited and/or prohibited by law (e.g., the Arctic and Labrador);¹⁸

¹⁷ CER-02: Sharp Report, Schedules B2.1 and C2.1.

¹⁸ RER-03: Doug Uffen Expert Report, ¶¶ 55-58; RER-02: Robert Hobbs Expert Report, Section IV.B.2.

- b. Entities may instead have chosen to access alternative seismic material from surveys conducted by GSI's competitors, which was available through the Boards for free in some cases;
 - c. Entities that would have been willing to pay to license data might instead have chosen to license data from GSI's competitors, some of which was also higher quality data;¹⁹
 - d. Entities may have accessed GSI's seismic materials through the Boards because it was free, but may not have done so if they had been required to purchase a license; and
 - e. Much of the GSI seismic material accessed through the Boards was beyond the age where it would be expected to generate material revenue.
24. We also note that the paper or mylar reports obtained through the Boards were inferior compared to the commercial, processed seismic data available for license.²⁰ Given the inferior quality, the market price for the seismic material actually accessed from the Boards would have been lower than the list price for access to the full seismic data and information from GSI.²¹
25. ***The Sharp Report ignores GSI's failure to invest in new data.*** It is well understood that sustaining and growing revenue in the offshore MC seismic industry requires continual investment. Mr. Sharp's own observations are consistent with that understanding: he finds that GSI's "revenues primarily consisted of licensing of data shot within the year."²² Typically, as seismic data gets older, its ability to generate new revenue declines, for a variety of reasons.²³ Indeed, GSI's predecessor recognized that seismic data more than 15 years old "would have little or no commercial value."²⁴ Nonetheless, GSI substantially cut investment in new data acquisition after 2008, sold its data collection equipment (including the ships), and discontinued virtually all such investment by the end of 2011. Given his recognition of the limited economic life of seismic data and GSI's lack of investment after 2008, Mr. Sharp should have projected materially diminished but-for revenues on both of his valuation dates: 30 November 2017 and 30 June 2022.

¹⁹ **RER-03:** Doug Uffen Expert Report, ¶¶ 56-59 and 72; **RER-02:** Robert Hobbs Expert Report, ¶ 106.

²⁰ **RER-03:** Doug Uffen Expert Report, ¶ 40.

²¹ Mr. Sharp assumes sales of GSI data were and would have been made at list prices, but he has not verified that result historically. Instead, he relies on an assertion of the claim from Mr. Paul Einarsson. **CER-02:** Sharp Report, ¶¶ 84-85.

²² **CER-02:** Sharp Report, ¶ 59. Emphasis added.

²³ **RER-03:** Doug Uffen Expert Report, ¶¶ 64-65; **RER-02:** Robert Hobbs Expert Report, ¶ 77(4).

²⁴ **C-165:** Letter from John Clink to Marcel Masse, dated 7 October 1986, p. 3.

26. **Mr. Sharp's assumed revenues and expenses lead to demonstrably excessive profit margins.** After assembling all of his revenue and cost assumptions, Mr. Sharp compares his resulting long-term profit margin for GSI to that of companies he chose to be comparable. His analysis reveals that the implied GSI margins are far higher than those of all the comparable companies, except for one, Pulse Seismic, Inc. ("Pulse"). Mr. Sharp nonetheless concludes that the margin implied by his analysis is reasonable. He does so based on Mr. Paul Einarsson's instruction that Pulse is the best comparable. However, Pulse does not collect and sell offshore seismic data,²⁵ which is GSI's primary business. More importantly, Mr. Sharp compares his assumed *long-term* GSI margin to Pulse's margin for an anomalous year. Had Mr. Sharp analyzed Pulse's long-term average margin, he would have found that is less than one-third the margin that Mr. Sharp assumes GSI would earn perpetually. If GSI's EBITDA (earnings before interest, taxes, depreciation, and amortization) margin were equivalent to the long-term average margin earned by Pulse, Mr. Sharp's valuation would decline by ██████
27. **The Capitalized Cash Flow method is not reliable to value GSI.** Mr. Sharp concludes that a discounted cash flow ("DCF") analysis could not be performed, because GSI did not have multi-year forecast and he did not conduct his own analysis of GSI's prospects.²⁶ Instead, he applies the Capitalized Cash Flow ("CCF") method. The CCF is just a simplified *implementation* of the DCF in which the first year's cash flows are estimated and then assumed to grow at a fixed rate forever.²⁷ Use of the CCF cannot be reliable when a more detailed and meaningful DCF model could not reliably be estimated, and when meaningful forecasts beyond the valuation date have not been or cannot be developed.
28. **Mr. Sharp's attempt to validate his valuation is circular.** Mr. Sharp attempts to validate his estimate of GSI's enterprise value ("EV") by comparing the resulting EV/EBITDA multiple to those for a set of public companies he assumes are comparable. He draws comfort that the multiples are similar.
29. This analysis is misguided, for at least two reasons. First, the comparables are not similar to GSI immediately before the date of the alleged breaches, not least because they were going concerns while GSI was not. Second, one fundamentally cannot use an EV/EBITDA multiple to test the reasonableness of any valuation in which both EV and EBITDA are estimated simultaneously, as Mr. Sharp does for GSI. Mr. Sharp created his own estimate of EBITDA, and

²⁵ **RER-03:** Doug Uffen Expert Report, ¶ 83.

²⁶ **CER-02:** Sharp Report, ¶ 75.2.

²⁷ When a fixed growth rate is applied, the present value of a series of forecast cash flows that is typically used in the DCF collapses to a simple formula known as the Gordon Growth Model, which Mr. Sharp applies for his CCF calculation.

that EBITDA is a key determinant of his estimate of EV. The fact that both are being estimated together creates an inherent circularity in his EV/EBITDA multiple for GSI. This circularity creates the illusion of a reasonable multiple for a demonstrably unreasonable valuation. For example, a valuator could estimate an EBITDA of \$100, resulting in an EV of \$1,000 (a multiple of 10x) and assume that result is reasonable if the multiples from public companies are also about 10X. However, that would be equally true had a valuator estimated an EBITDA of \$1 and therefore concluded an EV of \$10 or an EBITDA of \$1,000 and an EV of \$10,000. Due to the circularity, the comparables would appear to ‘validate’ any of these results without providing any insight about which, if any, valuation is correct.

B. GSI’s Value as of 30 November 2017

30. The Claimants argue that damages in the event of expropriation should be equal to “*fair market value immediately before the expropriation*,” citing to NAFTA Article 1110(2).²⁸ They claim that the damages from the alleged breach of Article 1106 are the same, arising from the loss of *future* revenue from data sales.²⁹ Of course, forward-looking damages calculated for an alleged breach of Article 1106 cannot exceed those that would arise from an expropriation with the same breach date, though they could be less.
31. We find that GSI was not a going concern immediately prior the alleged breaches and should therefore be valued on a liquidation basis. Information available is not sufficient to perform an independent valuation of GSI on a liquidation basis immediately before the alleged breaches on 30 November 2017. However, that valuation is unlikely to be more than a small fraction of the amount estimated by Mr. Sharp for at least two reasons: (1) GSI made no meaningful investments in its seismic data library for many years prior; and (2) the company had destroyed its goodwill with customers.
32. ***GSI had no value as a going concern immediately prior to the alleged expropriation on 30 November 2017.*** GSI faced serious financial issues as early as 2001 (described by GSI’s controller in 2001 as a “crisis”³⁰), but it nonetheless bought two ships between 2001 and 2004

²⁸ Claimants' Memorial, ¶ 475. We understand that this is the standard for a lawful expropriation under Article 1110(1)(d).

²⁹ Claimants' Memorial, ¶¶ 484, 489–490 and 498.

³⁰ **BR-2:** Geophysical Service Incorporated v. Sable Mary Seismic Incorporated and Mathew Kimball, 2009 NSSC 404, dated 31 December 2009, ¶ 65.

that required large amounts of capital and time offline to upgrade them.³¹ It had not previously owned or operated ships. Beyond that, [REDACTED] leaving it in a fragile financial condition. GSI's business deteriorated significantly following the 2008 industrywide downturn in offshore exploration and geological survey activity (particularly in North America),³² increased competition from foreign-flagged vessels,³³ failure to recover significant investments in seismic data in the Falkland Islands,³⁴ and the initiation of lawsuits against many of its customers starting in 2007.³⁵ By the end of 2011, the company had [REDACTED] depleted staff, and virtually no productive assets beyond its seismic data library (in which it ceased making any material investment). [REDACTED] [REDACTED] Moreover, GSI's history of lawsuits against customers likely made potential licensees reluctant to transact with GSI, limiting its ability to generate future revenue.³⁷

33. [REDACTED] and the offshore MC seismic industry deteriorated further after that point.³⁸ Thus, there were serious and growing doubts about the sustainability of GSI's business as early as 2008.³⁹ GSI's distressed condition in 2008 followed years of [REDACTED] and continued [REDACTED] – amounts that could have been reinvested in the business. Instead, GSI [REDACTED] in 2008 and never fully recovered. Indeed, Canadian courts concluded that GSI had ceased its seismic data collection activities in Canada by 2009 and that its primary business became litigation against its customers.⁴³

³¹ October 10, 2018 Notice of Intent to Submit a Claim to Arbitration Under NAFTA Chapter Eleven, ¶ 99.

³² RER-02: Robert Hobbs Expert Report, ¶ 33.

³³ October 10, 2018 Notice of Intent to Submit a Claim to Arbitration Under NAFTA Chapter Eleven, ¶¶ 91-100.

³⁴ BR-3: Geophysical Service Incorporated, Acquired Data Library.

³⁵ CWS-06: Witness Statement of Paul Einarsson, ¶ 139.

³⁶ CER-02: Sharp Report, Schedule D2. The value was [REDACTED] at the end of 2016, and became [REDACTED] by the end of 2017.

³⁷ CWS-06: Witness Statement of Paul Einarsson, ¶ 159(c).

³⁸ RER-02: Robert Hobbs Expert Report, ¶¶ 33-34.

³⁹ C-109: Financial statements of GSI, year ended 31 December 2008, Note 1 (Bates C-109_0205).

⁴⁰ CER-02: Sharp Report, Schedule D1. [REDACTED]

⁴¹ CER-02: Sharp Report, Schedule B2.3.

⁴² C-109: Financial statements of GSI, year ended 31 December 2008, Note 1 (Bates C-109_0205).

⁴³ BR-4: Geophysical Service Incorporated v. Encana Corporation, 2015 ABQB 196, dated 19 March 2015, ¶ 8. See also BR-5: Geophysical Service Incorporated v. Encana Corporation, 2016 ABQB 49, dated 22 January 2016, ¶

34. We consider GSI to have ceased being a going concern years before the 30 November 2017 valuation date. While GSI's audited financial statements might confirm this, these have not been provided for any year after 2008. In our analysis, we rely on the definition of a going concern from the World Bank Guidelines related to the Treatment of Foreign Investment:

[A] "going concern" means an enterprise consisting of income-producing assets which has been in operation for a sufficient period of time to generate the data required for the calculation of future income and which could have been expected with reasonable certainty, if the taking had not occurred, to continue producing legitimate income over the course of its economic life in the general circumstances following the taking by the State.⁴⁴

35. Based on this definition, our analysis indicates that GSI ceased to be a going concern before the end of 2012. By then, [REDACTED] laid off more than 90% of its staff,⁴⁵ [REDACTED] and significantly tarnished its reputation and ability to license seismic data to customers.⁴⁶ Mr. Paul Einarsson highlighted that by 2010, GSI's main business had shifted its focus away from acquiring seismic data and primarily towards litigation.⁴⁷ GSI's seismic data library was static by 2009, and its value continued to deteriorate over time for reasons discussed by Messrs. Hobbs and Uffen, diminishing prospects for future revenue.⁴⁸ Thus, while we understand that it is appropriate to incorporate going concern value in assessing FMV immediately prior to the alleged breaches in 2017, GSI had none. Mr. Sharp accepts the Claimants' assertion that its actual-world value was zero in 2017.⁴⁹

40: "As to the Master's failure to attribute any value to GSI's seismic data, it is not listed or valued in GSI's unaudited financial statements and there is no evidence from a qualified appraiser as to its value. While the Master's approach of attributing no value to GSI's seismic data presumes that GSI will be unsuccessful in its actions, that is the premise underlying any award for security for costs. This is a very unusual case where GSI's main business at the present time appears to be pursuing multiple actions advancing similar arguments."

⁴⁴ **BR-6:** World Bank, Legal Framework for The Treatment of Foreign Investment Volume II, dated 25 September 1992, ¶ 6, p. 42.

⁴⁵ **BR-7:** Email from Paul Einarsson to Bharat Dixit, dated 4 February 2010.

⁴⁶ See Section VI.A.2, ¶ 175.

⁴⁷ **BR-7:** Email from Paul Einarsson to Bharat Dixit, dated 4 February 2010.

⁴⁸ **RER-02:** Robert Hobbs Expert Report, ¶ 77 and **RER-03:** Doug Uffen Expert Report, ¶¶ 64-65; **CER-02:** Sharp Report, Schedule D1.

⁴⁹ **CER-02:** Sharp Report, ¶ 71; Claimants' Memorial, ¶ 483.

36. We understand that GSI's competitors were subject to the same regulatory and disclosure framework at issue. Despite this, other companies such as PGS and TGS continue to operate in Canada and in other jurisdictions with exclusivity periods of similar length.⁵⁰ Mr. Sharp does not address this contrast, which suggests that it is incorrect to attribute GSI's failure entirely to the Alberta Court Decisions' interpretation of the Regulatory Regime.
37. **GSI should be valued on a liquidation basis.** Because GSI was no longer a going concern years before the alleged breaches, it should not be valued as such. When an entity has no realistic possibility of continuing to operate, as was the case for GSI well before 30 November 2017, accounting guidance shifts toward analyzing the business on a liquidation basis. Similarly, the World Bank's Legal Framework for the Treatment of Foreign Investment suggests that a company that is not a going concern and demonstrates a lack of profitability should be valued on a liquidation basis.⁵¹ This approach would value GSI as the FMV of its individual assets minus the FMV of its liabilities.
38. [REDACTED] **but its liquidation value cannot be assessed without more information.** [REDACTED]
[REDACTED] Balance sheet data show that GSI's reported assets consisted primarily of [REDACTED] and, to a lesser extent, [REDACTED] with a value of approximately [REDACTED]. The Claimants estimate the FMV of the company's capital assets was about [REDACTED]. The [REDACTED]
[REDACTED]
[REDACTED] Thus, [REDACTED]
[REDACTED]
39. [REDACTED]
[REDACTED]

⁵⁰ The exclusivity period in Canada is 10-15 years, similar to that of Australia, Brazil, Norway, and the U.K. **RER-02:** Hobbs Expert Report, ¶ 76(4). TGS and PGS continue to operate in some of these countries. See **BR-8:** S&P Capital IQ, PGS ASA Company Tearsheet Report; and **BR-9:** S&P Capital IQ, TGS ASA Company Tearsheet Report.

⁵¹ **BR-6:** World Bank, Legal Framework for The Treatment of Foreign Investment Volume II, dated 25 September 1992 ¶ 6(ii), p. 42.

⁵² **C-109:** Financial statements of GSI, Balance Sheet as of 30 November 2017 (Bates C-109_0237).

⁵³ **C-109:** Financial statements of GSI, Balance Sheet as of 30 November 2017 (Bates C-109_0237).

⁵⁴ **C-109:** Financial statements of GSI, Balance Sheet as of 30 November 2017 (Bates C-109_0237-8).

⁵⁵ **C-109:** Financial statements of GSI, Balance Sheet as of 30 November 2017 (Bates C-109_0238).



40. GSI has not provided any estimate of the value of its offshore MC seismic data library as of the valuation date, and it is our understanding that the Claimants have not provided any evidence that would allow an independent valuation to be conducted, including whether GSI's library has been properly maintained physically. We understand that the value of such assets declines over time, that GSI had not collected any substantial data since 2008,⁵⁷ and that most of its data was relatively old and/or subject to competition from other companies' seismic materials that was newer, higher quality, and (at least in part) available through Board disclosure. As such, we expect that the FMV of the library at the valuation date was relatively limited.
41. Canadian courts concluded in 2015 that "[g]iven these decisions [confirming that GSI's seismic materials were properly releasable into the public domain by the Boards] and the age of the seismic data, it would be difficult to sell through execution proceedings and is of little value."⁵⁸

C. Claimed Losses on Einarsson Loans and Salaries

42. The Claimants also seek compensation for two other alleged harms. First, the Claimants say that GSI was unable to repay shareholder loans made by the Einarssons. Second, the Claimants seek compensation for salaries that they assume the Einarssons would have collected from GSI if the company had continued to operate.
43. Mr. Sharp's calculation of the Claimants' losses on loans from the Einarssons to GSI is based on an assumed loan balance on 30 November 2017 plus interest to the present. Mr. Sharp adopts an assumed loan balance from Mr. Paul Einarsson, but no documentation of the loans or loan terms has been provided to test his assumption that the loan FMVs were equal to their book value. Moreover, the ability for GSI to repay the loans was in doubt, because the company was no longer a going concern before the alleged expropriation, and the liquidation value is uncertain.

⁵⁶ **C-109**: Financial statements of GSI, year ended 31 December 2008, Note 3 (Bates C-109_0209). **BR-10**: Jeffries & Company Inc., "The Seismic Industry – Survival of the Fittest," dated December 2003, p. 38; **BR-11**: Bank of America Merrill Lynch, "Seismic: stick to quality - initiate TGS at Buy, reinstate CGG Neutral, PGS - U/P", dated 26 September 2019, p. 4.

⁵⁷ See paragraph 25.

⁵⁸ **BR-4**: Geophysical Service Incorporated v. Encana Corporation, 2015 ABQB 196, dated 19 March 2015, ¶ 18.

44. Mr. Sharp's assessment of the alleged lost employment earnings of the Einarssons is economically unsound. His analysis purports to estimate damages based on the market wages he assumes each of the Einarssons would have earned by continuing to work at GSI through their assumed retirements in 2019 (Davey), 2039 (Paul), and 2040 (Russell). Mr. Sharp's analysis ignores the fact that, if Paul and Russell Einarsson are not employed by GSI, they could pursue alternative employment opportunities, also at fair market wages. This would allow them to mitigate their lost employment earnings.⁵⁹ Because Mr. Sharp's analysis estimates lost earnings at market wages, the Einarssons should have been able to mitigate all, or virtually all, of these losses by pursuing alternative employment. Moreover, the assumed retirement dates of Davey (2019, at approximately age 88),⁶⁰ Paul (2039, at age 75), and Russell (2040, at age 75) Einarsson are speculative.

D. Pre-Award Interest

45. Mr. Sharp applies interest on his valuations at two alternative rates: (1) the 20-year borrowing cost for debt rated BBB by the Standard & Poor's credit rating agency; and (2) the risk-free rate based on 20-year Canadian government debt.⁶¹ The interest rate that makes an economic actor whole has two components: the time value of money – a dollar today is worth more than a dollar tomorrow – and compensation for bearing risk. The time value of money corresponds to the risk-free rate because it compensates only for waiting. If it is legally appropriate to compensate a claimant for default risk from the date of the alleged breaches until the award date, it may also be appropriate to add a credit spread to account for that risk. However, in this instance, the Respondent is the sovereign and creditors willingly lend to it at the risk-free rate, so the risk-free rate provides full compensation consistent with the commercial market rates earned by other creditors of Canada. The correct rate is a short-term rate that compounds over time and accrues until any award is paid.

IV. Methods to Estimate Claimed Impact

46. Claimants allege two specific mechanisms by which the alleged breaches harmed GSI:

⁵⁹ Given his age, we do not assume Davey Einarsson would have pursued alternative employment.

⁶⁰ We understand that Davey Einarsson was born in January 1932.

⁶¹ **CER-02:** Sharp Report, ¶ 153.

- a. *GSI hoped to recover damages for the breaches of its intellectual property in the Seismic Works through the Domestic Actions. The Alberta Decisions rendered GSI unable to pursue any of those claims in the Domestic Actions, outside of contractual rights, regarding disclosure from the Boards as of the date of the Supreme Court of Canada Decision—30 November 2017.*⁶²
 - b. *The Alberta Decisions also rendered the Secondary Submissions (the majority of which included the Seismic Works in SEG-Y format) accessible to the public for free. With that, the Seismic Works that GSI licensed to licensees, which were more valuable than the Seismic Works included in the Submissions, were also in the general public domain and could no longer be licensed.*⁶³
47. Claimants assert that because GSI was “unable to enforce the copyright in its seismic data against infringers, GSI’s business was destroyed.”⁶⁴ Claimants equate these forward-looking impacts with the complete expropriation of their business, presumably because they view the litigation claims they are pursuing or may pursue in the “Domestic Actions” and their “Seismic Works” (*i.e.*, GSI’s seismic data library) as the only valuable assets of GSI at the time of the Alberta Court Decisions.⁶⁵ Thus, the relevant questions for damages are: (1) what are the actual values of GSI’s litigation claims against its customers immediately after the Alberta Decisions, as compared to their value immediately prior to the Alberta Decisions; and (2) what is the actual value of GSI’s seismic data library immediately after the Alberta Court Decisions, as compared to its value immediately prior to the Alberta Court Decisions.
48. Answering those questions requires two corresponding and forward-looking analyses: (1) an evaluation of the value of GSI’s current and future intellectual property damages claims against defendants in the “Domestic Actions,” both before and after the alleged breaches (akin to litigation-risk analyses) and (2) an evaluation of the fair market value of GSI’s seismic data library at the date of the alleged breaches.
49. The first analysis would evaluate the litigation claims of GSI against its customers before and after the Alberta Court Decisions. The standard method for such valuations considers the path of litigation, the probability of winning damages, the amount of damages awarded contingent

⁶² Claimants' Memorial, ¶ 109. Footnote omitted.

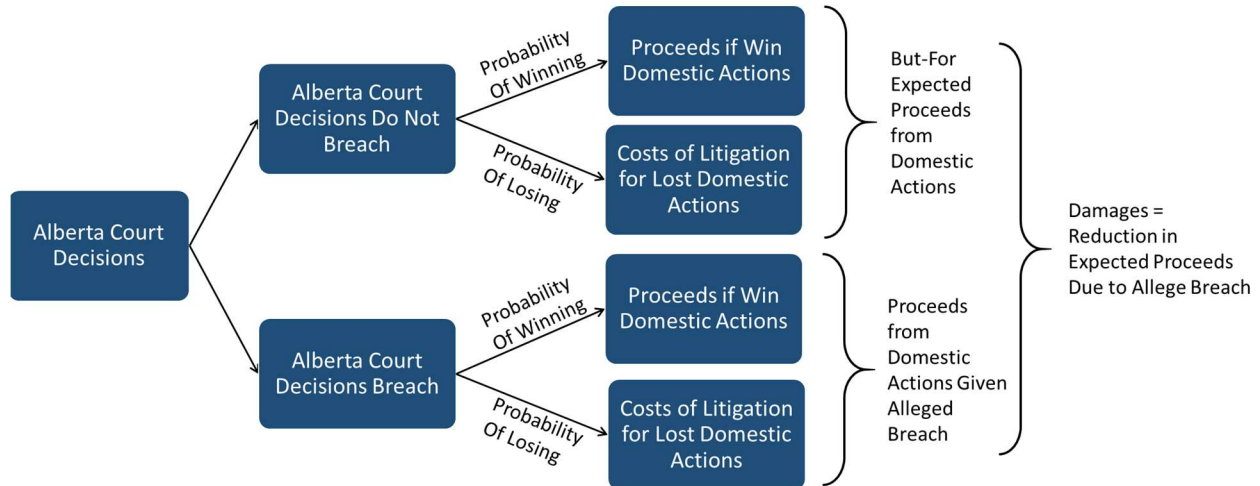
⁶³ Claimants' Memorial, ¶ 110.

⁶⁴ Claimants' Memorial, § II.G section heading. Capitalization of in the heading has been removed.

⁶⁵ We have been instructed to assume that the alleged breaches do not prevent pursuit of the Domestic Actions. For purposes of this section, we have not made that assumption in order to address questions of methodology for estimating Claimants’ damages.

on success and the costs associated with the litigation. Figure 1 illustrates how this analysis might be done.

FIGURE 1: DAMAGES FROM HARM TO EXPECTED PROCEEDS FROM DOMESTIC ACTIONS



50. The key consideration for the second analysis is an assessment of the value of GSI’s seismic data library at the time of the Alberta Court Decisions. This is because Claimants allege that, as a result of the Alberta Court Decisions, none of GSI’s remaining seismic materials would be licensed.⁶⁶

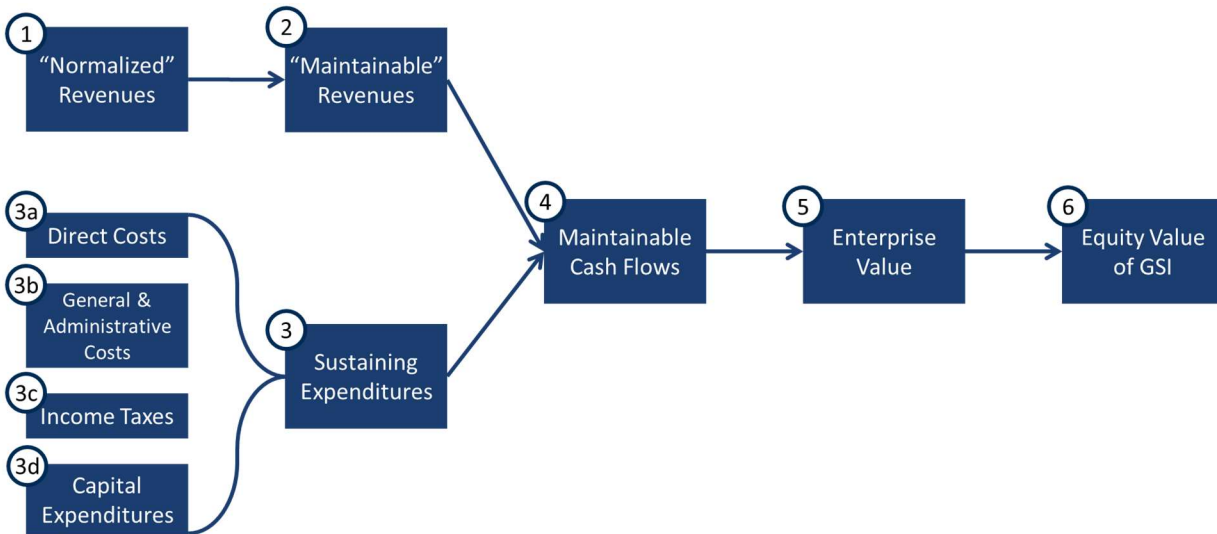
51. The appropriate damages methodology for this second analysis would begin with an appraisal of GSI’s seismic data library on 30 November 2017. This is the but-for value. We discuss how this value would be assessed further in Section VI.B. Neither the Claimants nor Mr. Sharp has advanced a litigation risk analysis or appraisal of GSI’s seismic data. As we discuss in the remainder of this report, Mr. Sharp instead presents an altogether different analysis that does not value GSI as it existed immediately prior to the alleged NAFTA breaches. Instead, Mr. Sharp attempts to value GSI as he argues it would have existed under a large number of counterfactual assumptions that he applies to GSI and its customers beginning more than a decade before the alleged breaches.

⁶⁶ Claimants' Memorial, ¶ 110.

V. The Sharp Report Methodology

52. The Sharp Report calculates the equity value of GSI using a six-step methodology, as summarized in Figure 2 and detailed below:

FIGURE 2: SHARP REPORT METHODOLOGY



- a. Step 1: Calculate GSI’s “normalized” revenues: GSI’s but-for annual revenue for the period from 2000 to 2012 are estimated as the revenues GSI actually earned plus revenues that Mr. Sharp assumes GSI lost because third parties accessed seismic materials from the Boards and because customers refused to pay transfer and equalization fees invoiced by GSI (the “Unpaid Invoices” discussed above).
- b. Step 2: Project and infer “maintainable” revenues: Mr. Sharp identifies an industry benchmark for GSI’s revenues, uses that benchmark to forecast GSI’s normalized revenues from 2013 to the valuation year, and then uses those projections to infer “maintainable revenues” – a range of annual revenues GSI purportedly could have maintained indefinitely into the future.
- c. Step 3: Forecast the expenses required to sustain GSI’s maintainable revenues: The expenses that would be required to generate the maintainable revenues on a sustainable basis are estimated. The Sharp Report considers four categories of expenses:

- i. Step 3a: Direct expenses: GSI's direct expenses are "mostly costs related to acquisition and creation of new seismic data."⁶⁷ For 2000 to 2008, Mr. Sharp calculates GSI's *actual* direct expenses as a share of his *but-for* normalized revenues annually and then takes the average share across those years. He assumes that direct expenses would remain at that fraction of GSI's but-for revenues going forward. Implicit in comparing but-for revenues to actual expenses is the assumption that *none* of the additional revenue would have required (and would never require) *any* incremental direct costs. In other words, the but-for *revenue* in 2000-2008 would require *no* additional but-for *cost*, and that same amount of revenue projected into perpetuity would never require any additional cost.
 - ii. Step 3b: General & Administrative (G&A) expenses: The annual average G&A expenses are calculated for 2006 to 2008, subtracting compensation paid to Messrs. Einarsson in excess of market value. The resulting average G&A expense is grown by inflation. Mr. Sharp assumes that to earn the maintainable revenues calculated above, GSI would incur G&A expenses equal to that 2006 to 2008 average. Again, this is equivalent to the assumption that none of the additional revenue he forecasts in the but-for case would ever require any additional general and administrative expense (beyond inflation).
 - iii. Step 3c: Income taxes: The effective tax rate is calculated on GSI's net income using its federal and provincial income tax returns to estimate the relevant allocation between the provinces.
 - iv. Step 3d: Capital expenditures: As asserted by Claimants, it is assumed that GSI would need to, on average, incur capital expenditures equal to 9% of its revenues annually to sustain maintainable revenues. These expenditures are adjusted to account for income tax benefits of capital expenditures.
- d. Step 4: GSI's "maintainable cash flow": Direct expenses, G&A expenses, income taxes, and tax-adjusted capital expenditures are subtracted from maintainable revenues to estimate maintainable cash flow.
 - e. Step 5: GSI's enterprise value using the Capitalized Cash Flow method: GSI's weighted average cost of capital ("WACC") is estimated through a combination of benchmark companies and subjective adjustments. Cash flows as of the valuation date are assumed to grow in perpetuity at a growth rate equal to inflation. The WACC is then used to calculate the present value of the perpetual future cash flows.

⁶⁷ CWS-06: Witness Statement of Paul Einarsson, ¶ 171(d).

- f. Step 6: GSI's debts to calculate its equity value: The value of GSI's debts to third parties, Messrs. Einarsson, and other related parties is subtracted from GSI's enterprise value to estimate equity value.
53. As we explain in detail in the sections that follow, this methodology cannot produce a meaningful valuation of GSI. It relies almost entirely on assumptions and instructions from the Claimants and their counsel for foundational inputs, producing unreliable – and sometimes conflicting – results. Indeed, Mr. Sharp admits that:

Due to the nature of this mandate, the sweeping and pervasive impact of the alleged wrongful actions of the Government of Canada on GSI's business, and the passage of time between the occurrence of these alleged wrongful actions and our Valuation Dates, the validity of the assumptions forming the basis of the But-for Scenario cannot be fully corroborated. We have relied on these assumptions, which have been identified in this Report as assumptions taken from Mr. Paul Einarsson's witness statement, and for the purposes of this Report, treated them as facts.⁶⁸

54. Finally, Claimants allege that damages are equal to the but-for value of GSI, because the actual value of GSI as of Mr. Sharp's two valuation dates is zero. However, neither GSI nor Mr. Sharp has presented any analysis demonstrating the actual value of GSI.

A. "Normalized" Revenue

55. The first and most impactful step in the Sharp Report's methodology is to calculate GSI's but-for revenues – the revenues that GSI purportedly would have earned had certain unspecified actions on the part of the Government of Canada not occurred as of 30 November 2017. Mr. Sharp refers to these as "normalized" revenues. The Sharp Report calculates normalized revenues as the sum of three components during 2000 to 2012:
- GSI's actual revenues, as reported on its annual financial statements;
 - Revenues GSI allegedly lost due to the disclosure of seismic materials from GSI by the Boards. Mr. Sharp assumes that the entities accessing information through the Boards

⁶⁸ CER-02: Sharp Report, ¶ 22. Emphasis added.

would instead have instead licensed seismic data directly from GSI at its list prices.⁶⁹ The assumed but-for licensing revenues are multiplied by a factor of 2 or 3. Mr. Sharp was instructed to use these multiples to reflect the assumption that each purchaser would have generated supplemental revenue beyond the single license fee (e.g., through transfer fees to partners through an exploration or a premium license fee for seismic data contractors that sell to multiple third parties);⁷⁰ and

- c. Revenues GSI allegedly would have collected from certain Unpaid Invoices.⁷¹ GSI claims that it sent these invoices to customers for alleged contractual violations and that the customers refused to pay them. [REDACTED] Mr. Sharp's analysis considers only the portion of the Unpaid Invoices related to transfer and equalization fees as lost revenue in this part of his analysis.

56. First, the Sharp Report tabulates GSI's actual revenues from the company's annual financial statements as the sum of the line items for [REDACTED] and [REDACTED] only). This is a straightforward arithmetical exercise, which records about [REDACTED] over 2000 to 2012.⁷³
57. Next, the Sharp Report calculates the revenues GSI allegedly would have earned from selling information that was otherwise accessed through the Boards. Mr. Sharp refers to this revenue as "Lost Revenues from Access of Disclosed Data."⁷⁴ To carry out this calculation, Mr. Sharp uses information provided to him by GSI management that lists the alleged disclosures of GSI seismic materials by the Boards.⁷⁵ For each assumed disclosure, Mr. Sharp was also provided a list price in US dollars for a single user license.⁷⁶ Mr. Sharp was instructed by GSI to assume that, but for the alleged breaches, each entity accessing disclosed data on the list would instead have licensed the data from GSI at that list price.⁷⁷ Mr. Sharp was further instructed to apply a

⁶⁹ CER-02: Sharp Report, ¶ 89.

⁷⁰ CER-02: Sharp Report, ¶ 85; CWS-06: Witness Statement of Paul Einarsson, ¶ 170(c) and (d).

⁷¹ CER-02: Sharp Report, ¶ 92.

⁷² C-112: Unpaid GSI Invoice Listing.

⁷³ CER-02: Sharp Report, Schedule D1.

⁷⁴ CER-02: Sharp Report, p. 18.

⁷⁵ C-111: List of Seismic Works Disclosed by the Boards; CER-02: Sharp Report, ¶¶ 81 and 84.

⁷⁶ CER-02: Sharp Report, ¶ 84.

⁷⁷ CER-02: Sharp Report, ¶ 89. Neither Claimants nor Mr. Sharp does discuss whether these licenses would relate to data of the same quality and format as available from the Boards, or whether the list price relates to the higher-quality data that we understand GSI actually provided to its licensees.

multiplier to each incident of access and that the appropriate multiplier depended on the type of entity accessing the data: exploration & production company (2x), a seismic data contractor (3x), or a government/non-profit institution (0x).⁷⁸ He was further instructed to spread these multiplied revenues evenly across the year of disclosure and the following two years.⁷⁹

58. Finally, these US dollar revenues are converted into Canadian dollars using average daily exchange rates for each year. This procedure results in [REDACTED] in alleged lost revenues over 2000 to 2012.⁸⁰
59. The Sharp Report next calculates additional revenues that GSI allegedly would have earned from the Unpaid Invoices. The Unpaid Invoices are represented to contain amounts in two broad categories:
- a. The first category relates to amounts invoiced to GSI customers for the GSI seismic materials that they allegedly accessed from the Boards. These amounts total to [REDACTED]
 - b. The second category relates to amounts that are alleged to be due for further use of data already licensed by the companies. Specifically, these are invoice amounts for “Transfer Fee,” “Exploration Group Licensing—partners equalizations,” and “Exploration Group Licensing—equalization to other partners.”⁸² These amounts appear to be related to alleged license agreement violations by the customers that are unrelated to accessing materials from the Boards. These amounts total to [REDACTED] but based on the allocation scheme applied by Mr. Sharp, only [REDACTED] is treated as lost GSI revenue during the 2000 to 2012 period.⁸³
60. Mr. Sharp does not analyze, review, or verify the Unpaid Invoices. Instead, Mr. Paul Einarsson provided Mr. Sharp with a summary spreadsheet presenting the US dollar amounts that GSI asserts were due and remain unpaid.⁸⁴ Mr. Sharp, on an understanding from GSI, assumes that all license fees listed would have been paid to GSI but for Canada’s alleged breaches.

⁷⁸ CER-02: Sharp Report, ¶ 85.

⁷⁹ CER-02: Sharp Report, ¶ 90.

⁸⁰ CER-02: Sharp Report, p. 20.

⁸¹ C-112: Unpaid GSI Invoice Listing. [REDACTED] discussed in the next paragraph.

⁸² C-112: Unpaid GSI Invoice Listing.

⁸³ CER-02: Sharp Report, ¶¶ 70 and 96 and Schedule B2.1.

⁸⁴ C-112: Unpaid GSI Invoice Listing.

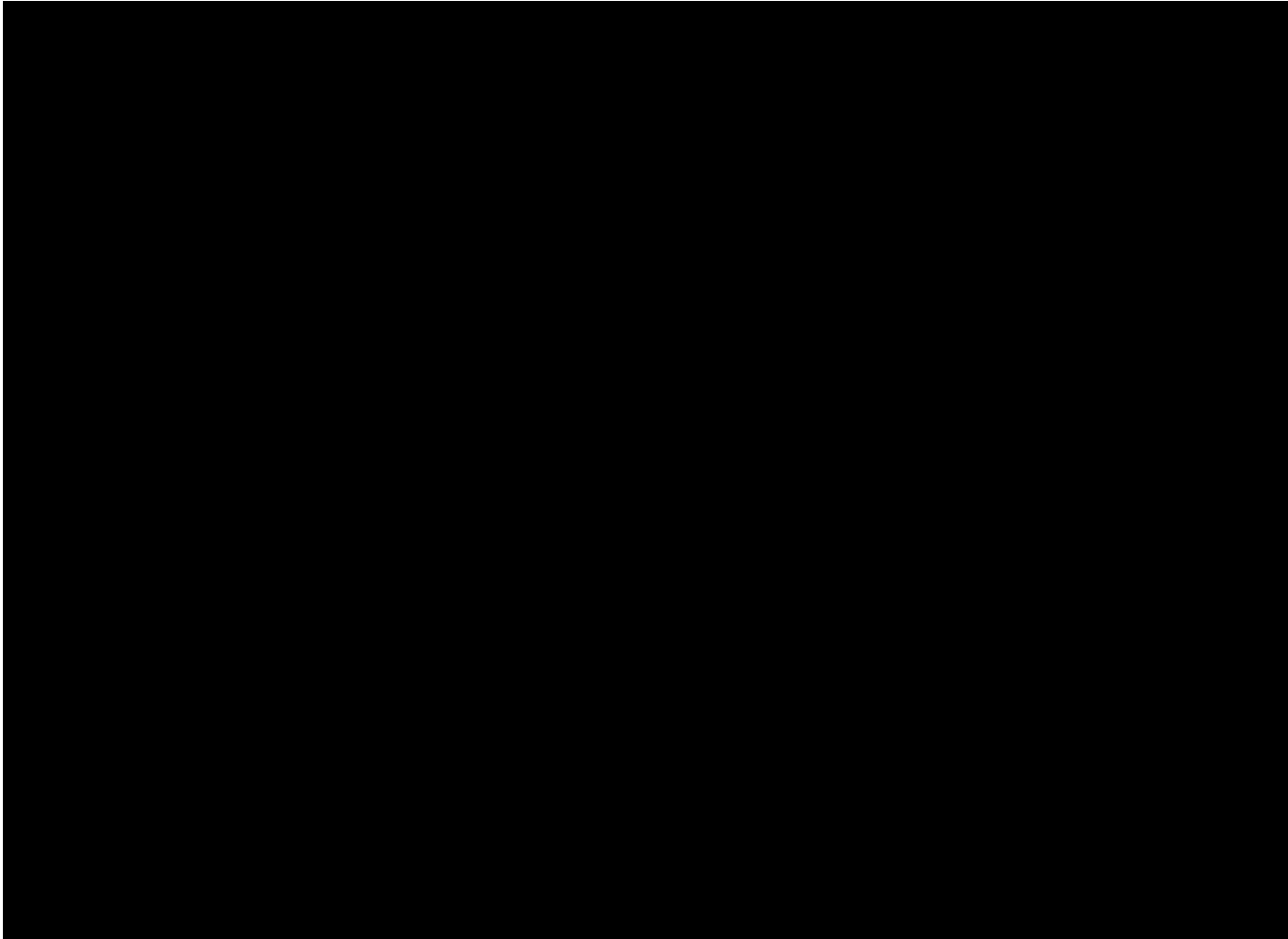
61. Perhaps to avoid double counting with the quantification he made based on alleged accesses of GSI seismic materials from the Boards as instructed by Mr. Paul Einarsson,⁸⁵ Mr. Sharp quantifies only the *second* category as allegedly lost revenue from Unpaid Invoices (*i.e.*, the equalization and transfer fees).⁸⁶ Then, on instruction from Mr. Paul Einarsson, Mr. Sharp divides these amounts evenly over the invoice year and the preceding four years (although his implementation of this instruction is incorrect, as we discuss later). Finally, he converts these US dollar revenues to Canadian dollars using average daily exchange rates for each year. This procedure results in [REDACTED] in alleged Unpaid Invoice revenue from 2000 to 2012, all of which occurs in 2007 and beyond.⁸⁷
62. Figure 3 presents the resulting “normalized” revenues from 2000 to 2012 by component. The actual revenues represent only about [REDACTED] of Mr. Sharp’s estimate of but-for revenues. Mr. Sharp’s assumed revenue from the sale of GSI seismic materials that were otherwise accessed through the Boards and from Unpaid Invoices together account for [REDACTED] the actual revenue, or about [REDACTED] of GSI’s total estimated revenues over this period.⁸⁸

⁸⁵ CER-02: Sharp Report, ¶¶ 84–85.

⁸⁶ CER-02: Sharp Report, ¶ 70. [REDACTED]

⁸⁷ CER-02: Sharp Report, ¶ 96 and Schedule B2.1.

⁸⁸ See footnote 16.



63. We note that these assumed revenues from access to GSI seismic materials from the Boards and Unpaid Invoices are essential to Mr. Sharp's conclusions. Absent this assumed additional revenue, GSI would have virtually no value in the Sharp model. **If one were to apply Mr. Sharp's model excluding these additional assumed revenues, his valuation would drop by 96%.**⁹⁰
64. These two assumed inputs are essential, yet Mr. Sharp undertook no analysis to test their reliability. GSI's submission does not document these claims and so we cannot perform a full assessment. However, as we demonstrate below, it is clear that these assumed lost revenues are unreasonable and excessive.⁹¹

⁸⁹ **BR-12:** Brattle Workpapers, Workpaper 7.

⁹⁰ **BR-12:** Brattle Workpapers, Workpaper 4.

⁹¹ While we adjust Mr. Sharp's analysis to show the effect of changes in inputs or assumptions, our analysis can only be an approximation, because Mr. Sharp did not provide native copies of his analyses and some analyses are not transparent.

1. Alleged Lost Revenues from Board Disclosures of GSI Seismic Materials Are Unsupported and Excessive

65. Alleged lost revenue due to Board disclosures of GSI seismic material is assumed to be [REDACTED] million from 2000 to 2012.⁹² Mr. Sharp's calculation is not performed independently and is instead the mechanical implementation of instructions provided by Mr. Paul Einarsson, based in part on information from Exhibit C-111. We have been instructed that the Boards' disclosure of GSI seismic material is not a breach of NAFTA. If so, we understand these amounts should be excluded from the analysis. However, if the Board disclosures were compensable violations of NAFTA, the inputs and directions provided to Mr. Sharp (and by extension his estimate of the lost revenue) are unsupported and generate excessive results for reasons we discuss below.
66. First, Mr. Sharp makes no effort to estimate a price that customers would have been willing to pay GSI for the seismic materials disclosed by the Boards.⁹³ Mr. Sharp does not analyze the underlying price lists that purportedly produce these total amounts; he simply takes them as given without citation to any original pricing documents.⁹⁴ Nor does his analysis reflect the possibility of licenses negotiated at rates below the list price, which we understand is common for revenues from transfer fees, farm-ins, and M&A transactions, as well as for customers that purchase multiple surveys.⁹⁵ More fundamentally, we understand that the seismic materials disclosed by the Boards contain only a subset of the digital raw field and processed data that GSI offers to customers at these list prices. As explained in the Uffen Report, the information accessed through the Boards is likely of lower quality and value than the data that GSI would be licensing.⁹⁶ It is unreasonable to assume that *any* customer would have paid the full list price to license the less granular seismic material available from the Boards, let alone that *all* of them would have done so.
67. Second, Mr. Sharp does not indicate that he checked to avoid possible double counting. The quality of seismic material that could be obtained from the Boards is lower quality than the data and information that would be available by through licensing the data from GSI. It is

⁹² CER-02: Sharp Report, p. 20.

⁹³ Mr. Sharp should also have confirmed that none of the customers for whom he assumes lost revenue from access to seismic material through the Boards ultimately licensed the full dataset from GSI. However, nowhere in his report does Mr. Sharp state that he confirmed this. We do not have access to data to confirm this ourselves.

⁹⁴ CER-02: Sharp Report, ¶ 84.

⁹⁵ RER-03: Doug Uffen Expert Report, ¶ 49; RER-02: Robert Hobbs Expert Report, ¶¶ 71-72.

⁹⁶ RER-03: Doug Uffen Expert Report, ¶ 40.

possible that some entities that accessed GSI seismic materials through the Boards subsequently licensed the full set of information from GSI. In such an instance, the license fee would be included in GSI's actual revenues, and it would be double counting to also include it in lost revenues.

68. Third, Mr. Sharp's assumed multipliers are applied to list prices that are given directly to him by the Claimants and their counsel as instructions.⁹⁷ The Sharp Report provides no analysis or consideration of whether these multipliers are reasonable (*e.g.*, by analysing historical experience). Moreover, the Sharp Report does not identify which multiplier it assigned to each entity that accessed GSI seismic materials through the Boards. It is not even clear whether the determination of which multiple to assign to each specific entity was made by Mr. Sharp himself or this was received as an instruction. As a result, these calculations cannot be replicated or tested.
69. Fourth, we understand that calculating lost revenues relating to seismic material accessed from the Boards by customers who were invoiced for these amounts may not be appropriate. We understand that GSI is seeking recovery from customers for these and other charges in other venues and jurisdictions. This raises two concerns. First, courts have concluded in at least some of the cases that the amounts being sought by GSI for access to GSI seismic materials from the Boards are not owed. For example, GSI sought about \$11 million from Total in a lawsuit. The court, however, concluded that Total was liable for less than \$1 million.⁹⁸ [REDACTED]
- [REDACTED]
- [REDACTED] Second, because these amounts also drive damages here,⁹⁹ litigating such claims in multiple proceedings raises the concern of double recovery. For example, GSI claims lost revenues in this case for the same access events at issue in the *Total* case.¹⁰⁰ We understand other litigations have been resolved or are still ongoing that deal with

⁹⁷ CER-02: Sharp Report, ¶ 85.

⁹⁸ C-286: Geophysical Service Incorporated v. Total SA, 2020 ABQB 730, Reasons for Judgment, ¶¶ 3(21), 126 in which we understand GSI claimed US\$11,074,873, but the court awarded GSI only US\$970,175. [REDACTED]

⁹⁹ See section IV.A.V.A.3.

¹⁰⁰ C-286: Geophysical Service Incorporated v. Total SA, 2020 ABQB 730, Reasons for Judgment, ¶¶ 3(21), 72, which gives a list price value of US\$374,120 and US\$1,225,595 for Total's access of the NF-79 and LB-82 datasets, respectively. In this case, GSI claims lost revenues, pre-multiple, of US\$429,138 and US\$1,225,594 for Total's access of the NF-79 and LB-82 datasets, respectively. C-111: List of Seismic Works Disclosed by the Boards, p. 5.

GSI's contractual claims and that are based on the Unpaid Invoices. Mr. Sharp does not account for this.

70. Fifth, the allocation of the allegedly lost revenues across time is arbitrary. Once Mr. Sharp calculates the total revenues from each access event per GSI's instructions, he divides these revenues evenly over the year of access and the following two years. The pattern of revenues matters, because it causes revenues to fall inside or outside the averaging period (which was also arbitrary) and because the time pattern impacts the evaluation of the maintainable revenues. Again, the mechanics and rationale for this step are taken by Mr. Sharp as instruction from the Claimants and their counsel.¹⁰¹
71. Sixth, the information relied upon by Mr. Sharp appears to contain errors. For example, Exhibit C-111 lists a request made in October 2002 by BP Exploration to access the GSI Mamou 3D report.¹⁰² However, the GSI website indicates that this survey was completed only in 2003.¹⁰³ If the data were collected in 2003, the seismic materials associated with this survey would not have been available for access from the Boards in October 2002.
72. Seventh, it should not be assumed that all companies that accessed free GSI seismic materials through the Boards would otherwise have chosen to license the data. As discussed in the Uffen and Hobbs Expert Reports, many of GSI's datasets faced direct competition from other seismic providers.¹⁰⁴ If GSI seismic data were only available through licenses, the entities that accessed GSI's seismic materials through the Boards might have elected to license competing data or rely on seismic materials from GSI's competitors that was available through the Boards instead. Moreover, basic principles of economics and common sense indicate that people will consume more of something when it is free than when it is costly.¹⁰⁵ Thus, the number of customers that would pay to license a particular GSI dataset is smaller than the number of customers that would choose to access GSI seismic materials from the Boards at no cost.
73. Finally, Mr. Sharp's estimate of GSI's lost revenue arising from entities accessing GSI seismic material through the Boards is implausibly large. In total, Mr. Sharp assumes the lost revenue

¹⁰¹ **CER-02:** Sharp Report, ¶ 90.

¹⁰² **C-111:** List of Seismic Works Disclosed by the Boards, p. 7.

¹⁰³ **BR-3:** Geophysical Service Incorporated, Acquired Data Library.

¹⁰⁴ **RER-03:** Doug Uffen Expert Report, ¶¶ 55-58; **RER-02:** Robert Hobbs Expert Report, Section IV.B.

¹⁰⁵ **BR-13:** Joseph E. Stiglitz and Robin W. Boadway, "Principals of Microeconomics and the Canadian economy," 2nd edition W.W. Norton & Company, Inc., 1997, Chapter 4, p. 62.

due to Board accesses is [REDACTED]¹⁰⁶ This comprises the bulk of GSI's total but-for revenue from 2000 to 2012. However, the GSI seismic material accessed through the Boards following the expiry of the applicable confidentiality periods was, by design, dated at the time of the access. All of it would be at least 10 to 15 years old (given the Regulatory Regime) and much of it considerably older. That matters because the value of seismic data generally declines over time.¹⁰⁷ Given the fact that the seismic materials accessed through the Boards were at least 10 to 15 years old, and generally much older than that (as we show below), it would appear to be implausible that the lost revenue could be so high.

74. More specifically, the vast majority of Mr. Sharp's claimed lost revenue from 2000 to 2012 accesses of GSI seismic materials through the Boards was for seismic material collected by Halliburton *prior to 1993*. Figure 4 shows our attempt to replicate the Mr. Sharp's estimate of lost revenue due to GSI seismic materials accessed from the Boards using based on the vintage of the survey.¹⁰⁸ The figure reveals that *virtually all* (> 99%) of the claimed lost revenue from access to GSI seismic materials from the Boards is from surveys conducted in *1990 and earlier* by Halliburton or its predecessors. In total, Mr. Sharp assumes that GSI would have earned about [REDACTED] in revenues, which translates into pure profits, from this Halliburton data that Mr. Davey Einarsson acquired from Halliburton for only *US\$450,000*.¹⁰⁹

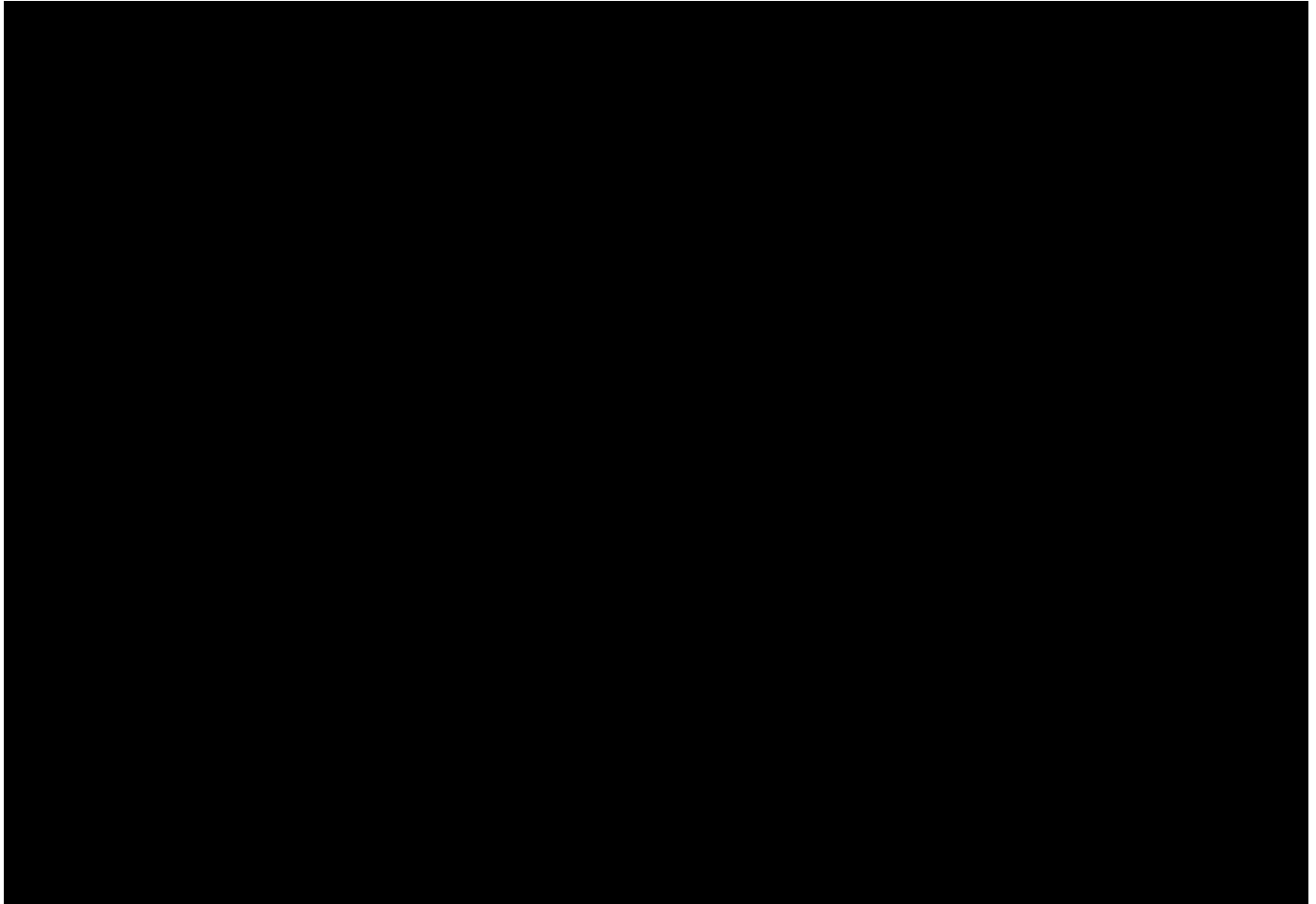
¹⁰⁶ **CER-02:** Sharp Report, p. 20.

¹⁰⁷ As explained by Mr. Hobbs, offshore seismic data companies generally amortize their investments in data acquisition over a 4-year period, consistent with the fact that it is typical for most revenue to be earned in the early years of a survey's life. **RER-02:** Robert Hobbs Expert Report, ¶ 82. For example, see TGS amortization method and Veritas US\$55 million write-off on old data. **BR-10:** Jeffries & Company Inc., "The Seismic Industry – Survival of the Fittest," dated December 2003, pp. 28 and 37. PGS seismic surveys are also reviewed for impairment every quarter and amortized over a four-year period. **BR-14:** Jeffries & Company, Inc., "Seismic Technology Takes Center Stage," dated October 1998, p. 38.

¹⁰⁸ As discussed in paragraph 14, Mr. Sharp did not provide a transparent version of his analysis that shows all of his inputs, and thus, this is an approximation.

¹⁰⁹ **C-049:** Seismic Data Purchase Agreement, § 2. We understand that there was later transferred to GSI in a separate transaction that had a price of [REDACTED] which was a cross-border transfer price. Cross-border transfer prices are required to reflect FMV. **C-050:** Seismic Data Purchase Agreement, § 2.

FIGURE 4: SHARP LOST REVENUE FOR SEISMIC MATERIAL ACCESSED FROM BOARDS BY YEAR OF COLLECTION¹¹⁰

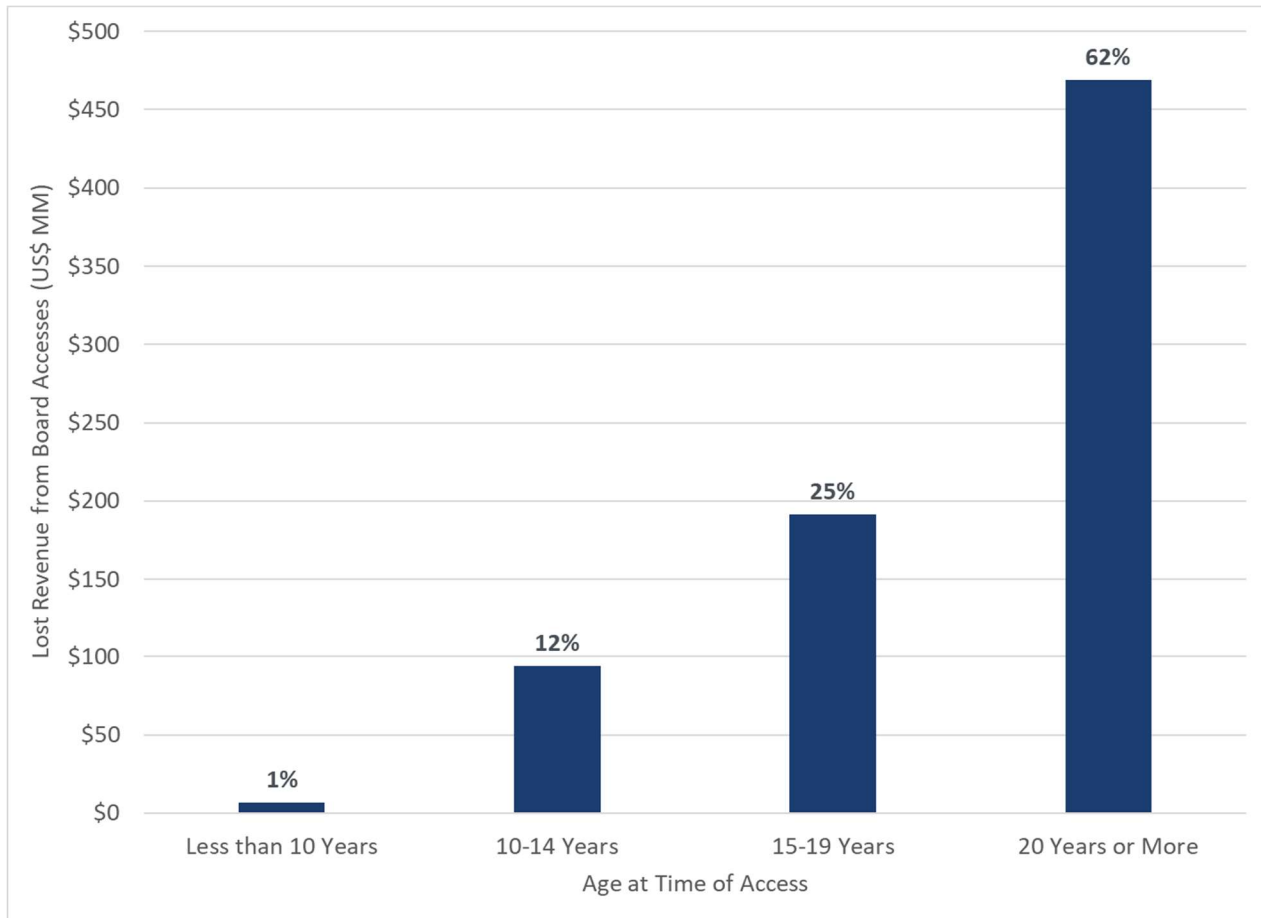


75. Moreover, significant portions Mr. Sharp’s lost revenues come from GSI seismic materials that were decades old at the time of access through the Boards. Figure 5 shows that 62% of assumed lost revenues derive from seismic materials that were at least 20 years old at the time of access. In fact, 87% of assumed lost revenues derive from seismic materials that were at least 15 years old at the time of access, which, according to GSI’s predecessor, presumably “would have little or no commercial value.”¹¹¹

¹¹⁰ **BR-12:** Brattle Workpapers, Workpaper 8. Mr. Sharp does not identify which multipliers were used in his report; therefore, values may not match exactly.

¹¹¹ **C-165:** Letter from John Clink to Marcel Masse, dated 7 October 1986, p. 3.

FIGURE 5: SHARP LOST REVENUES FOR SEISMIC MATERIAL ACCESSED FROM BOARDS BY SURVEY AGE AT TIME OF ACCESS¹¹²



76. In summary, the claimed lost revenue of [REDACTED] arising from access to GSI seismic material through the Boards appear to be implausibly high and contains errors. Rather than perform any testing of this critical input, Mr. Sharp simply “assume[d] that each instance of access would have resulted in license fees (*i.e.*, the accessing parties would have paid for the data in the normal course of business)” and that those license fees would be based on the list price with the relevant multiplier.¹¹³

2. Lost Revenues from Unpaid Invoices Are Unreliable

77. Mr. Sharp’s assumed lost revenues from allegedly Unpaid Invoices (excluding amounts allegedly invoiced for data accessed from the Boards) total [REDACTED] million over the period from 2000 to

¹¹² **BR-12:** Brattle Workpapers, Workpaper 9. Mr. Sharp does not identify which multipliers were used in his report; therefore, values may not match exactly.

¹¹³ **CER-02:** Sharp Report, ¶¶ 84–91.

2012.¹¹⁴ Of this amount, virtually all of the lost revenues were assumed to occur from 2010 to 2012.¹¹⁵ Mr. Sharp's estimate of lost revenues from Unpaid Invoices is unsupported, dependent on untested assumptions, and implausible.

78. First, GSI provided to Mr. Sharp only a list of asserted invoices and the associated amounts owed, not the invoices themselves. The Sharp Report does not confirm, review, analyze, or even discuss the actual invoices underlying GSI's claims. These figures cannot be checked.
79. Second, the Claimants assume a causal link between the alleged breaches and the Unpaid Invoices. No such analysis is provided. None would make sense because the breaches are only alleged to have occurred years later. Moreover, if GSI's customers have violated their licensing agreements, we are instructed that the alleged breaches do not interfere with GSI's right to pursue legal remedies for such alleged contract violations to collect any revenues due.¹¹⁶
80. Third, the Claimants have not demonstrated that GSI is entitled to the revenues claimed on these Unpaid Invoices. GSI issued the Unpaid Invoices to its licensees between 2011 and 2016, claiming the failure to pay equalization or transfer fees (i.e., the fees for "further use" discussed earlier).¹¹⁷ According to Mr. Sharp, these revenues were lost because many of GSI's customers ceased paying for services and license fees to which GSI was entitled.¹¹⁸ We understand, however, that Canadian and American courts have ruled that at least some of GSI's customers were not obligated to pay the types of fees claimed in the Unpaid Invoices.¹¹⁹ For example:
 - a. Mr. Sharp includes [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]²⁰ However, we understand that GSI's claims regarding these invoices were dismissed with prejudice by US courts;¹²¹

¹¹⁴ CER-02: Sharp Report, ¶ 96.

¹¹⁵ CER-02: Sharp Report, ¶ 96.

¹¹⁶ It is unclear why some of these alleged invoices were directed to GSI's customers rather than the parties alleged to have benefited from the alleged further use (for example, exploration partners of GSI's alleged to have made improper use of GSI data).

¹¹⁷ CWS-06: Witness Statement of Paul Einarsson, ¶ 171(g).

¹¹⁸ CER-02: Sharp Report, ¶ 92.

¹¹⁹ For example, see C-286: Geophysical Service Incorporated v. Total SA, 2020 ABQB 730, Reasons for Judgment, ¶ 3(21), ¶ 126 in which we understand GSI claimed US\$11,074,873—the same amount claimed in this proceeding. GSI was awarded only US\$970,174.68.

¹²⁰ C-112: Unpaid GSI Invoice Listing.

¹²¹ BR-15: Geophysical Service Incorporated v. Occidental Corp., Case 4:20-cv-1396, Order of Dismissal, dated 24 March 2021. GSI's supporting materials in that case list unpaid invoices that match the invoice numbers and

b. Mr. Sharp includes [REDACTED]
[REDACTED]¹²² However, we understand that Canadian courts have considered the claims for these types of fees and ruled that no fee was payable.¹²³

c. Mr. Sharp includes [REDACTED]
[REDACTED]
[REDACTED]²⁴ However, we understand that Canadian courts have considered these claims and dismissed most of them, including all of the transfer fee claims.¹²⁵

81.

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

82. Fifth, Mr. Sharp relies on an untested assumption about the time period covered by these invoices and implements that instruction incorrectly. According to Mr. Paul Einarsson, “the invoices should be split between the year of the invoice and the five preceding years.”¹²⁷ However, Mr. Sharp states that “we have been instructed by Counsel based on information in Mr. Paul Einarsson's Witness Statement to split the amounts evenly between the year of the invoice and the four preceding years.”¹²⁸ More importantly, the Claimants have provided no basis to demonstrate that Mr. Paul Einarsson’s proposed apportionment is reasonable or consistent with the facts of the alleged license violations. This matters because in the Sharp methodology, the apportionment across years can have a significant impact on claimed damages.

amounts used by Mr. Sharp for Anadarko Petroleum Corporation. **BR-16:** Geophysical Service Incorporated, Exhibit C - Occidental Corp. Cover Letter, dated 14 August 2019, p. 2.

¹²² **C-112:** Unpaid GSI Invoice Listing.

¹²³ **BR-17:** Geophysical Service Incorporated v. Plains Midstream Canada ULC, 2022 ABKB 722, dated 1 November 2022, ¶¶ 28 and 74.

¹²⁴ **C-112:** Unpaid GSI Invoice Listing.

¹²⁵ **BR-18:** Geophysical Service Incorporated v. Suncor Energy Inc, 2017 ABQB 465, dated 26 July 2017, ¶¶ 99 and 100.

¹²⁶ **C-112:** Unpaid GSI Invoice Listing. See **BR-19:** Geophysical Service Incorporated v. Falkland Oil and Gas Limited 2019 ABQB 162, dated 7 March 2019, ¶ 1.

¹²⁷ **CWS-06:** Witness Statement of Paul Einarsson, ¶ 170(i). Emphasis added.

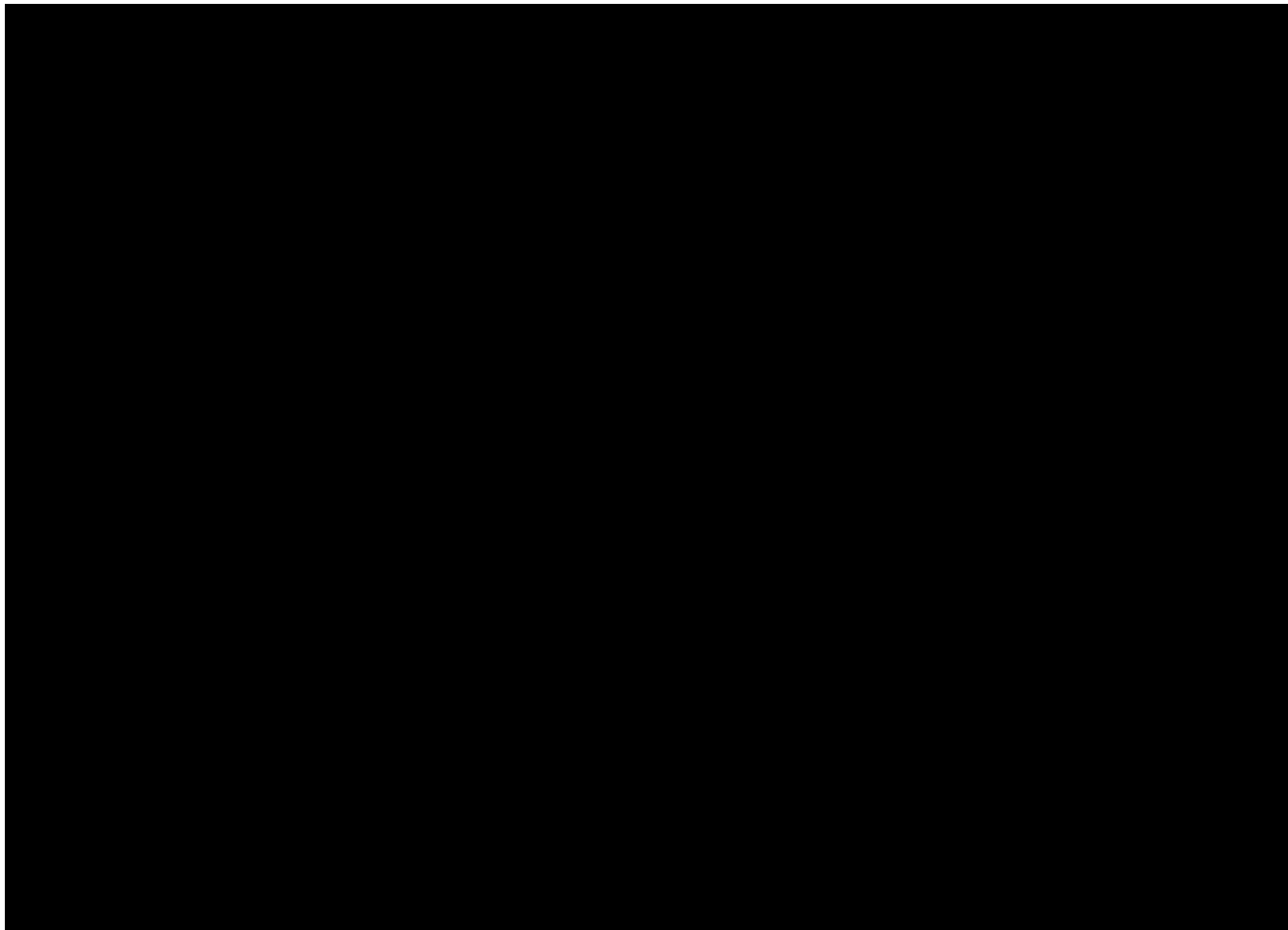
¹²⁸ **CER-02:** Sharp Report, ¶ 94. Emphasis added.

83. Sixth, even under the assumption that all of the Unpaid Invoices are valid and that all claims would have been paid had certain unspecified actions on the part of the Government of Canada not occurred, the amounts Mr. Sharp considers are overstated and accrue earlier in time. This is because the invoiced amounts may include penalty interest.¹²⁹ In the but-for scenario Mr. Sharp contemplates, presumably these invoices would have been paid at the time fees were due, which Mr. Sharp notes is different from the dates he uses in his analysis.¹³⁰ Furthermore, we understand that in at least some cases, “the interest is now almost as much if not more than the original invoices.”¹³¹ Eliminating any interest that may have been included in the Unpaid Invoices would reduce the revenues Mr. Sharp incorporates into his estimates and reduce his valuation of GSI.
84. Figure 6 shows the importance of the Unpaid Invoices to Mr. Sharp’s conclusions. Using Mr. Sharp’s method to project GSI’s but-for revenues, the figure shows that if the unpaid revenues are eliminated from his model, Mr. Sharp’s projection of GSI’s but-for revenues for 2017 decreases by 65%, from [REDACTED]

¹²⁹ We cannot confirm this because the Claimants did not provide copies of the Unpaid Invoices.

¹³⁰ **CER-02:** Sharp Report, ¶ 94.

¹³¹ **BR-16:** Geophysical Service Incorporated, Exhibit C - Occidental Corp. Cover Letter, dated 14 August 2019, p. 2.



3. Mr. Sharp's Method Evades the Time Limitations Period under NAFTA

85. We have discussed why the revenues Mr. Sharp estimates from allegedly lost sales are implausible. The revenues are also entirely from periods well outside what we understand to be the three-year limitations period under NAFTA. The Sharp Report relies on these revenues, which we understand would be time barred under NAFTA, to project more revenue far into the future. In this way, a specific harm alleged in the past and beyond the limitations period gains perpetual life in Mr. Sharp's valuation.
86. Mr. Sharp notes that the information about user accesses of "Board Data is limited after 2012."¹³³ More generally, the amount of alleged lost revenue due to the availability of GSI seismic material from the Boards declined significantly over the period from 2000 to 2012. Mr. Sharp's report assumes lost revenues from Board accesses averaging approximately [REDACTED]

¹³² **BR-12:** Brattle Workpapers, Workpaper 10.

¹³³ **CER-02:** Sharp Report, Schedule B2.1.

████████████████████ From 2007 to 2012, the average lost revenue from Board accesses declined to only ████████████████████ consistent with the expectation that seismic materials from older surveys become less valuable over time.¹³⁴ The continuing decline suggests that lost revenues from Board accesses would be expected to be lower by Mr. Sharp's valuation date than it was on average during his "normalized" revenue-benchmarking period. Similarly, the alleged revenues from Unpaid Invoices are a one-time settling of amounts owed by GSI clients, and would not generate new revenues thereafter.

87. This raises a conundrum at the core of Mr. Sharp's analysis: How is it that revenues that are assumed to have been lost years or even more than a decade before the alleged breaches on 30 November 2017 create equivalent cash flows every year in perpetuity, such that they can be capitalized as damages in 2017 (and later)?
88. Through the use of implausible instructions and a flawed damages methodology, Mr. Sharp has created a damages machine that avoids any time limitation on damages. To illustrate, take a simple case: assume GSI lost \$1,000 from a lost sale due to the Boards' release of GSI seismic materials in each year from 2000 to 2012. Absent any limitation period, the damages calculated in the standard way would be \$13,000, plus pre-award interest. If a limitations period precluded damages before 2012, damages would be zero. Of course, if the alleged breaches had not even occurred in 2000, those revenues must have been lost independent of the alleged breaches, and damages again would be zero.
89. But what happens in the Sharp model? We have explained above how those allegedly lost revenues are "normalized." To continue our example, the \$1,000 of annual revenue alleged to have been lost from 2000 to 2012 is now labeled "normalized." Mr. Sharp's approach builds this \$1,000 into his forecast of revenues in all the years that follow up to 2017. Then the CCF method assumes that this \$1,000 in 2017 but-for revenue would continue in perpetuity – thus this lost revenue from 2000 to 2012 is now assumed to be lost in every future year too. The illustrative loss of \$1,000 from 2000 to 2012 is transformed in the Sharp model into a perpetual loss valued at about \$3,900 in November 2017.¹³⁵
90. In the sections that follow, we show how that normalized revenue is then assumed to repeat, and even grow, in every year into perpetuity. These revenues continue forever without any increased direct or overhead spending. In this way, lost revenues that we understand are time

¹³⁴ CER-02: Sharp Report, Schedule B2.1.

¹³⁵ BR-12: Brattle Workpapers, Workpaper 5.

barred can escape that time bar, because they are assumed to perpetuate and so can be valued at any arbitrary future date.

B. The “Maintainable Revenues” Methodology is Unreliable and Inappropriate

91. The next step of Mr. Sharp’s analysis takes the normalized revenues calculated for 2000 to 2012 and compares them to various industry metrics to identify a benchmark against which to forecast them.¹³⁶ He chooses the percent change in the global offshore rig count as the basis for forecasting GSI’s future revenues. He assumes that GSI’s 2012 but-for revenues would grow until 2017 (for the November 2017 valuation date, or to 2022 for the June 2022 valuation date) at a rate equal to the percent change in the number of offshore rigs operating globally.¹³⁷ Then, based on these but-for revenue forecasts from 2000 to the valuation year, Mr. Sharp subjectively selects a range of revenues he judges to be “maintainable” from the valuation date onward.
92. Mr. Sharp assumed that GSI’s maintainable revenue would grow with the global offshore rig count after 2012, because a statistical analysis indicated global rig counts were more correlated with his estimate of normalized but-for revenue from 2000 to 2012 than other metrics.¹³⁸ Specifically, Mr. Sharp found that the correlation between the global offshore rig count and his estimate of GSI’s normalized but-for revenues was 0.5.¹³⁹ The correlation coefficient measures the relationship between two different date series, with a value of zero meaning no correlation and a value of 1.0 reflecting perfect correlation. Of course, as is often noted, finding a correlation between two variables does not mean there is a causal link between them.
93. Thus, to project GSI’s normalized revenues forward from 2012 to the valuation year, Mr. Sharp calculates the annual percentage change in the global offshore rig count and assumes that GSI’s revenues in US dollars will experience the same percentage from year-to-year. He then converts these projected US dollar revenues back to Canadian dollars.
94. The procedure results in a set of but-for revenue estimates from 2000 to the valuation year. Based on these estimates and forward-looking industry forecasts, Mr. Sharp subjectively selects

¹³⁶ CER-02: Sharp Report, ¶¶ 105–106.

¹³⁷ CER-02: Sharp Report, Schedules B2.1 and C2.1.

¹³⁸ CER-02: Sharp Report, ¶¶ 101–107.

¹³⁹ CER-02: Sharp Report, ¶ 107.

a range of annual revenues that he argues GSI could have maintained from the valuation date onward but for Canada's alleged breaches. The Sharp Report does not describe the selection methodology used, only that Mr. Sharp considered "normalized revenues, illustrated extended revenues, and the forward-looking data points at the Valuation Dates."¹⁴⁰

1. Maintainable Revenues Are Inconsistent with Fundamental Drivers of Offshore Seismic Data Spending

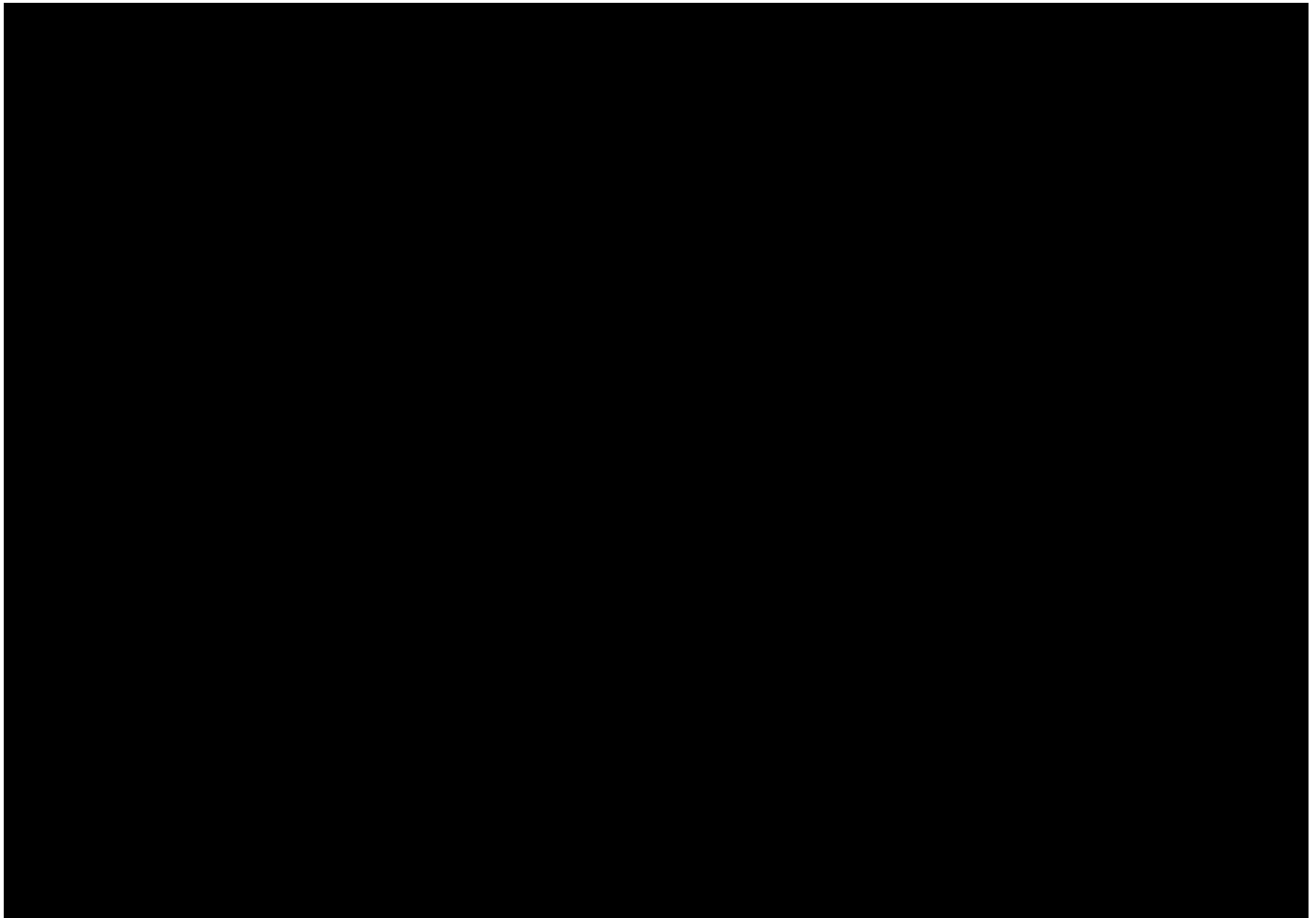
95. The methods used by Mr. Sharp first to forecast normalized revenues to 2017 (or 2022), and then to judge what perpetual stream would follow, are not reliable.
96. First, the global offshore rig count benchmark that Mr. Sharp uses to forecast revenues between 2012 and 2017 is conceptually flawed and ignores the actual offshore MC seismic data industry downturns during those times. As discussed by Mr. Hobbs, offshore rigs are used for both exploration and production, whereas seismic data sales are related more to exploration rather than production.¹⁴¹ That offshore rig counts are not reliable to predict GSI's revenues should have been apparent to Mr. Sharp based on his own analysis. If offshore rig count were a reliable predictor of GSI's normalized revenues, then the more relevant metric would be the *Canadian* offshore rig count, not the global rig count. Mr. Sharp did in fact look at the Canadian offshore rig count and found essentially no correlation with GSI's forecasted revenues (a coefficient of 0.02).¹⁴² This means there is virtually no relationship between these two data series. This should have signaled to Mr. Sharp that his assumed relationship between offshore rig count (whether Canadian or global) and seismic data spending was not meaningful.
97. Even on its own terms, the revenue-benchmarking exercise is illogical. Mr. Sharp's analysis concludes that GSI's but-for revenues are not linked to offshore drilling activity in Canada but instead to global offshore rig counts. If, for example, offshore rig counts increased overall with a large increase in Brazil but a decline in Canada, the Sharp methodology would predict GSI would have increased its revenue. That does not make sense in the context of GSI's historical activities in Canada or in the context of this case, where the alleged breaches affect only Canadian offshore seismic programs.
98. Mr. Sharp's analysis relies on a statistic called "R-squared" that calculates what proportion of the variability in GSI's revenues corresponds to variability in some other measure. The R-

¹⁴⁰ CER-02: Sharp Report, ¶ 110.

¹⁴¹ RER-02: Robert Hobbs Expert Report, ¶ 93.

¹⁴² CER-02: Sharp Report, ¶ 106.

squared that Mr. Sharp cites as justification for using global offshore rig count as the benchmark for GSI's revenues is 0.5, meaning that half of the variation in GSI's revenues does not correspond to variations in the benchmark. Even the observed coincident variation can be the result of random movements. In fact, in many years, Mr. Sharp's estimate of GSI's "normalized" revenues increase while his chosen benchmark decreases and vice-versa, as shown in Figure 7. Forecasting GSI's revenue from global offshore rig counts is clearly speculative.

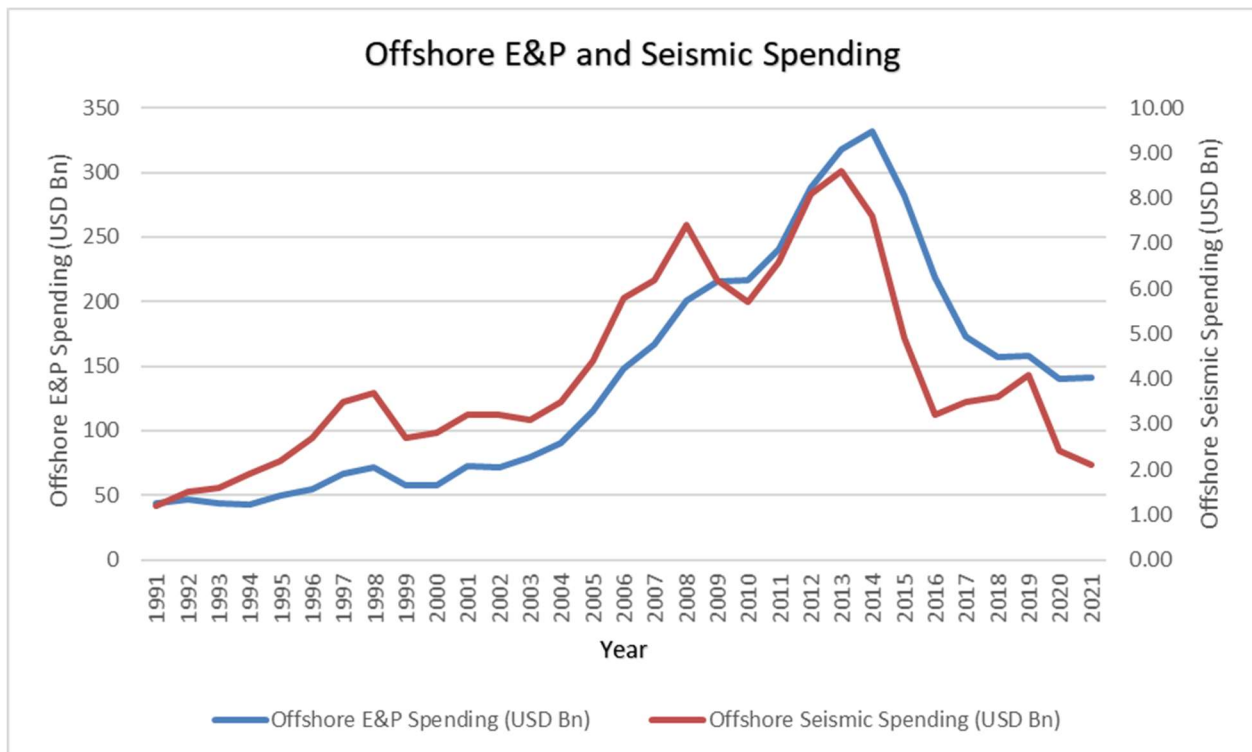


99. It is not surprising that Mr. Sharp does not cite any sources, academic or otherwise, to support his use of the R-squared concept in this way. R-squared is simply a measure that describes the strength of overall correlation between two sets of numbers. It is a tool – helpful and suggestive when applied correctly in appropriate circumstances, but uninformative and potentially misleading otherwise. It does not measure how appropriate one variable will be in predicting another – correlation is not causation, and correlation can be spurious.

¹⁴³ **BR-12:** Brattle Workpapers, Workpaper 11.

100. The R-squared can be informative when there is an *a priori* reason to believe that two sets of numbers have a relationship. As discussed above, there are reasons not to expect a relationship between GSI’s revenues and Mr. Sharp’s chosen metric. However, there is public data on the amount of spending on global offshore seismic services. It would be reasonable to anticipate that the revenue prospects for GSI would have some correlation with this measure. The Hobbs Report presents this data, an excerpt of which is shown in Figure 8 below. The figure shows that the market for offshore seismic data has collapsed in recent years. In 2017, the level of total offshore seismic spending was US\$3.5 billion. This is a steep decline compared to the US\$7.4 billion spent during 2008, the last year in which GSI made any substantial investment to acquire new data. Yet, Mr. Sharp’s analysis implies that GSI but-for normalized revenues would have almost doubled, from ██████████ in 2008 (with actual revenues of ██████████ to ██████████ million in 2017.¹⁴⁴ This shift is clearly inconsistent with trends on seismic industry revenues.

FIGURE 8: OFFSHORE SEISMIC SPENDING FROM HOBBS REPORT¹⁴⁵

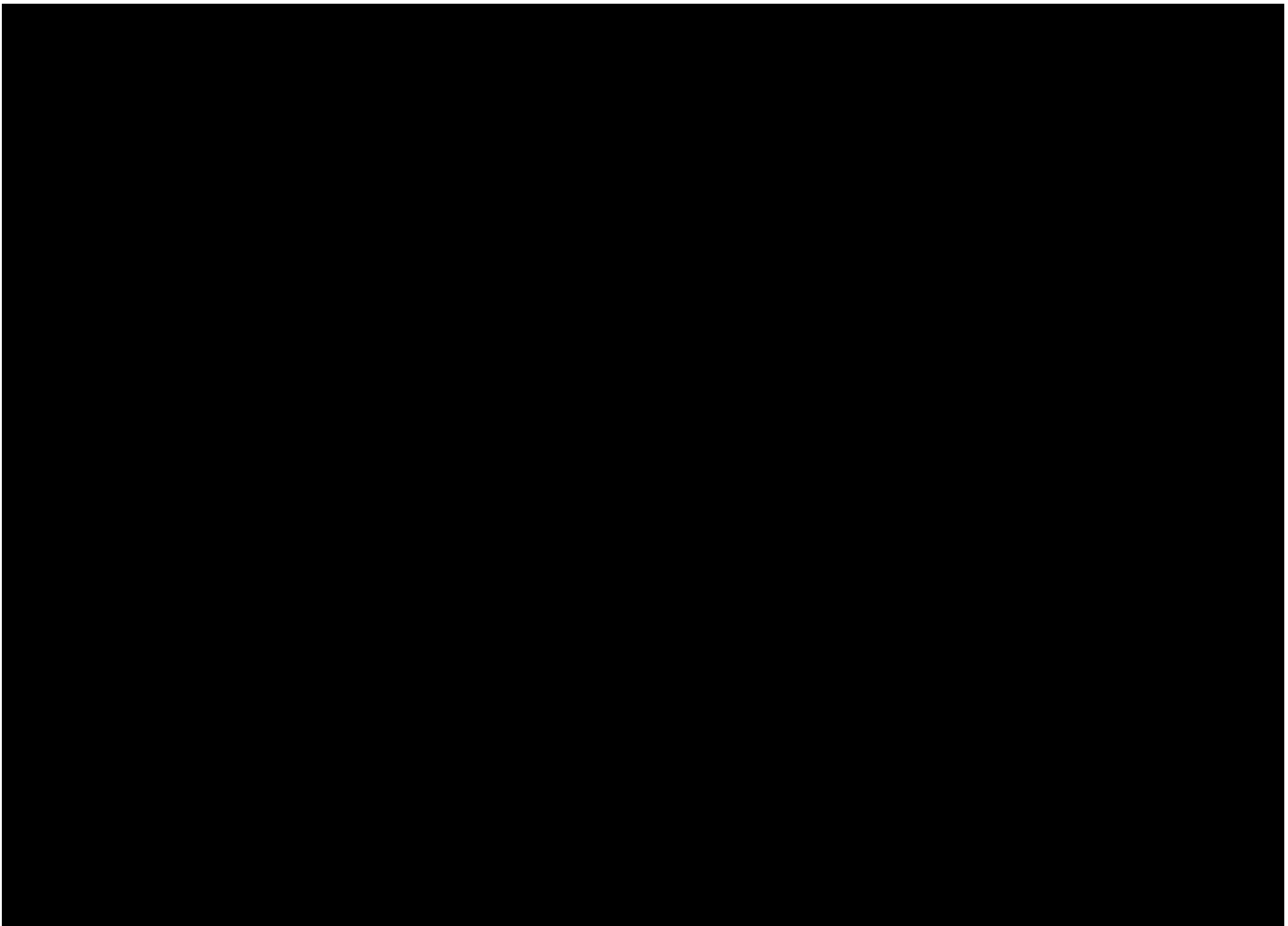


101. Since the Sharp Report’s metric is not strongly correlated with GSI’s revenues, but assumes GSI’s revenues are perfectly correlated for projecting revenues forward, Mr. Sharp’s conclusions are critically dependant on the year in which his projection begins. As Figure 9

¹⁴⁴ CER-02: Sharp Report, Schedule B2.1.

¹⁴⁵ RER-02: Robert Hobbs Expert Report, Figure 2.

demonstrates, if Mr. Sharp had begun his projection in 2008 consistent with his treatment of GSI's costs, his projection for GSI's revenues in 2017 would be less than half of the value claimed in the Sharp Report.

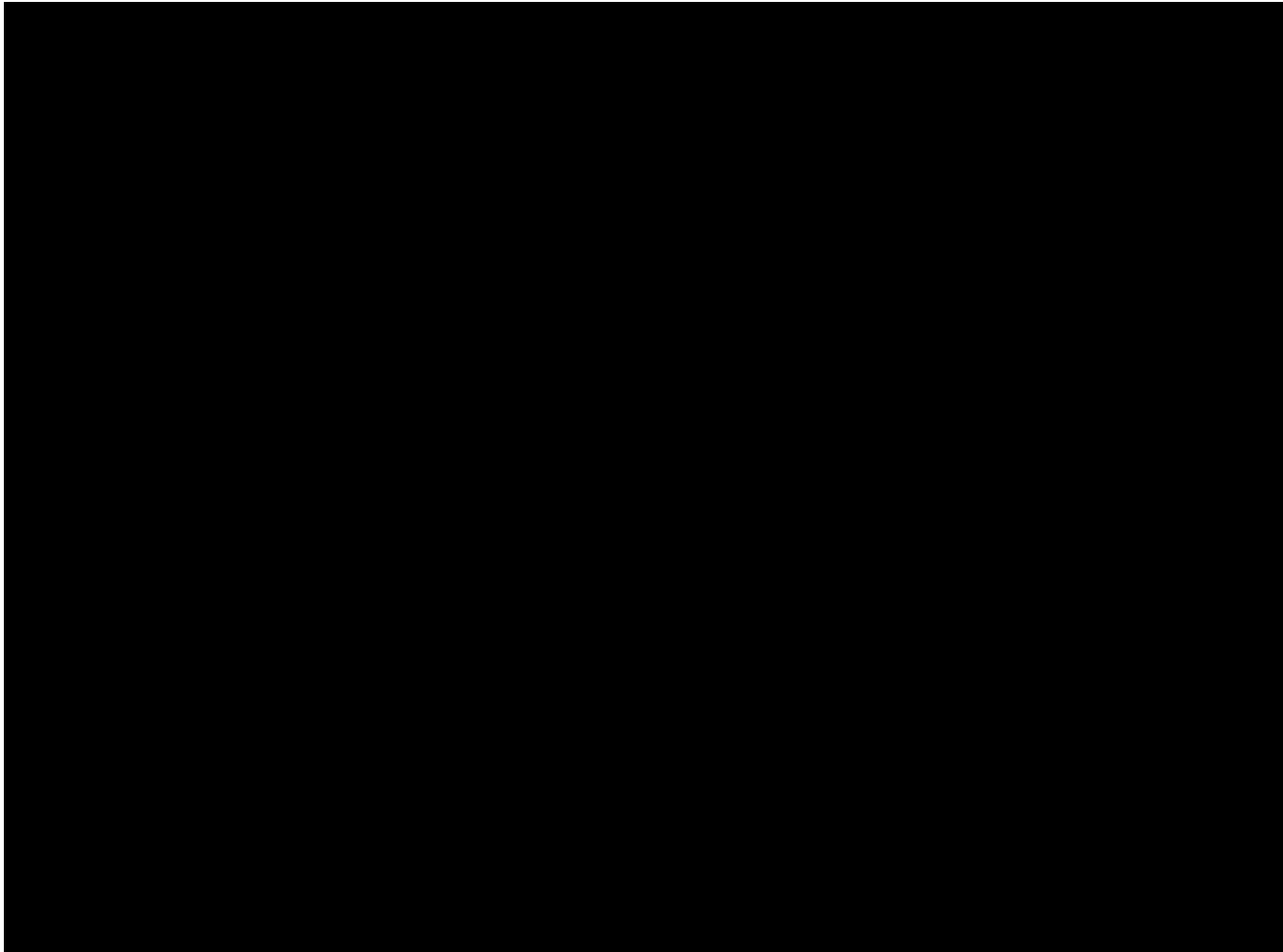


102. Figure 10 shows the forecast of Mr. Sharp's estimated 2012 normalized revenues based on the change in global rig count. It creates a striking result in the forecast period after 2012. Mr. Sharp's 2012 normalized revenues are [REDACTED]. If this assumed 2012 normalized revenue were to track the global rig count, as Mr. Sharp believes, normalized revenue would have declined to [REDACTED] million by 2017.¹⁴⁷ Yet the range of normalized revenues that Mr. Sharp assumes for his 2017 valuation is [REDACTED] million to [REDACTED] with even the lowest part of the range above the forecast suggested by global rig counts.¹⁴⁸

¹⁴⁶ **BR-12:** Brattle Workpapers, Workpaper 10.

¹⁴⁷ **CER-02:** Sharp Report, Schedule B2.1.

¹⁴⁸ **CER-02:** Sharp Report, Schedule B2.1.

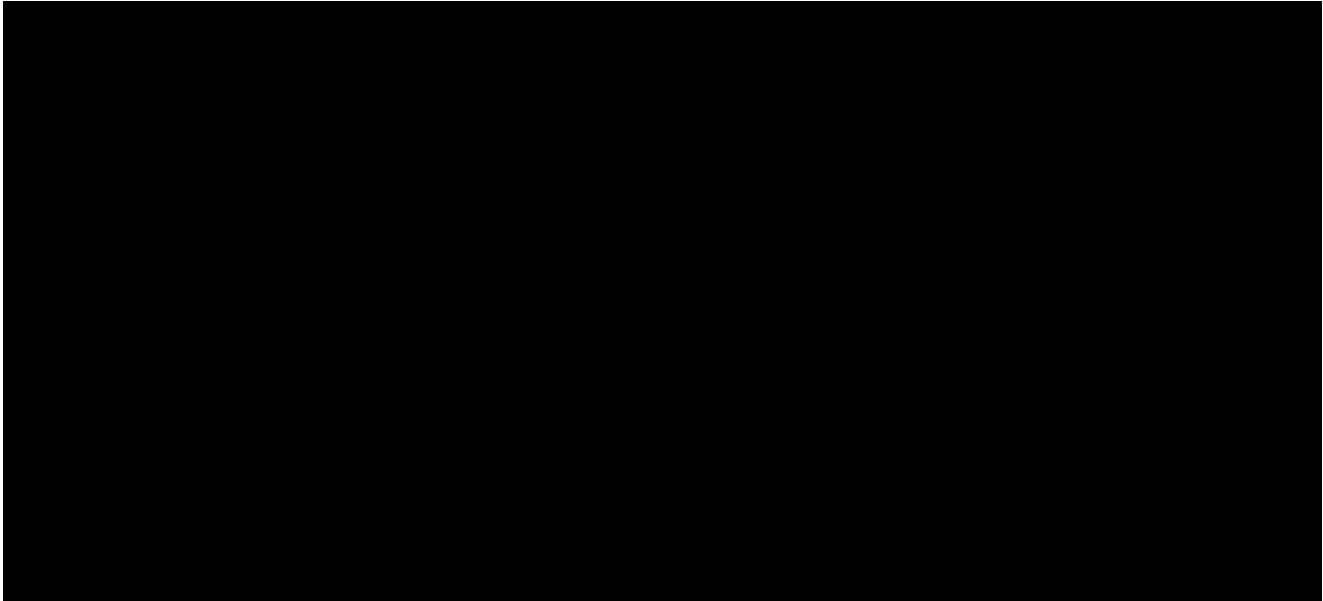


103. Finally, even if the normalized revenues and projections were reliable, the Sharp Report’s “maintainable revenue” estimates are biased upward, as can be seen in Figure 10. Although Mr. Sharp does not reveal specifically how he chose the maintainable revenues from the pattern resulting from his estimates, his selection of the appropriate range for “maintainable” revenues appears to favor the higher end of the range. In developing the low-to-high range of maintainable revenues for the November 2017 valuation date, Mr. Sharp applies a range of [REDACTED]. He does not explain the basis for selecting this range, but the logic does not appear to be consistent. Figure 11 shows Mr. Sharp’s table of “Key data points” used to select this range (we have added the arrows to this table).¹⁵⁰ The figure shows that the high end of the range [REDACTED] is consistent with the average of the five highest years of revenue [REDACTED]. However, the low end of the range [REDACTED] significantly overstates the lowest five years of revenues [REDACTED].

¹⁴⁹ **BR-12:** Brattle Workpapers, Workpaper 11. Maintainable revenue amounts are based on the amounts in the Sharp Report, then deflated at 2% per year, consistent with the Sharp Report’s terminal growth rate.

¹⁵⁰ **CER-02:** Sharp Report, Schedule B2.1.

Setting the low end of the range equal to the five lowest years of revenue – consistent with the treatment of the high end – would significantly reduce Mr. Sharp’s valuation.



2. GSI’s Revenues Are Driven by Contemporaneous Investment in Data Acquisition

104. A more reasonable approach to forecasting GSI’s revenue would have reflected the fundamental driver of revenue – investment in seismic data acquisition. In the seismic industry, investment in data acquisition generates revenue. As explained by Mr. Hobbs, the revenue captured from investments in seismic data accrue largely in a short period following the data collection. For example, public seismic data companies generally amortize their investments in multi-client seismic data acquisition over a period of 4 years, to match the typical revenue profile of multi-client studies.¹⁵¹
105. Indeed, Mr. Sharp found *that most GSI revenue was the result of data acquisition investments made within the year.*¹⁵² Thus, future revenue does not come primarily from seismic studies conducted more than 4 years prior, let alone from ones made 10 or 15 years previously that has become subject to disclosure. Rather, revenue comes from recent studies that are created by new investment. If one accepts Mr. Sharp’s characterization (not given to him by instruction), then it is difficult to show revenue allegedly lost in 2017 is the result of lost sales more than a decade earlier – it is more likely to be the result of a failure to invest in 2017 (or perhaps 2016), just prior to the alleged breaches. In any single year, revenue from data affected by the

¹⁵¹ RER-02: Robert Hobbs Expert Report, ¶ 82.

¹⁵² CER-02: Sharp Report, ¶ 59.

disclosure obligations under the Regulatory Regime – which would be at least 10 to 15 years old – would be expected to comprise only a small fraction of the total. This is in stark contrast with Mr. Sharp’s analysis, which forecasts but-for revenue in 2017 that derives almost entirely from data acquisition more than a decade before.

106. GSI’s historical data also reveal that its [REDACTED] followed [REDACTED] [REDACTED]. As Figure 12 below shows, GSI’s actual revenues generally moved [REDACTED] [REDACTED] which reflect GSI’s [REDACTED]. The R-squared between [REDACTED] – a near perfect correlation.¹⁵⁴ If, as Mr. Sharp noted, “[h]istorically, [GSI] revenues primarily consisted of licensing of data shot within the year,”¹⁵⁵ the ability to continue generating revenue required GSI to continue to invest in shooting new data. When it failed to do so in 2009 and beyond, its revenues predictably declined.

¹⁵³ CER-02: Sharp Report, Schedule D1.

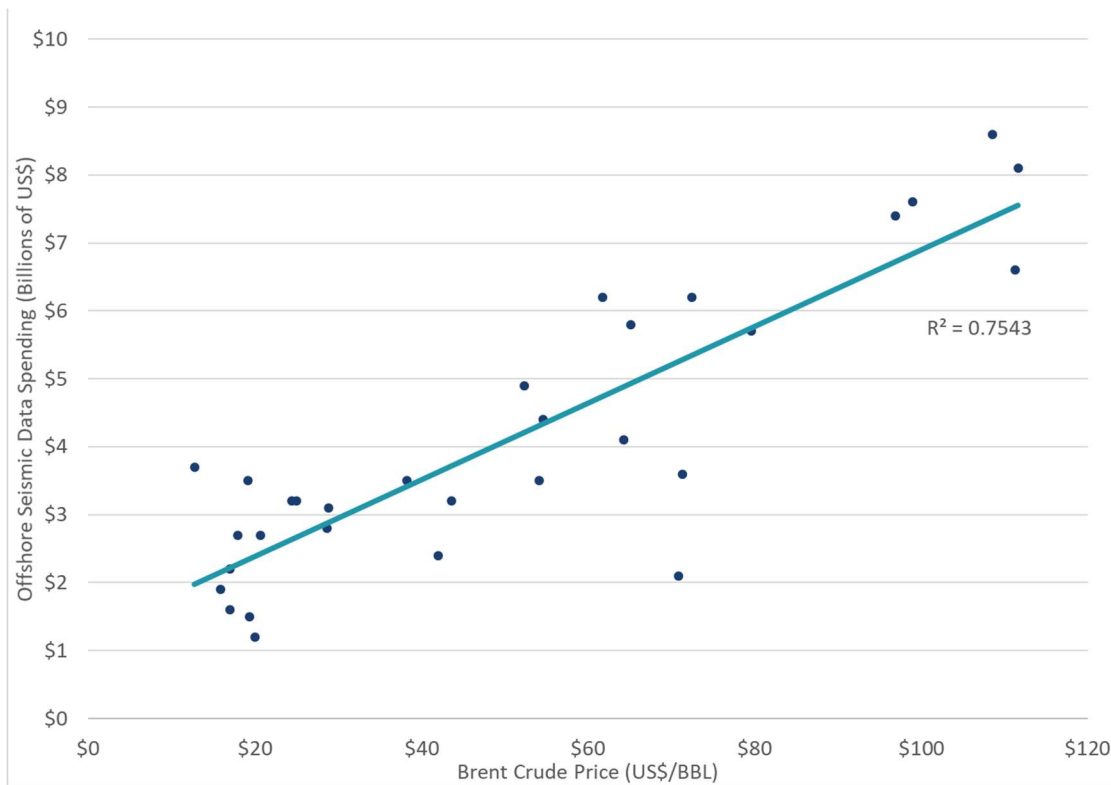
¹⁵⁴ R-squared is a measure of the extent to which changes in one data series can explain changes in another data series. As will be discussed below, the Sharp Report uses R-squared as a basis for projecting GSI’s revenues after 2012.

¹⁵⁵ CER-02: Sharp Report, ¶ 59.

¹⁵⁶ BR-12: Brattle Workpapers, Workpaper 7.

107. Companies seek new data when oil and gas prices are high. As discussed by Mr. Hobbs, commodity prices are a key consideration driving companies to invest in their data libraries. When prices are high, exploration & production companies (“E&Ps”) expand their exploration activity, increasing their seismic data purchases, as Mr. Hobbs illustrates for TGS, a global seismic data provider. Changes in year-to-year global spending to purchase offshore seismic data are explained largely by the movement in oil prices, as shown in Figure 13, which compares global offshore seismic purchases to Brent crude prices. The R-squared indicates that Brent crude prices movements explain 75% of the changes in offshore seismic data spending.

FIGURE 13: GLOBAL OFFSHORE SEISMIC DATA SPENDING VS. BRENT CRUDE PRICE (1991 TO 2021)¹⁵⁷

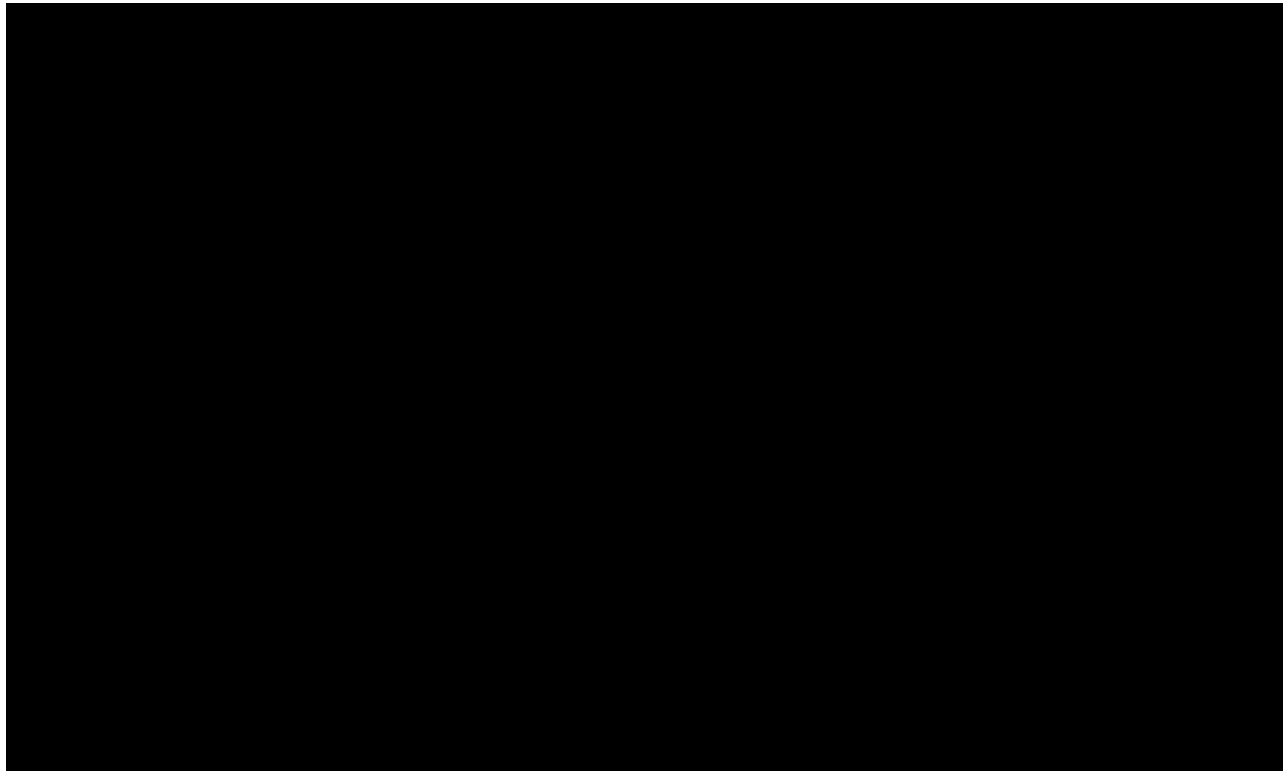


108. Historically, [REDACTED] Figure 14 presents the relationship between [REDACTED] [REDACTED] As the figure shows, [REDACTED] [REDACTED] in GSI’s year-to-year direct expenses.

¹⁵⁷ BR-12: Brattle Workpapers, Workpaper 12.

¹⁵⁸ We present data starting in 1997 because direct spending before this year was [REDACTED] We end this after 2008 because GSI [REDACTED] likely due in part to the company’s financial distress, as discussed in Section V.B.2.

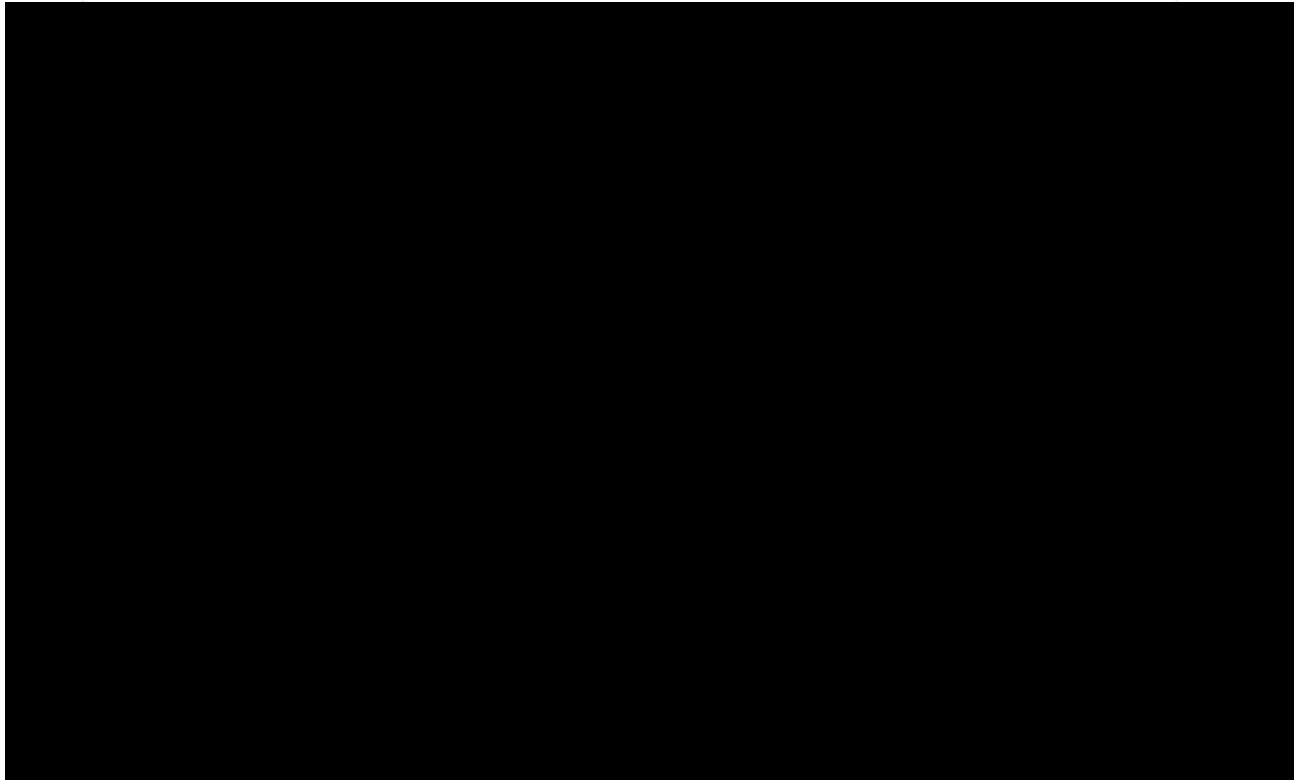
FIGURE 14: GSI DATA ACQUISITION SPENDING VS. BRENT CRUDE PRICES (1997 TO 2008)¹⁵⁹



109.



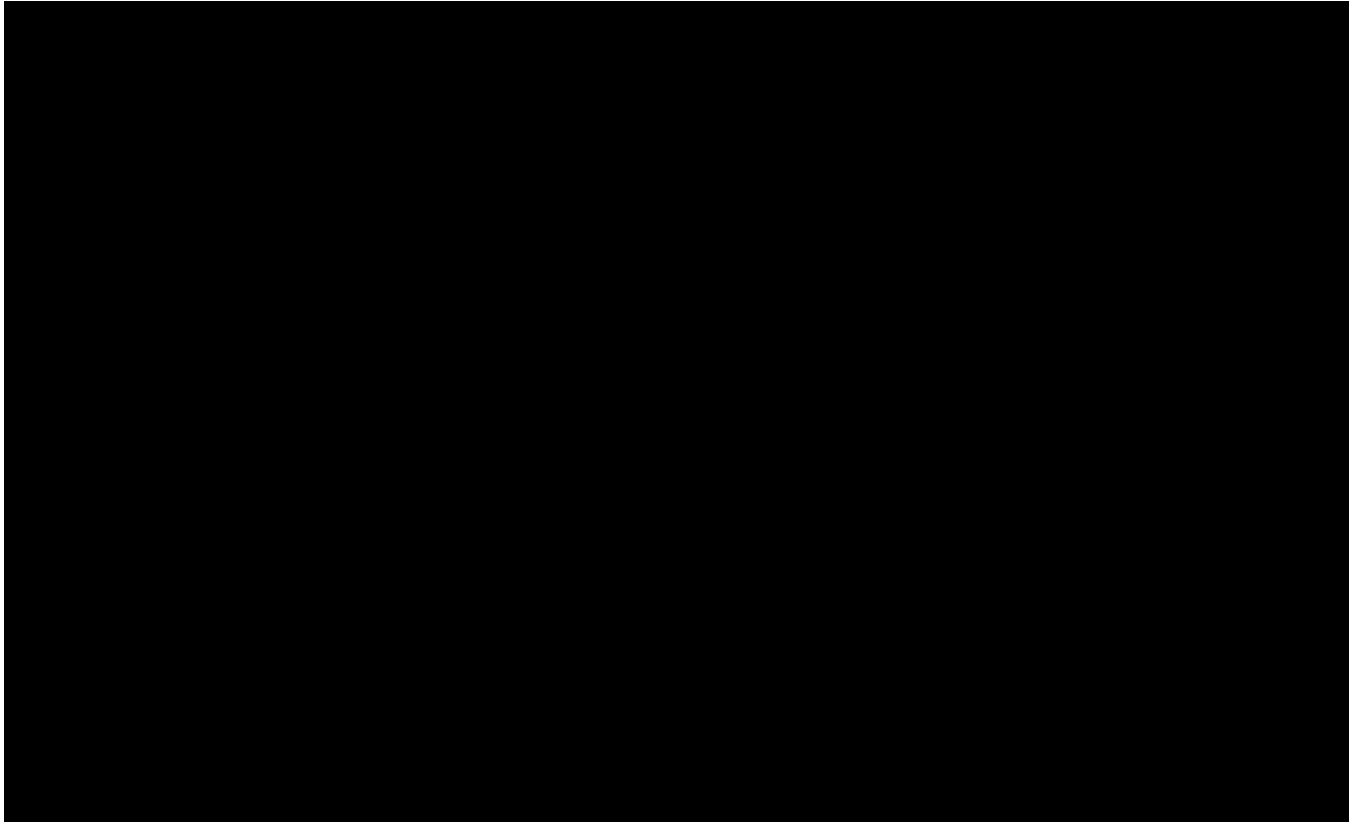
¹⁵⁹ **BR-12:** Brattle Workpapers, Workpaper 13.

FIGURE 15: GSI ACTUAL REVENUES VS. BRENT CRUDE PRICES (1997 TO 2008)¹⁶⁰

110. Thus, changes in oil prices from year to year explain demand for new seismic data, which then requires new investment in data acquisition. That investment in turn determines the actual revenue GSI earned.
111. The basic relationship disappears for Mr. Sharp's assumed but-for GSI revenues. Figure 16 shows the relationship between Mr. Sharp's assumed but-for GSI revenues and Brent crude prices. The R-squared in this relationship is [REDACTED] meaning that Mr. Sharp's estimate of but-for revenues have essentially no relationship to crude oil prices. As noted above, about 80% of Mr. Sharp's but-for revenues are simply assumed based on untested and unreasonable assumptions.¹⁶¹ The fact that Mr. Sharp's estimate of but-for revenues bears no relationship to global oil prices confirms that they are implausible.

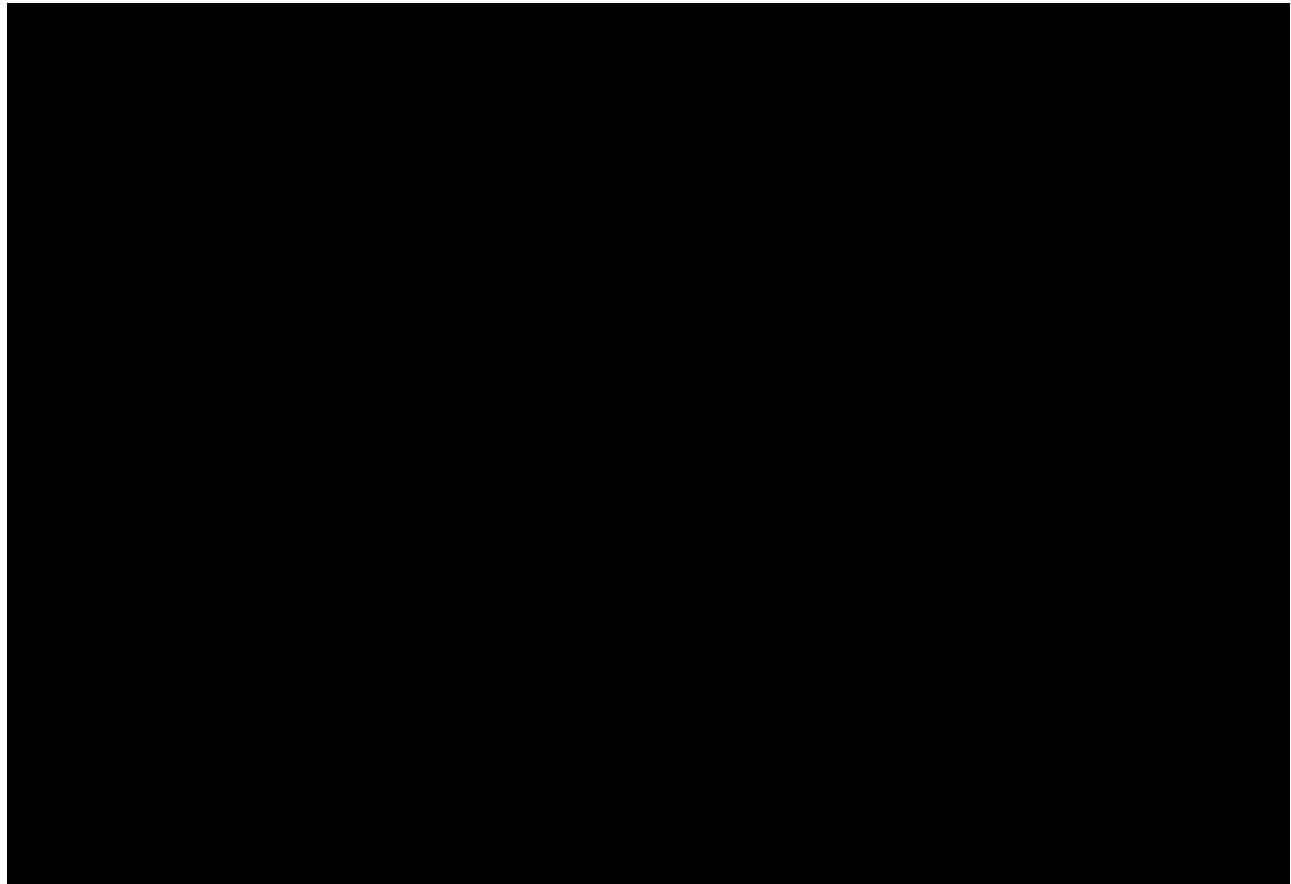
¹⁶⁰ **BR-12:** Brattle Workpapers, Workpaper 14.

¹⁶¹ See footnote 16.

FIGURE 16: SHARP GSI NORMALIZED REVENUES VS. BRENT CRUDE PRICES FOR 2000 TO 2012¹⁶²

112. Unsurprisingly, there is also [REDACTED] relationship between GSI's direct spending in a year and the but-for revenues Mr. Sharp estimates, as shown in Figure 17. The amount that GSI spends to acquire data explains [REDACTED] of the variation of Mr. Sharp's assumed but-for revenue from year to year. Oddly, Mr. Sharp's but-for revenue implies a slightly negative relationship between these two variables, suggesting that years with higher investment in data acquisition have slightly lower revenues.

¹⁶² **BR-12:** Brattle Workpapers, Workpaper 15.

FIGURE 17: SHARP GSI NORMALIZED REVENUES VS. GSI DIRECT EXPENSES FOR 2000 TO 2012¹⁶³

In short, Mr. Sharp’s estimate of GSI’s but-for revenues is inconsistent with both GSI’s historical investment in new data acquisition and the strong relationship between offshore seismic data demand and oil prices. These missing relationships confirm that Mr. Sharp’s assumed but-for revenues make no economic sense.

C. GSI’s Assumed Expenses Are Unreasonable

113. The Sharp Report considers four different categories of expenditures that GSI must incur to achieve these his estimated maintainable revenues. These are:
 - a. Direct expenses, which “include acquisition costs and other costs directly associated with the provision of marine seismic data to GSI’s customers”,¹⁶⁴

¹⁶³ **BR-12:** Brattle Workpapers, Workpaper 16.

¹⁶⁴ **CER-02:** Sharp Report, Schedule B2.2, Note 2.

- b. General & administrative (G&A) expenses, which “reflect the corporate overhead structure required to support maintainable revenues”;¹⁶⁵
 - c. Income taxes, both federal and provincial;¹⁶⁶ and
 - d. Capital expenditures.¹⁶⁷
114. Mr. Sharp deducts these expenses from maintainable revenues to calculate GSI’s maintainable cash flows at the valuation date.

1. Direct Expenses Are Based on an Assumed Relationship that Conflicts with Evidence

115. The Claimants and their counsel instructed Mr. Sharp to assume that “GSI’s average direct costs from 2000 to 2008 would be most appropriate to use in any valuation.”¹⁶⁸ In turn, he calculates each year’s direct expenses as a percentage of that year’s normalized revenues. He takes the average percentage across years and assumes that same percentage would persist from the valuation date onward.
116. Mr. Sharp tabulates GSI’s direct costs as shown in its annual financial statements. Again, on instruction from the Claimants and their counsel, Mr. Sharp assumes that GSI’s direct costs “include acquisition costs and other costs directly associated with the provision of marine seismic data,”¹⁶⁹ and that GSI would not have incurred *any* additional expense to earn the additional revenues contemplated by the revenue normalization steps above.¹⁷⁰
117. Mr. Sharp calculates direct costs as a percent of GSI’s normalized revenue in each year, which ranges from a low of ██████████ to ██████████ and averages ██████████¹⁷¹ Based on this calculation, Mr. Sharp assumes that GSI’s direct costs required to sustain his maintainable revenue estimates would equal ██████████ of those revenues from the valuation date onward.¹⁷²

¹⁶⁵ CER-02: Sharp Report, ¶ 115.

¹⁶⁶ CER-02: Sharp Report, ¶ 122.

¹⁶⁷ CER-02: Sharp Report, ¶ 121.

¹⁶⁸ CWS-06: Witness Statement of Paul Einarsson, ¶ 171(f).

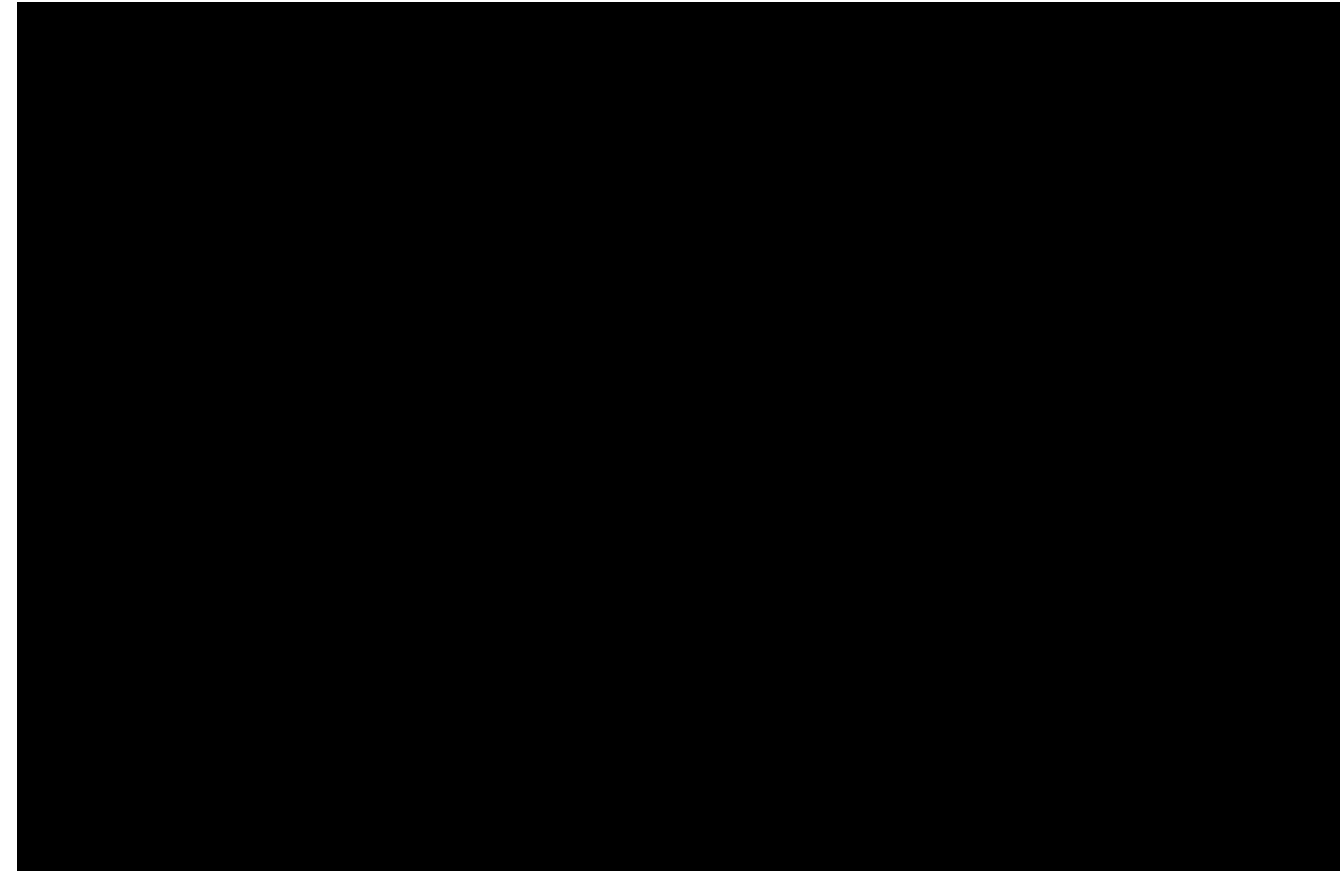
¹⁶⁹ CER-02: Sharp Report, ¶ 56; see also CWS-06: Witness Statement of Paul Einarsson, ¶ 171(d).

¹⁷⁰ CER-02: Sharp Report, ¶ 112.

¹⁷¹ CER-02: Sharp Report, Schedule B2 and B2.2.

¹⁷² CER-02: Sharp Report, ¶ 114 and Schedule B2.

118. The Sharp Report assumes a simple, stable relationship between direct expenses and normalized revenues where one clearly does not exist. By using a simple average taken across the 9-year period that he was instructed to consider, and assuming that same average will persist in perpetuity, Mr. Sharp ignores clear patterns in the actual data. Figure 18 shows that GSI's direct expenses as a share of normalized revenues increased every year from [REDACTED] [REDACTED] from [REDACTED]¹⁷³



119. Mr. Sharp does not discuss this trend, investigate its cause, or explain why it would not continue after [REDACTED] nor does he discuss why one should expect a simple, stable relationship at all when the data suggests that [REDACTED]. In fact, in Mr. Sharp's but-for world, one would not expect any stable relationship between direct costs and normalized revenue in a particular year. This is because Mr. Sharp's estimate of [REDACTED] revenue from 2000 to 2008 arises primarily from [REDACTED] associated with accesses to seismic materials from the Boards.¹⁷⁵ Given that seismic materials submitted to the Boards are available only after the confidentiality period, this data and the direct costs to acquire it were clearly incurred many

¹⁷³ CER-02: Sharp Report, Schedule B2.2.

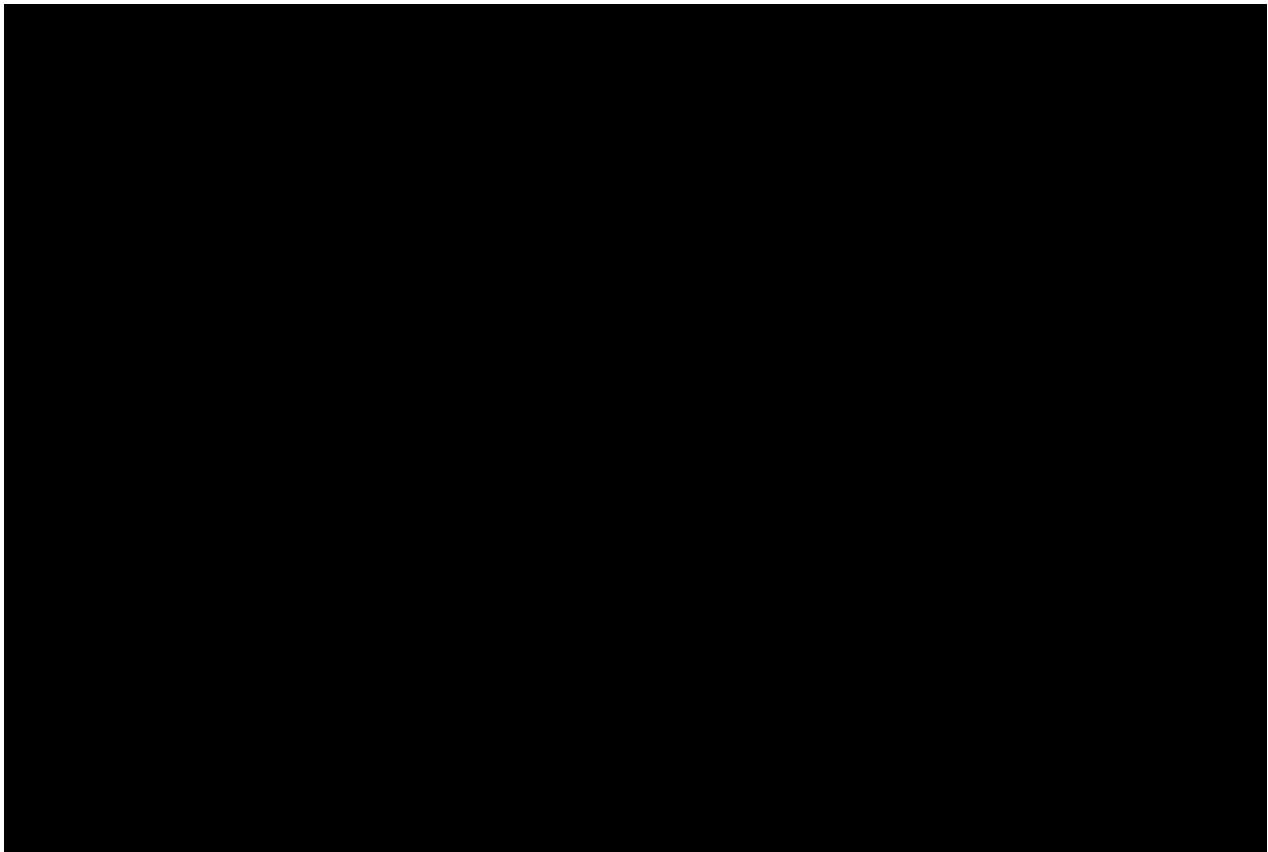
¹⁷⁴ BR-12: Brattle Workpapers, Workpaper 7.

¹⁷⁵ CER-02: Sharp Report, Schedule B2.1.

years before. Thus, Mr. Sharp's assumed link between direct expenses and his normalized revenues is not conceptually sound.

120. There was, however, a relatively simple, stable relationship between GSI's direct expenses and their *actual* revenues during this time period. Figure 19 shows that, in fact, GSI's direct expenses as a share of its actual revenue hovered around [REDACTED] and the associated R-squared is [REDACTED] – a very high correlation. In contrast, the R-squared between GSI's direct expenses and normalized revenue equals [REDACTED] a relatively [REDACTED] correlation. The lack of a relationship between Mr. Sharp's normalized revenue and direct expenses signals that his normalized revenue is inconsistent with the expenses needed to create it. In contrast, the clear relationship between *actual* revenue and *actual* expenses is consistent with Mr. Sharp's view that revenue in a year is primarily the result of investment/expenses in the same year.

FIGURE 19: DIRECT EXPENSES AS A SHARE OF ACTUAL REVENUE¹⁷⁶



121. Finally, we note that the period used by Mr. Sharp for his analysis of costs does not align with any analysis of the most appropriate period to consider. Mr. Sharp does not choose 2000 to

¹⁷⁶ BR-12: Brattle Workpapers, Workpaper 7.

2008 based on expert judgment or because it is the same period used to estimate “normalized” revenue (*it is not*), but on explicit instruction from Mr. Paul Einarsson:

*GSI’s average direct costs from 2000 to 2008 would be most appropriate to use in any valuation, as GSI was actively creating new Seismic Works during that period and the figures from subsequent years would reflect the decrease in direct costs that resulted from GSI becoming significantly less active in creating new Seismic Works transitioning to a data licensing operation only.*¹⁷⁷

122. Mr. Paul Einarsson’s statement acknowledges the critical fact that GSI failed to conduct any material new seismic data acquisition after 2008. In combination with the data illustrated in Figure 12 and Mr. Sharp’s understanding that [REDACTED] [REDACTED]⁷⁸ the available data tells a straightforward story. [REDACTED] [REDACTED]⁷⁹ The [REDACTED] likely came from seismic materials purchased from Halliburton in 1993,¹⁸⁰ much of which was collected in the 1970s and 1980s and was already public.¹⁸¹ Between 1997 and 2008, GSI commissioned the acquisition of seismic data,¹⁸² bought and upgraded two ships to carry out new surveys in Canada and abroad,¹⁸³ and generated revenue [REDACTED] [REDACTED]⁸⁴ As the industry began a downturn in 2008, [REDACTED] [REDACTED] and subsequently saw its revenues [REDACTED] as shown in Figure 20. The Alberta Court Decisions in 2017, of course, cannot be the cause of this much earlier failure of GSI to invest in new seismic data acquisition. The resulting financial distress was hastened by factors unrelated to the alleged breaches, which we describe in detail in Section VI.A.2 below.

¹⁷⁷ **CWS-06:** Witness Statement of Paul Einarsson, ¶ 171(f).

¹⁷⁸ **CER-02:** Sharp Report, ¶ 59.

¹⁷⁹ See Figure 20.

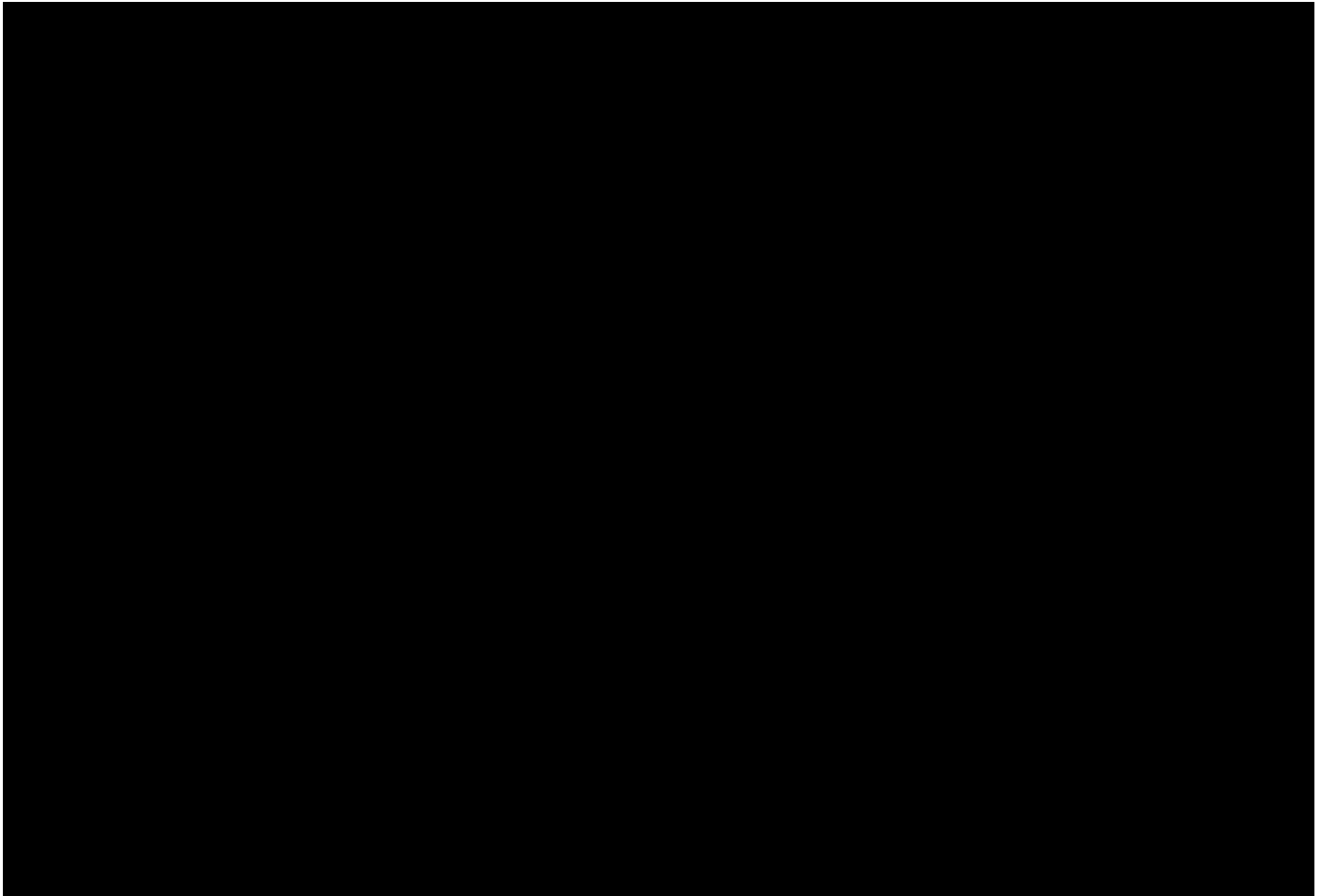
¹⁸⁰ **C-049:** Seismic Data Purchase Agreement.

¹⁸¹ **RWS-01:** Bharat Dixit Witness Statement, ¶ 36; **RWS-02:** Trevor Bennett Witness Statement, ¶ 34; **RWS-03:** Carl Makrides Witness Statement, ¶ 32.

¹⁸² See Figure 20.

¹⁸³ First seismic vessel purchased in 2001, see **C-109:** Financial statements of GSI, year ended 31 December 2001, Note 4 (Bates C-109_0142). GSI’s gross book value of vessels increased to C\$9.9 million in 2006, indicating another vessel purchase, see **C-109:** Financial statements of GSI, year ended 31 December 2006 (Bates C-109_0194).

¹⁸⁴ See paragraph 106 and Figure 20.

FIGURE 20: GSI'S HISTORICAL REVENUES AND DIRECT EXPENSES¹⁸⁵

2. GSI's General & Administrative Expenses Lack Clear Justification

123. Mr. Sharp deducts general & administrative (G&A) costs in his calculation of “maintainable” EBITDA. On instruction from the Claimants, Mr. Sharp bases his estimate of GSI’s G&A expenses on their actual dollar values from 2006 to 2008.¹⁸⁶ However, Mr. Sharp makes two adjustments. First, he reduces G&A expenses to account for his conclusion that [REDACTED]. [REDACTED] Second, Mr. Sharp adjusts for inflation between the 2006 to 2008 period and his valuation dates. This calculation is presented in Schedule B2.3 of the Sharp Report.¹⁸⁷ The results are not reliable.

¹⁸⁵ **BR-12:** Brattle Workpapers, Workpaper 7.

¹⁸⁶ **CER-02:** Sharp Report, ¶ 115.

¹⁸⁷ **CER-02:** Sharp Report, Schedule B2.3.

124. First, Mr. Sharp has not established that the G&A expenses for the 2006 to 2008 period are a reasonable proxy for G&A expenses that would be incurred in 2017 but for the alleged breaches. Mr. Sharp uses the 2006-2008 timeframe to estimate G&A as an instruction from GSI, because Mr. Paul Einarsson asserted that these years are “an appropriate starting point for determining a normalized level of indirect costs.”¹⁸⁸ According to Mr. Paul Einarsson, G&A expenses in these years “represented GSI’s highest years of indirect costs.”¹⁸⁹
125. Mr. Sharp does not question Mr. Paul Einarsson’s statement, but a simple reliability check contradicts it: [REDACTED]
[REDACTED]
[REDACTED] Given these trends, it would have been appropriate for Mr. Sharp to investigate the underlying drivers to determine the reasonable level of but-for G&A expenses to apply as of his valuation dates rather than to assume a flat amount plus inflation.
126. Second, the compensation that Mr. Sharp assumes to be embedded in the 2006 to 2008 G&A expenses is undocumented. Mr. Sharp does not cite to any documentation of the amounts paid to the Einarssons. For example, Mr. Sharp deducts assumed compensation of [REDACTED] paid to Mr. Russell Einarsson and [REDACTED] paid to Mr. Davey Einarsson.¹⁹⁴ However, these figures do not appear to be specific to the 2006 to 2008 period. Mr. Russell Einarsson’s witness statement states that he worked at GSI from 1992 to 2013 and that “I was paid approximately [REDACTED] a year for my employment with GSI.”¹⁹⁵ It would be more appropriate to deduct the actual compensation amounts, which were not identified in the Sharp Report.

¹⁸⁸ **CWS-06:** Witness Statement of Paul Einarsson, ¶ 171(g).

¹⁸⁹ **C-251:** Paul Einarsson Employment Agreement, ¶ 171(g); **CER-02:** Sharp Report, ¶ 115.

¹⁹⁰ **CER-02:** Sharp Report, Schedule D1. In 2000, G&A expenses were [REDACTED] while the G&A expenses for 2006 to 2008 ranged from [REDACTED] even before adjusting the 2000 G&A expenses upward for inflation between 2000 and 2006 to 2008.

¹⁹¹ **CER-02:** Sharp Report, Schedule D1.

¹⁹² **BR-12:** Brattle Workpapers, Workpaper 7.

¹⁹³ **BR-12:** Brattle Workpapers, Workpaper 7.

¹⁹⁴ **CER-02:** Sharp Report, Schedule B2.3, Note 3.

¹⁹⁵ **CWS-05:** Witness Statement of Russell John Einarsson, ¶ 6.

D. Mr. Sharp's Revenue and Expense Assumptions Lead to Unreasonable Margins

127. Mr. Sharp's valuation hinges on his calculation of GSI's but-for "maintainable EBITDA" that he argues GSI could sustain over the long term. Mr. Sharp estimates GSI's "Maintainable EBITDA" as his normalized but-for revenue less his estimate of direct expenses and normalized G&A expenses.¹⁹⁶ He concludes that but for the alleged breaches, GSI could have maintained an EBITDA margin (equal to maintainable EBITDA divided by maintainable revenue) of [REDACTED].¹⁹⁷ Mr. Sharp then tests the reasonableness of this [REDACTED] EBITDA margin by comparing it to the EBITDA margins from his set of nine comparable companies.¹⁹⁸
128. Figure 21 shows Mr. Sharp's comparison for the 30 November 2017 valuation date. The observed margins for these companies range from *negative* 87% to *positive* 85%.¹⁹⁹ Mr. Sharp admits that his estimated maintainable EBITDA margins for GSI are "higher than all but one" of the margins for his chosen comparables.²⁰⁰ Not only are his maintainable EBITDA margins higher than the margins generated by the remaining eight companies, they are much higher. Three of Mr. Sharp's nine comparables have *negative* EBITDA margins. For the other five companies that had positive EBITDA margins, Mr. Sharp's [REDACTED] margin for GSI is about [REDACTED] times higher.

¹⁹⁶ CER-02: Sharp Report, ¶ 80.

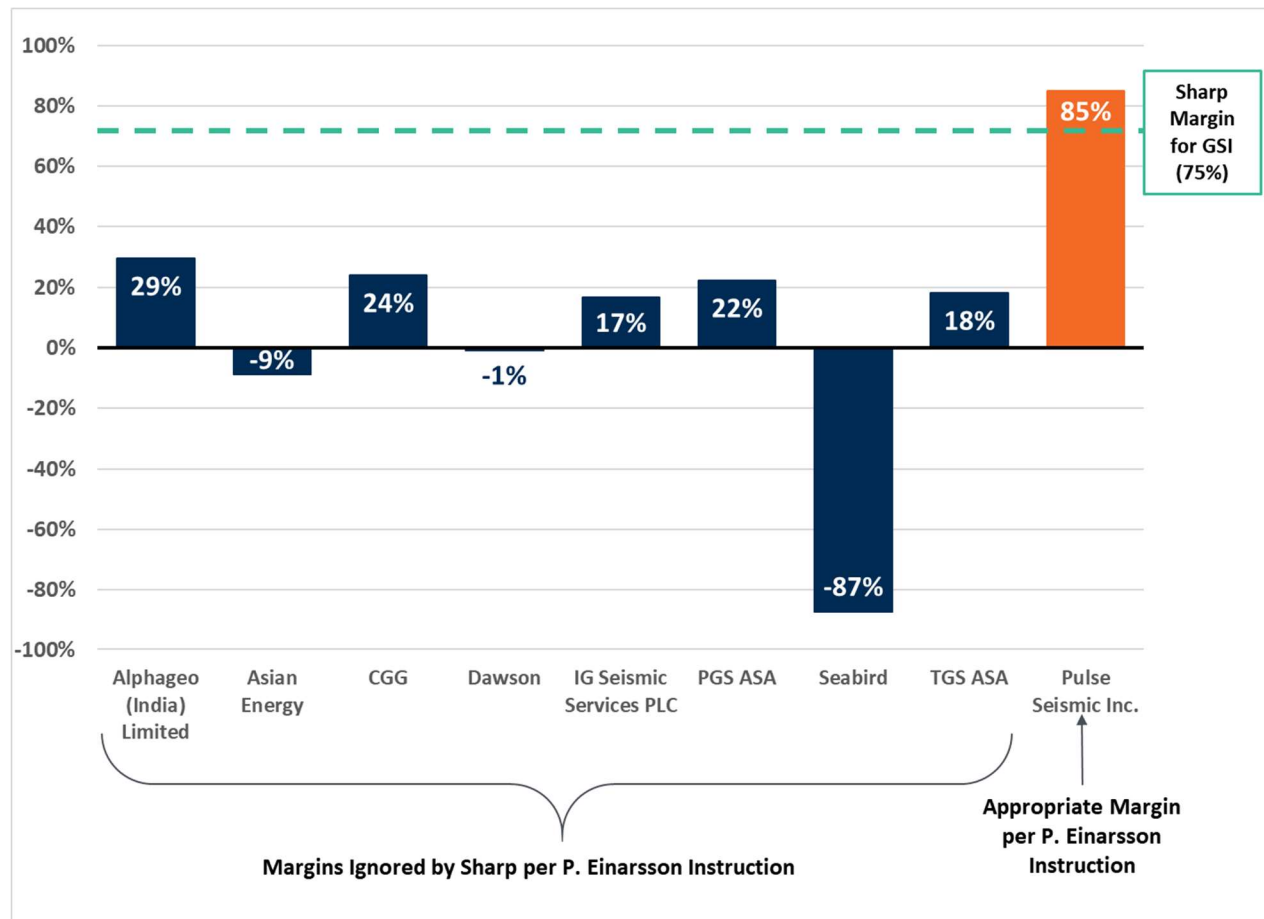
¹⁹⁷ CER-02: Sharp Report, ¶ 119.

¹⁹⁸ CER-02: Sharp Report, ¶ 119 and Schedule B4.

¹⁹⁹ CER-02: Sharp Report, Schedule B4. For the companies with negative EBITDA margins, Mr. Sharp does not calculate the margins, so we do. BR-12: Brattle Workpapers, Workpaper 17.

²⁰⁰ CER-02: Sharp Report, ¶ 119.

FIGURE 21: MAINTAINABLE EBITDA MARGINS, SHARP REPORT COMPARABLES²⁰¹



129. The only company that has a higher margin than Mr. Sharp’s but-for GSI margin is Pulse Seismic Inc.²⁰² So why is Mr. Sharp comforted that his results are reasonable? The answer, once more, is an instruction from Mr. Paul Einarsson, who instructed him that “Pulse Seismic is the most similar company to GSI in terms of its operating model, as both companies are primarily providers of non-exclusive seismic data to multiple customers.”²⁰³ Based on Mr. Paul Einarsson’s statement, Mr. Sharp concludes that it is reasonable to ignore the much lower, and sometimes negative, margins of the other eight comparables and to consider only Pulse.²⁰⁴
130. There are two problems with Mr. Sharp’s reliance on Pulse to conclude that GSI could have maintained an EBITDA margin of █████ over the long term. First, Pulse is not an offshore seismic

²⁰¹ BR-12: Brattle Workpapers, Workpaper 17.

²⁰² CER-02: Sharp Report, Schedule B4.

²⁰³ CWS-06: Witness Statement of Paul Einarsson, ¶ 171(j).

²⁰⁴ CER-02: Sharp Report, ¶ 119. The CCF model used by Mr. Sharp implies that this margin is maintained in perpetuity.

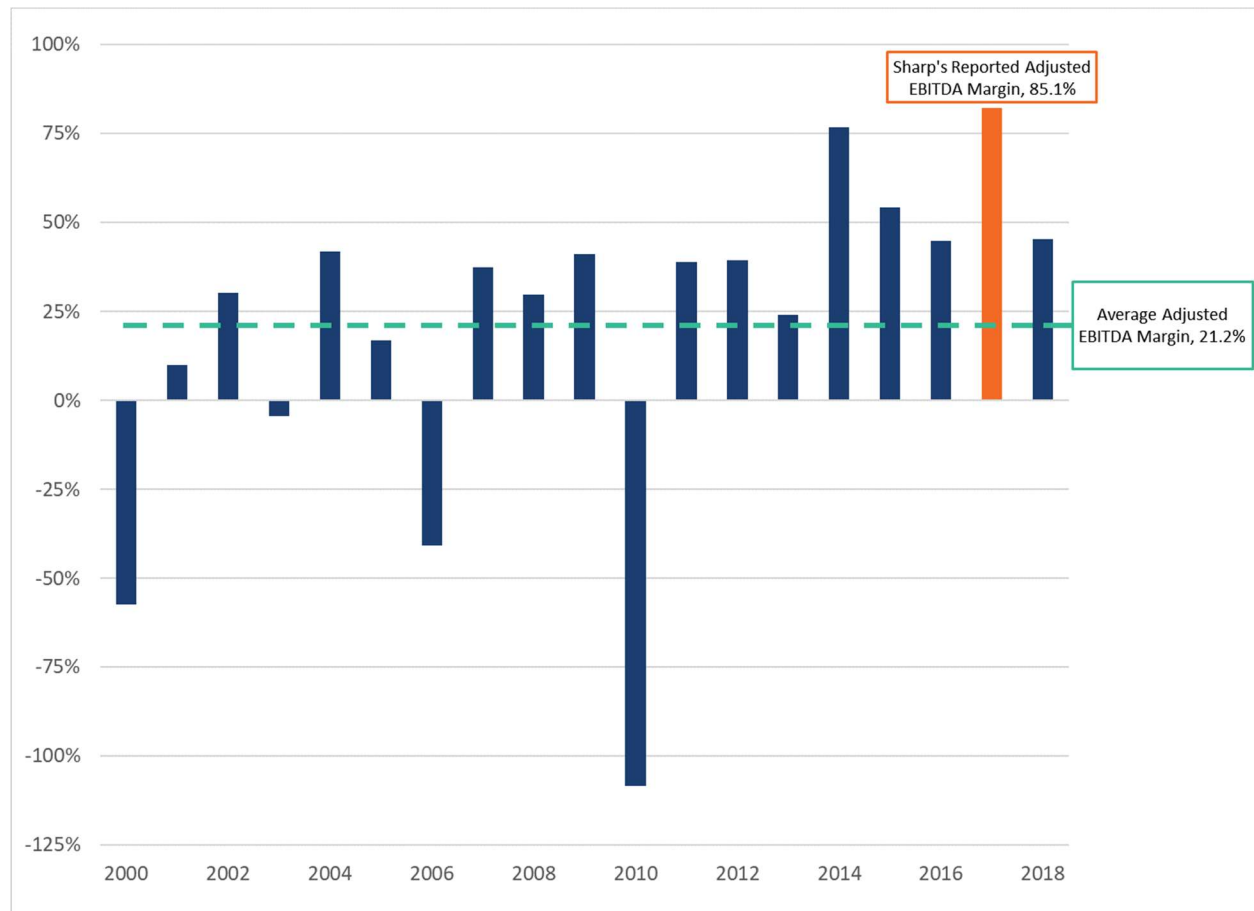
data company; it operates primarily in Canada's Western Canada Sedimentary Basin, which is onshore.²⁰⁵ As discussed by Messrs. Hobbs and Uffen, the onshore seismic market operates differently and is affected by different factors.²⁰⁶ Therefore, it might be reasonable to anticipate that margins might differ between Pulse and GSI.

131. Second, and more importantly, Pulse's "maintainable" EBITDA margins are much lower than the [REDACTED] margin that Mr. Sharp assumes GSI will maintain in perpetuity. Figure 22 charts Pulse Seismic Inc.'s EBITDA margins annually for 2000 to 2018, calculated as in the Sharp Report. Pulse Seismic Inc.'s *long-run average* EBITDA margin is about 21% – a fraction of the 85% Mr. Sharp uses for comparison.²⁰⁷

²⁰⁵ **BR-20:** Pulse Seismic, Data Library and Services.

²⁰⁶ **RER-03:** Doug Uffen Expert Report, ¶ 83; **RER-02:** Robert Hobbs Expert Report, ¶¶ 52 and 86.

²⁰⁷ **BR-12:** Brattle Workpapers, Workpaper 18; **CER-02:** Sharp Report, Schedule B4.

FIGURE 22: PULSE SEISMIC INC. ADJUSTED EBITDA MARGINS, 2000 TO 2018²⁰⁸

132. If Mr. Sharp's model reflected EBITDA margins of 21%, consistent with the long-term average margin for Pulse, this would reduce his estimate of GSI's equity value by 84%.²⁰⁹ This reduced margin is more consistent with the 2017 margins that Mr. Sharp identified for the other publicly traded companies that he examined with positive margins (22%), although it is still higher than the average margin when including all of the companies (2%).²¹⁰

²⁰⁸ BR-12: Brattle Workpapers, Workpaper 18.

²⁰⁹ BR-12: Brattle Workpapers, Workpaper 3.

²¹⁰ BR-12: Brattle Workpapers, Workpaper 17.

E. GSI's Capital Expenditures Reflect Arbitrary Assumptions

133. Mr. Sharp calculates capital expenditures (“capex”) net of an adjustment for the tax shield associated with the subsequent depreciation of those cash flows.²¹¹ He assumes that GSI would be required to incur capex equal to 9% of revenues going forward. This estimate is not based on any analysis of GSI's business, the capex requirements that would have been necessary for GSI's vessels, or any analysis of the broader industry. Rather, Mr. Sharp adopts this input at the instruction from Mr. Paul Einarsson,²¹² with no assessment of whether it is reasonable for a company that owns and operates its own vessels (what Mr. Hobbs refers to as an asset-heavy company).²¹³

F. The Source of Mr. Sharp's Income Tax Rate is Unclear

134. Mr. Sharp calculates GSI's corporate income tax rate using their 2006 to 2008 tax returns. He notes that GSI paid income taxes federally, in Alberta, and in Nova Scotia during those years, and his calculated corporate tax rate of [REDACTED]. [REDACTED] Mr. Sharp does not provide this calculation, nor any citation to the source of the data within the 209 pages of GSI tax returns used to determine this split. That said, the allocation of provincial taxes would not have a material impact on the results.

G. GSI's Maintainable Discretionary Cash Flows Are Based on Flawed Analysis of Revenues and Costs

135. Mr. Sharp calculates GSI's maintainable discretionary cash flows as maintainable revenues less required operating and overhead expenses, capital expenditures, and income taxes. Mr. Sharp

²¹¹ CER-02: Sharp Report, ¶ 120.

²¹² CER-02: Sharp Report, ¶ 121.

²¹³ RER-02: Robert Hobbs Expert Report, ¶ 49. It is necessary to estimate capex for GSI as if it owned vessels because the direct expenditures assumption used by Mr. Sharp were incurred over a period when GSI owned vessels.

²¹⁴ CER-02: Sharp Report, Schedule B1.

has implemented the calculation of maintainable discretionary cash flows correctly, but the key inputs into that calculation are incorrect and/or unsupported as discussed above.

H. Mr. Sharp's Discount Rate is Not Reliably Estimated

136. As with any DCF analysis, a critical input into the CCF method is the discount rate. Mr. Sharp uses the weighted-average cost of capital ("WACC"). However, the WACC developed by Mr. Sharp uses non-standard and arbitrary risk premia. In particular, no support is given for the [REDACTED] "company-specific premium" that he uses.²¹⁵ WACC generally is not company-specific, because it seeks to capture systematic risks common to all firms in a sector. Company-specific risks instead require careful attention to and adjustment of the forecast cash flows, to reduce them to an expected value that incorporates those risks.²¹⁶ Mr. Sharp's addition of a [REDACTED] premium obscures the fundamental failure to analyze the large number of risks facing GSI and to reduce the cash flows to reflect them. The risks identified by Mr. Sharp include:²¹⁷
- a. The risk that exploration moves away from Canadian offshore markets to other geographic areas, forcing GSI to shift into new markets, which Mr. Sharp notes that GSI had started to do (although it had experienced significant losses in one of its attempts to do so in the Falkland Islands, as discussed in paragraph 165 below).
 - b. The risk that GSI would not maintain a positive reputation with customers (a risk that already had an unfavorable outcome even before the alleged breaches, as discussed in paragraph 167 below).
 - c. Risks and uncertainty related to achieving Mr. Sharp's assumed maintainable revenues, gross margins, G&A levels, and capital expenditure requirements.
137. Indeed, corporate finance textbooks used in business schools around the world warn against using such fudge factors in the discount rate to account for company-specific risks rather than modelling their effect on cash flows.²¹⁸ There is no reason to expect that the addition of [REDACTED]

²¹⁵ CER-02: Sharp Report, Appendix ¶¶ 38-40 and Schedule B3.

²¹⁶ BR-21: Richard A. Brealey, Stewart C. Myers, and Franklin Allen, "Principles of Corporate Finance," 10th edition McGraw-Hill/Irwin, 2010, p. 232.

²¹⁷ CER-02: Sharp Report, Appendix ¶ 39.

²¹⁸ BR-21: Richard A. Brealey, Stewart C. Myers, and Franklin Allen, "Principles of Corporate Finance," 10th edition McGraw-Hill/Irwin, 2010, p. 232.

█ to the cost of equity properly account for these fundamental risks identified by Mr. Sharp.²¹⁹

138. Separately, Mr. Sharp estimates the WACC for GSI assuming that the company would have a debt rating of BBB. According to Mr. Sharp, “[t]his rating was selected as being investment grade and in the range of ratings for those companies considered in our comparables analysis.”²²⁰ However, Mr. Sharp has presented no analysis of credit ratings to support this conclusion. Indeed, Mr. Sharp lists the credit ratings for all of his comparables as “n/a,” with the exception of one that is listed as “NR” (which typically refers to “Not Rated”) for his November 2017 WACC calculation.²²¹
139. Even if a BBB rating was reasonable for the comparables, it would not be reasonable for GSI given that it was not a going concern (as we discuss later). But some of his comparable did in fact have ratings around Mr. Sharp’s valuation date, and those ratings were far worse than BBB. CGG had a credit rating of “D” (far lower than BBB) at the valuation date, because it was in default on its debt.²²² PGS was rated “CCC+.”²²³ A third comparable, IG Seismic Services Plc (“IGSS”), was rated by Moody’s until the credit rating organization withdrew its rating on 27 October 2017, just before Mr. Sharp’s valuation date. At the time of withdrawal, the IGSS rating was CCC+.²²⁴ Thus, all three had credit ratings far worse than his assumed BBB rating for GSI.
140. The impact of these ratings differences on the cost of debt is substantial. As of 1 January 2018, shortly after Mr. Sharp’s 2017 valuation date, credit spreads to compensate for default risk were 1.27% for bonds rated BBB, but 8.64% and 18.6% for bonds rated CCC and D, respectively (the ratings of Mr. Sharp’s assumed comparables).²²⁵ By assuming a higher-quality credit rating for GSI, Mr. Sharp understates the cost of debt used in his WACC and overstates the resulting valuation. Given that debt accounts for 40% of the total capital,²²⁶ correcting Mr. Sharp’s debt cost alone would lead to a substantial reduction in his valuation.

²¹⁹ CER-02: Sharp Report, ¶¶ 38–40.

²²⁰ CER-02: Sharp Report, Appendix ¶ 30.

²²¹ CER-02: Sharp Report, Schedule B3.

²²² BR-22: S&P Global Ratings, CGG Outlook, dated 7 March 2018.

²²³ BR-23: S&P Global Ratings, PGS Outlook, dated 8 May 2018.

²²⁴ BR-24: Moody's Investors Service, "Moody's withdraws IGSS's rating for business reasons", dated 27 October 2017, p. 3. Moody’s uses a slightly different rating nomenclature. IGSS was rated Caa1 by Moody’s, which is recognized as the equivalent of a CCC+ rating by S&P as illustrated by the National Association of Insurance Commissioners (“NAIC”) table that maps ratings across agencies. BR-25: NAIC Generic Rating Symbol Mapping.

²²⁵ BR-26: Credit Spreads by Rating from NYU Professor Aswath Damodaran, tab “Default Spreads”.

²²⁶ CER-02: Sharp Report, Schedule B3.

141. For his June 2022 valuation date, Mr. Sharp again assumes a credit rating of BBB for GSI. At this date, Mr. Sharp reports credit ratings for only two of the companies he uses to estimate the WACC (CGG and PGS), and both had “CCC+” credit ratings.²²⁷ Again, by using an unsupported, higher-quality credit rating of BBB, Mr. Sharp understates the cost of debt, leading to an overstated valuation that would likely be substantial.

I. The CCF Method Is Unreliable to Value GSI

142. Once Mr. Sharp estimates GSI’s maintainable discretionary cash flows at the valuation date, he applies the CCF method to value the company. The CCF assumes that these cash flows persist in perpetuity and grow at a constant annual rate. Mathematically, the CCF divides the annual cash flow by the discount rate minus the growth rate – the standard formula for a growing perpetuity. Mr. Sharp assumes a 2% constant annual growth rate equal to his estimate of future inflation,²²⁸ and he applies the CCF method to his high and low estimates of GSI maintainable cash flows (which we discuss are unreasonable in Section V.VI.B) to get high and low estimates for GSI’s enterprise value.
143. The Sharp Report admits that a DCF approach could not be performed: GSI “did not have multi-year forecasts that contemplated the But-for Scenario at the Valuation Dates which would be required to perform a discounted cash flow method.”²²⁹ The task of developing multi-year forecasts often falls to the quantum expert. What the admission implies is that Mr. Sharp was unable to produce them. However, Mr. Sharp’s CCF approach is, in fact, a DCF with multi-year forecasts that contemplates a but-for scenario at the valuation date. It is just that his forecast mechanically follows from a particular assumption about future cash flows imposed – namely, that a particular level of cash flow would continue into perpetuity and grow at a fixed rate.
144. The same detailed assumptions that would normally be used to forecast cash flows over the long-term in a standard DCF analysis remain important in the CCF approach. The difference is that in a CCF method, those assumptions are embedded into the assumed constant annual growth rate applied in the model. Without considering the factors that drive the future positive or negative changes in cash flows (the same factors Mr. Sharp says were not present to conduct a DCF of GSI), it is not possible to estimate a reliable perpetual growth rate for the CCF. Moreover, given that the industry has been volatile, as shown by seismic industry revenues

²²⁷ CER-02: Sharp Report, Schedule C3.

²²⁸ CER-02: Sharp Report, ¶ 125.

²²⁹ CER-02: Sharp Report, ¶ 2.2.

presented by Mr. Hobbs (and shown in Figure 8 above), the use of a fixed assumed growth rate may not be reasonable. Similarly, the use of a fixed growth rate (and perhaps any positive growth rate) for an industry facing new government policies related to climate change and the reduction in use of hydrocarbons may be inappropriate. In short, Mr. Sharp's CCF calculation does nothing to overcome the obstacles to a proper DCF model, and it is not meaningful as a but-for value of GSI.

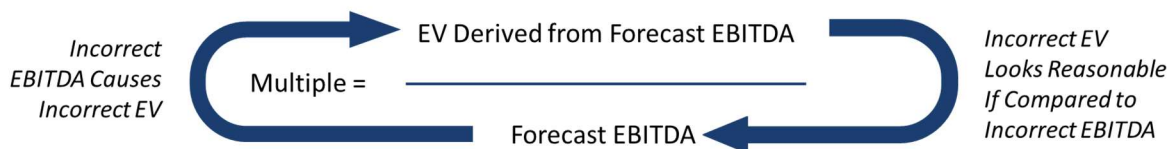
J. Mr. Sharp's Validation Analysis Is Circular

145. After estimating the enterprise value of GSI, Mr. Sharp tests the reasonableness of his conclusions using market valuations of public companies. To perform this analysis, Mr. Sharp converts his estimated EV for GSI into an EV/EBITDA valuation multiple and compares it to those for a set of comparables.²³⁰ Mr. Sharp finds that the multiple implied by his valuation of GSI is consistent with observed market multiples and concludes that his valuation is reasonable.²³¹ That conclusion is flawed for two primary reasons.
146. First, GSI as it existed immediately prior to the alleged expropriation is not comparable to the companies that Mr. Sharp selected. The comparables were going concerns. However, GSI ceased to be a going concern long before the valuation date. As we discuss in V.A many years before the valuation dates used by Mr. Sharp, GSI had ceased to invest in new data, laid off nearly all of its employees, divested the assets necessary to collect and process data, and shifted its focus from collecting and licensing data to pursuing litigation.
147. Second, the multiples that Mr. Sharp derives from his CCF analysis are inherently circular, because Mr. Sharp is estimating both GSI's but-for EBITDA and EV simultaneously, as shown in Figure 23. Mr. Sharp's forecast of EBITDA (the denominator of the multiple) is the primary determinant of his estimated EV. He is then comparing his resulting EV to the forecast EBITDA from which it was derived. As a result, the multiple derived from his valuation of GSI will appear reasonable even when the valuation itself is demonstrably incorrect.

²³⁰ CER-02: Sharp Report, ¶¶ 133–136.

²³¹ CER-02: Sharp Report, ¶ 133.

FIGURE 23: CAUSE OF THE CIRCULARITY IN THE GSI EV/EBITDA MULTIPLE



148. This problem can be illustrated with a simple example, shown in Table 1. Imagine that the true enterprise value of an asset that generates \$100 in EBITDA is \$1,000. However, the valuator knows neither the EBITDA nor the true enterprise value. If the valuator incorrectly forecasts an EBITDA that is too low (\$10) or too high (\$1,000), this would be expected to lead to a misstated EV. For example, if forecast EBITDA is overstated at \$500 rather than the true EBITDA of \$100, the resulting EV could easily be \$5,000 rather than the true value of \$1,000. Despite overstating the EBITDA, and therefore the EV, by a factor of five, the EV/EBITDA multiple is the same as would be implied by the true EBITDA and value. The same is true if forecast EBITDA and the resulting EV were similarly understated. The comparables multiple would incorrectly confirm either result as reasonable. Thus, because both EBITDA and EV are unknown and must be estimated together, the multiple is circular, and even a significantly overstated or understated valuation could still imply a reasonable multiple. As a result, Mr. Sharp’s verification exercise is meaningless.

TABLE 1: CIRCULARITY ILLUSTRATION²³²

		Understated	True	Overstated
Forecast EBITDA	[1]	\$50	\$100	\$500
Implied EV given EBITDA forecast	[2]	\$500	\$1,000	\$5,000
EV/EBITDA multiple	[2]/[1]	10x	10x	10x

K. Mr. Sharp Fails to Analyze the Actual Value of GSI, Which Is Necessary to Estimate Damages

149. To calculate damages, it is necessary to deduct the actual FMV of GSI’s equity as of the valuation date from the but-for value. Mr. Sharp states that “[w]e understand that the Disclosures and the subsequent Canadian Court decisions have had the effect of decreasing the fair market value of GSI at the Valuation Dates to \$nil.”²³³ Given the assumption that the actual

²³² BR-12: Brattle Workpapers, Workpaper 1.

²³³ CER-02: Sharp Report, ¶ 71.

scenario value is zero, the Claimants assert that damages are equal to GSI's but-for value. Of course, if GSI retains any value in the actual world, damages would be lower. However, no analysis of GSI's actual value was performed by Mr. Sharp or the Claimants. Neither does Mr. Sharp explain how the apparent demise of GSI's separate business of processing or reprocessing data for third parties (*i.e.*, which generated revenue by providing services, not licensing GSI data) was caused by the alleged breaches.²³⁴

VI. GSI's Actual Value at 30 November 2017

150. We have been asked to estimate damages under the assumption that the Respondent breached the provisions of NAFTA as the Claimants allege as of 30 November 2017. The Claimants allege breaches of two provisions. First, under NAFTA Article 1110, Claimants argue that the Alberta Court Decisions resulted in an uncompensated expropriation of GSI's business.²³⁵ Second, under NAFTA Article 1106, the Claimants argue that the Alberta Court Decisions enforced a performance requirement to transfer proprietary information to third parties, again destroying GSI's business.²³⁶ GSI alleges that the quantum claimed is the same for both breaches.²³⁷
151. Claimants argue that damages in the event of expropriation should be equal to fair market value immediately before the expropriation, citing to NAFTA Article 1110(2):²³⁸

Compensation shall be equivalent to the fair market value of the expropriated investment immediately before the expropriation took place ("date of expropriation"), and shall not reflect any change in value occurring because the intended expropriation had become known earlier. Valuation criteria shall include

²³⁴ **C-126:** Davey Einarsson, *A Life of Adventure* (Calgary: Theophania Publishing, 2015). Mr. Einarsson states that: "In order to better process our [Old Halliburton] data, we bought Precision Seismic Processing in 1999, a data center in Canada, so that we could take care of the data without having to pay someone else to process and reprocess it. We also process others' data. In fact, about 60 percent of the data processing we do at that center is data we are paid to process as a contract for others. This is just another way to diversify our revenue and expand our services."

²³⁵ Claimants' Memorial, § IV.A.

²³⁶ Claimants' Memorial, § IV.B and ¶ 481.

²³⁷ Claimants' Memorial, ¶¶ 488–489.

²³⁸ Claimants' Memorial, ¶ 475.

going concern value, asset value including declared tax value of tangible property, and other criteria, as appropriate, to determine fair market value.

152. We understand that the Respondent argues that there was no expropriation. However, if this Tribunal concludes that an expropriation has occurred, we are instructed to use this standard for estimating compensation.
153. We understand that NAFTA does not contain similar guidance for the calculation of compensation in the event of a breach of Article 1106. The Claimants argue that the damages from the alleged breach of Article 1106 are the same as those from the alleged breach of Article 1110.²³⁹

A. GSI Was Not a Going Concern Immediately Before the Alleged Expropriation

154. The Claimants explain that, under NAFTA, a relevant consideration in assessing the “fair market value of the expropriated investment immediately before the expropriation took place” is the “going concern value” of a business.²⁴⁰
155. Mr. Sharp accepts that GSI was not a going concern as of his 30 November 2017 valuation date. Specifically, he states that “[w]e understand that the Disclosures and the subsequent Canadian Court decisions have had the effect of decreasing the fair market value of GSI at the Valuation Dates to \$nil.”²⁴¹ However, Mr. Sharp argues that “[b]ased on our analysis and the assumptions provided to us, in the But-for Scenario, GSI would have been a going concern.”²⁴² Mr. Sharp recognizes that the assumption that GSI was a going concern is essential to his but-for value of GSI.²⁴³ We explain that GSI was not a going concern immediately before (and even years before, as we discuss below) the alleged breaches, and thus should not be valued as a going concern in the case of expropriation resulting from the Alberta Court Decisions.

²³⁹ Claimants' Memorial, ¶¶ 484, 489–490 and 498.

²⁴⁰ October 10, 2018 Notice of Intent to Submit a Claim to Arbitration Under NAFTA Chapter Eleven, ¶ 126, NAFTA Article 1110(2).

²⁴¹ CER-02: Sharp Report, ¶ 71.

²⁴² CER-02: Sharp Report, ¶ 2.1.

²⁴³ CER-02: Sharp Report, ¶ 75.

1. Definition of “Going Concern”

156. The concept of going concern can have different definitions. Accountants prepare financial statements for organizations on either a going concern basis or a liquidation basis. The International Financial Reporting Standards (“IFRS”) Foundation, which was established to develop high quality, understandable, enforceable, and globally accepted accounting and disclosure standards that underlie IFRS, describes the concept of a going concern based on International Accounting Standard 1:

*The Standard defines going concern by explaining that financial statements are prepared on a going concern basis unless management either intends to liquidate the entity or to cease trading, or has no realistic alternative but to do so.*²⁴⁴

157. A company that faced significant financial constraints, which limited its ability to continue operations or caused it to cease operations voluntarily, would not be considered a going concern from an accounting standpoint.
158. The Legal Framework for the Treatment of Foreign Investment published by The World Bank Group also defines going concern with a focus on the state of an entity’s business. The World Bank definition of a going concern is:

*an enterprise consisting of income-producing assets and already in existence for a sufficient period of time to generate the data necessary for proving its profitability and the calculation, with reasonable certainty, of its income in future years (on the assumption that the taking did not occur).*²⁴⁵

159. In applying the compensation standard for an expropriation, the focus is on the state of GSI’s business immediately before the alleged breaches.

²⁴⁴ **BR-27:** IFRS, "Going concern - a focus on disclosure," dated January 2021, p. 1.

²⁴⁵ **BR-6:** World Bank, Legal Framework for The Treatment of Foreign Investment Volume II, dated 25 September 1992, ¶ 42, p. 26.

2. GSI Ceased to Be a Going Concern Well Before 30 November 2017

160. The decline of GSI's business started long before 30 November 2017, and it ceased being a going concern by the end of 2012. There were several causes.
161. **GSI was facing a crisis in 2001.** In a lawsuit between GSI and the vendor managing GSI's seismic vessels and assisting in their operation,²⁴⁶ there was discussion of GSI's financial position. The discussion highlighted that GSI was facing a "crisis" due to "serious cashflow" issues, which caused the company to cut back on data acquisition (i.e., investment to earn future revenue):

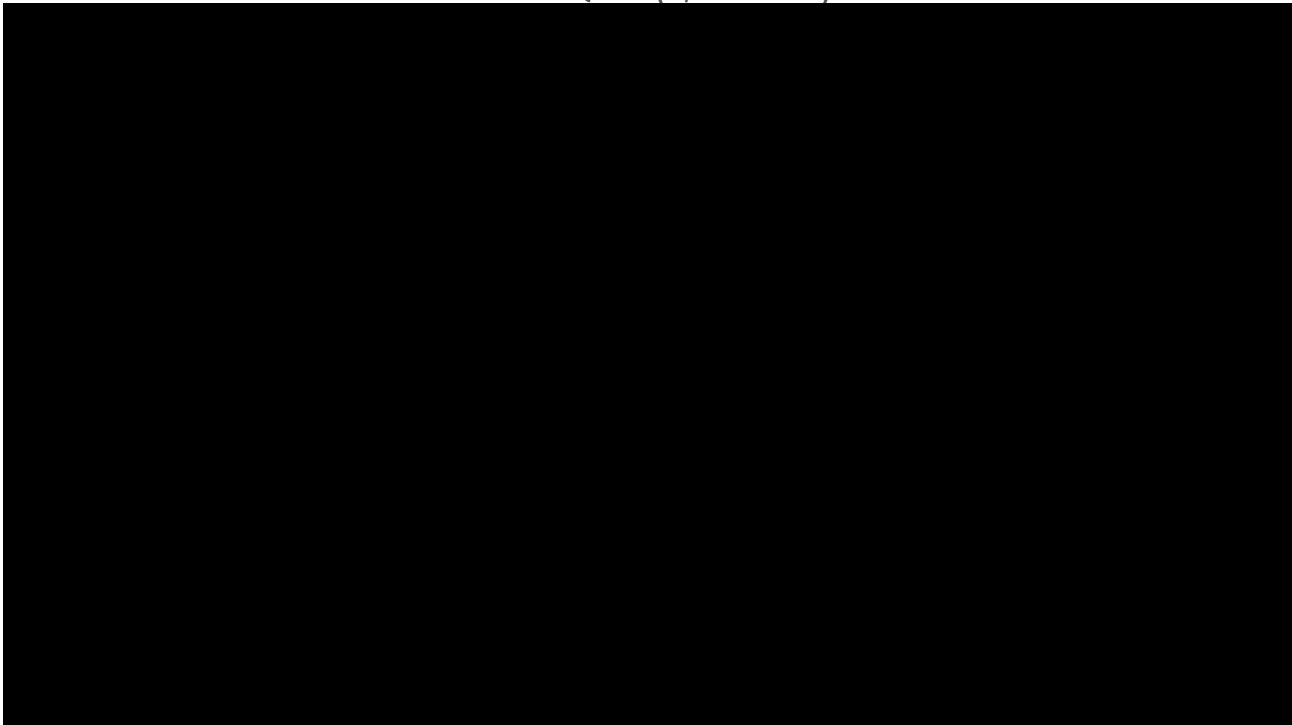
In the fall of 2001, GSI's controller Wayne Lam was expressing concerns about GSI's serious cashflow problems (he called it a "crisis"), that stemmed from the large capital expenditures on the East Coast marine operation, and operating expenses (that he believed were higher than necessary), coupled with the uncertain revenue stream from speculative data collection. Conservation of cash had led to a shutdown in marine operations in August 2001.²⁴⁷

162. **GSI's accounts show [REDACTED] in the years that followed the 2001 crisis.** Figure 24 shows GSI's book value of equity and debt from the end of 2001 through the end of 2011, [REDACTED]. As this figure shows, GSI was [REDACTED] at virtually all times during this period and ended with [REDACTED]. While GSI had [REDACTED] at the end of [REDACTED] this was [REDACTED] through the payment of [REDACTED] to the company's officers and directors.²⁴⁸ In most other years, GSI had [REDACTED].

²⁴⁶ **BR-2:** Geophysical Service Incorporated v. Sable Mary Seismic Incorporated and Mathew Kimball, 2009 NSSC 404, dated 31 December 2009, ¶ 1.

²⁴⁷ **BR-2:** Geophysical Service Incorporated v. Sable Mary Seismic Incorporated and Mathew Kimball, 2009 NSSC 404, dated 31 December 2009, ¶ 65.

²⁴⁸ GSI paid out bonuses of [REDACTED]. See **CER-02:** Sharp Report, Schedule D1.

FIGURE 24: GSI BOOK VALUE OF DEBT AND EQUITY (C\$ MILLIONS)²⁴⁹

163. **Losses arising from GSI's purchase of vessels were a primary cause of GSI's demise.** GSI chose to make very significant investments to purchase two vessels to collect seismic data rather than working with contractors to acquire data as it had done previously. Mr. Paul Einarsson states that GSI purchased the GSI Admiral in 2002 and the GSI Pacific in 2004.²⁵⁰ GSI's financial statements suggest that this recollection is inaccurate. It appears that one vessel was purchased during 2001²⁵¹ and the other during 2005.²⁵² GSI asserts that it further invested millions to register and flag the two vessels.²⁵³
164. GSI's decision to invest in vessels changed GSI's business model and introduced new risks that harmed the company. Following the purchase of the vessels, GSI invested more than US\$20

²⁴⁹ **BR-12:** Brattle Workpapers, Workpaper 19.

²⁵⁰ **CWS-06:** Witness Statement of Paul Einarsson, ¶¶ 87-88.

²⁵¹ [REDACTED] **C-109:** Financial statements of GSI, year ended 31 December 2001, Note 4 (Bates C-109_0142).

²⁵² The [REDACTED] financial statements continue to show [REDACTED] **C-109:** Financial statements of GSI, year ended 31 December 2004 (Bates C-109_0179). It was only in [REDACTED] suggesting another vessel purchase. **C-109:** Financial statements of GSI, year ended 31 December 2006 (Bates C-109_0194).

²⁵³ October 10, 2018 Notice of Intent to Submit a Claim to Arbitration Under NAFTA Chapter Eleven, ¶¶ 41, 46, and 93.

million to upgrade its vessels and related equipment in 2007 to 2008.²⁵⁴ However, GSI was largely unsuccessful in deploying its ships. During the period from [REDACTED]

[REDACTED] These [REDACTED] which took place around the time of the 2008 financial crisis that severely impacted the global oil and gas industry, undoubtedly contributed to GSI's downfall.

165. **GSI suffered significant losses from investments in the Falkland Islands.** GSI acquired data in the Falkland Islands around 2005 and 2006.²⁵⁶ According to Mr. Paul Einarsson, by 2 November 2010, GSI had not recovered the costs of its Falkland Islands data acquisition and “only a small portion of the entire data set has been licensed...”²⁵⁷
166. **GSI was facing competition from newer, better data.** GSI's data library faced significant competition. Many of GSI's datasets had been supplanted by newer, higher-quality datasets collected and marketed by GSI's competitors.²⁵⁸ This competition, which would include data from GSI competitors that could be accessed through the Boards, reduced potential licensing revenues from GSI's data library.
167. **Lawsuits starting in 2007 by GSI against its customers hindered the company's ability to license its existing data and harmed the potential for new surveys.** Mr. Paul Einarsson stated that, beginning in 2007, GSI began to pursue lawsuits regarding its data.²⁵⁹ Over the coming years, we understand that GSI brought at least 45 lawsuits, including claims against the oil & gas companies that licensed its data.²⁶⁰ These lawsuits damaged GSI's good will with customers and made them reluctant to purchase its data.²⁶¹ Additionally, poor customer relationships likely would have hindered GSI's potential for successful investment in new seismic data lines.
168. [REDACTED] Oil and gas prices were high during most of 2008, but they experienced declines during the last

²⁵⁴ October 10, 2018 Notice of Intent to Submit a Claim to Arbitration Under NAFTA Chapter Eleven, ¶ 99.

²⁵⁵ **C-109:** Financial statements of GSI (Bates C-109_0123).

²⁵⁶ **BR-3:** Geophysical Service Incorporated, Acquired Data Library.

²⁵⁷ **BR-28:** Geophysical Service Incorporated v. Falkland Islands, Claim No. SC/CIV/05/14, Approved Judgment, dated 9 December 2016, ¶ 49.

²⁵⁸ **RER-02:** Robert Hobbs Expert Report; Section IV.B.1; **RER-03:** Doug Uffen Expert Report, ¶¶ 56-59.

²⁵⁹ **CWS-06:** Witness Statement of Paul Einarsson, ¶¶ 139-140.

²⁶⁰ **CWS-06:** Witness Statement of Paul Einarsson, ¶¶ 139-140. Mr. Paul Einarsson noted at least 30 lawsuits, but we understand that the number may have been more than 45.

²⁶¹ **CWS-06:** Witness Statement of Paul Einarsson, ¶ 159(c); **CER-02:** Sharp Report, ¶ 69.

three months of that year.²⁶² Weaker market conditions tend to reduce demand for seismic data. Despite high oil prices for most of 2008, GSI had [REDACTED]

[REDACTED]

[REDACTED]

169. [REDACTED]

170. **Market conditions continued to decline after** [REDACTED]

[REDACTED] Following 2008, market conditions worsened. As discussed in the report of Mr. Hobbs, there was a significant drop in sales as companies reduced spending on seismic exploration.²⁶⁵ This issue was highlighted in the 2010 Schlumberger Limited annual report’s description of results for its WesternGeco subsidiary. WesternGeco describes itself as “the world’s most technologically advanced surface seismic company, provid[ing] comprehensive reservoir imaging, monitoring and development services with the most extensive seismic crews and data processing centers in the industry as well as a leading multiclient seismic library.”²⁶⁶ While WesternGeco described a 25% decline for its overall revenue following 2008, it highlighted that “the largest declines [were] experienced in Marine

²⁶² **BR-29:** U.S. Energy Information Administration, 2008 Cushing, OK WTI Spot Price FOB

²⁶³ **C-109:** Financial statements of GSI, year ended 31 December 2008 (Bates C-109_0203).

²⁶⁴ **C-109:** Financial statements of GSI, year ended 31 December 2008, Note 1 (Bates C-109_0205).

²⁶⁵ **RER-02:** Robert Hobbs Expert Report, ¶¶ 33-34.

²⁶⁶ **BR-30:** Schlumberger Limited, 2010 Annual Report, Part I, Item 1, p. 4.

and Multiclient” and that “Multiclient revenue decreased primarily in North America.”²⁶⁷ Thus, the worst performance occurred in the market segment served by GSI: marine, multiclient studies in North America.²⁶⁸

171. **GSI ceased to be a going concern in the seismic data industry by the end of 2012.** [REDACTED] [REDACTED] the harm from its failed investment in vessels, and deteriorating market conditions, GSI severely limited its investment in seismic data starting in 2009 and ceased virtually all activities in the marine seismic data collection business before the end of 2012. We discuss these considerations below.
172. **GSI had stopped investing before 2012.** [REDACTED] [REDACTED] Figure 25 shows GSI’s reported direct expenses from 2001 to 2019. As can be seen, GSI [REDACTED] [REDACTED] [REDACTED] Mr. Paul Einarsson confirmed that GSI became “significantly less active in creating new Seismic Works”²⁷⁰ after 2008. GSI ceased all investments in new seismic data in Canada by 2009 with only very limited amounts of activity outside of Canada continuing through 2012.²⁷¹ The listing of GSI’s available data on the GSI website does not appear to include any surveys conducted after 2008.²⁷² Of course, such investment is the lifeblood of a seismic data company.

²⁶⁷ **BR-30:** Schlumberger Limited, 2010 Annual Report, Part II, Item 7, p. 24.

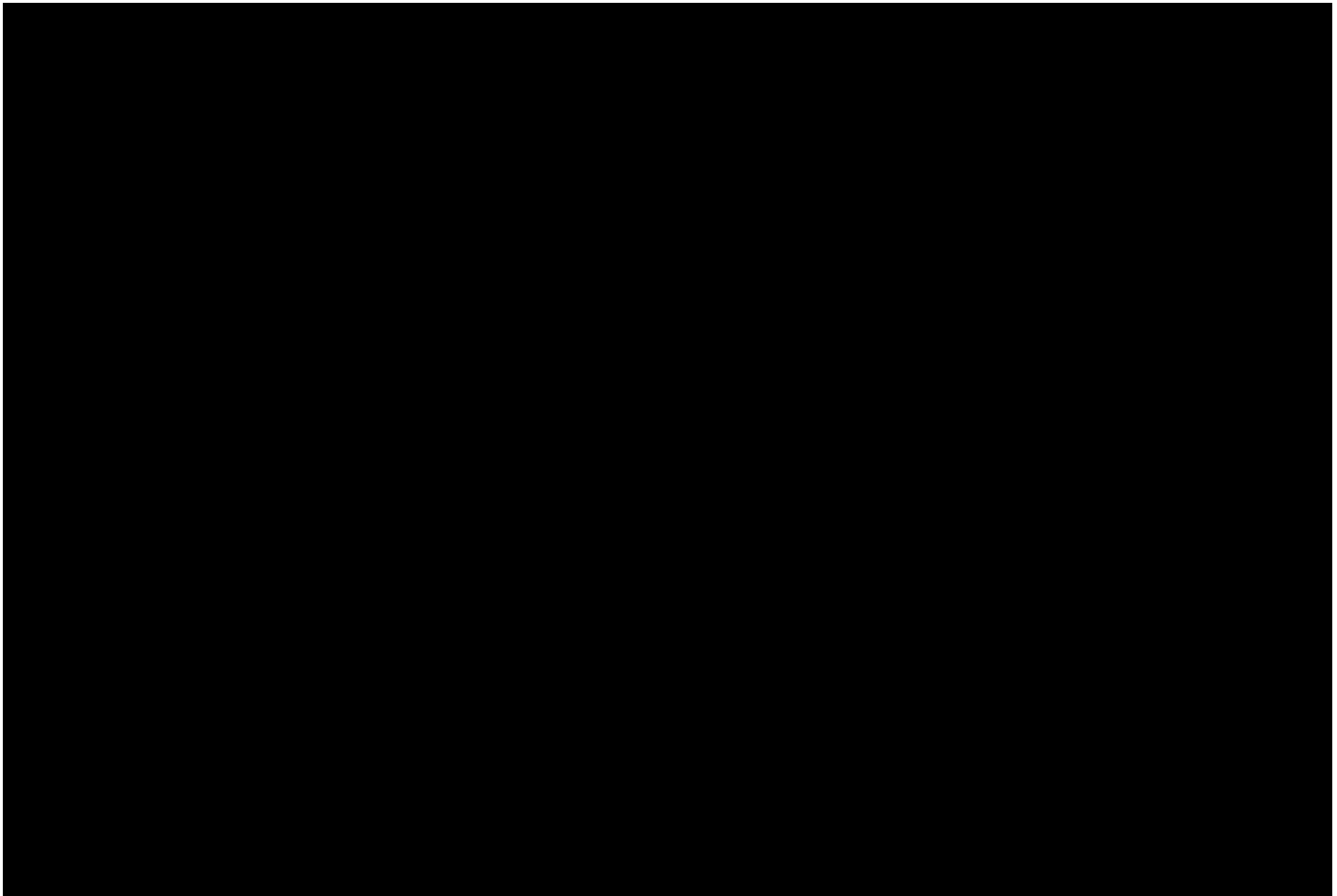
²⁶⁸ See, e.g., **BR-31:** PGS, 2009 Annual Report, p. 55.

²⁶⁹ According to Mr. Sharp, “Direct expenses include acquisition costs and other costs directly associated with the provision of marine seismic data to GSI’s customers.” **CER-02:** Sharp Report, Schedule B2.2, Note 2. However, some direct expenses are not related to data acquisition. **CWS-06:** Witness Statement of Paul Einarsson, ¶ 171(d). Data we have seen to date is not sufficient for us to separate out the direct expenses related to data acquisition from those that are not.

²⁷⁰ **CWS-06:** Witness Statement of Paul Einarsson, ¶ 171(f).

²⁷¹ **BR-4:** Geophysical Service Incorporated v. Encana Corporation, 2015 ABQB 196, dated 19 March 2015, ¶ 8.

²⁷² **BR-3:** Geophysical Service Incorporated, Acquired Data Library.

FIGURE 25: GSI DIRECT EXPENSES (C\$ MILLIONS)²⁷³

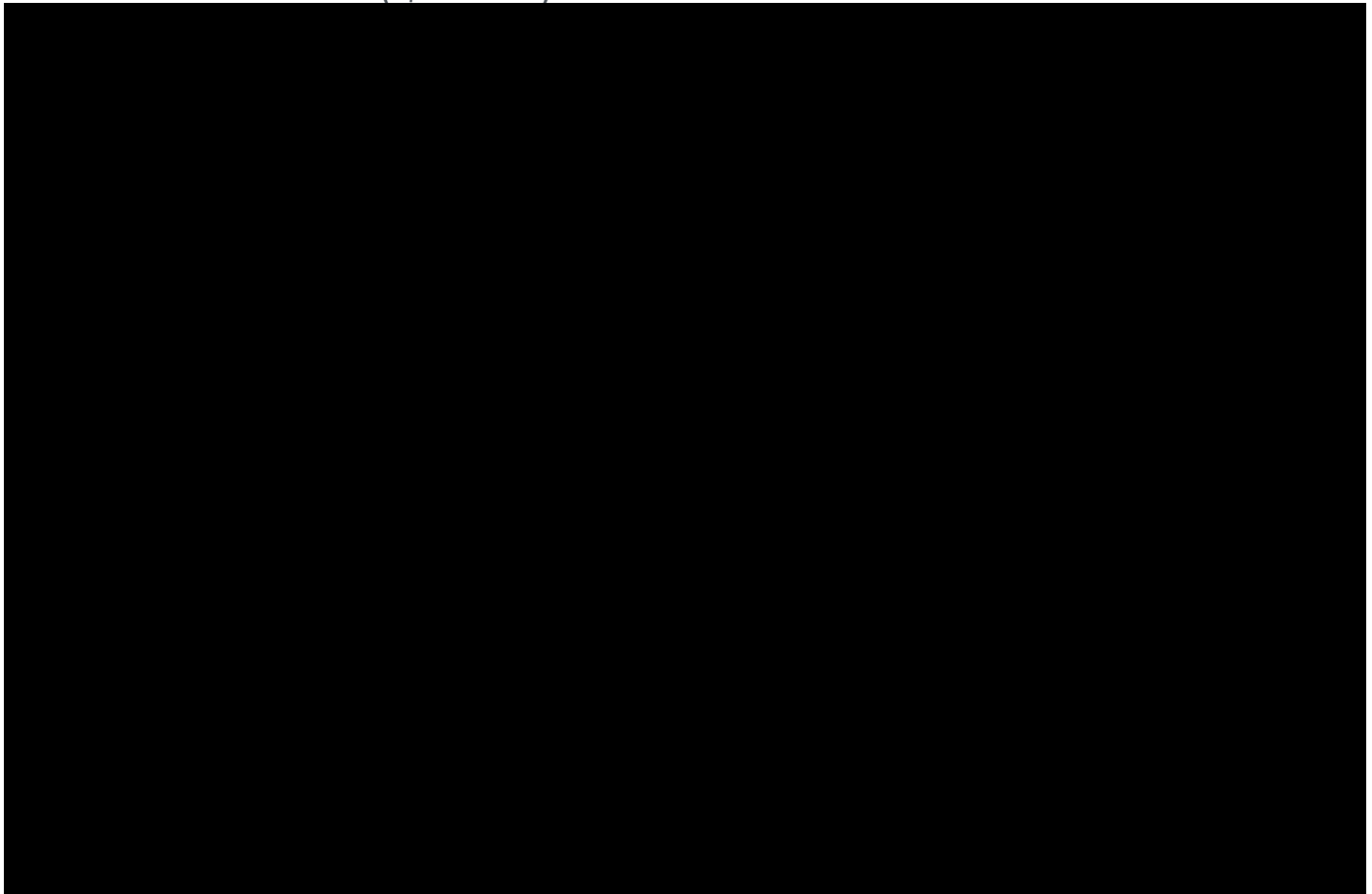
173. GSI had divested nearly all of its seismic data equipment before 2012. As noted by Mr. Paul Einarsson, the marine seismic data business is capital intensive.²⁷⁴ [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED] Figure 26 shows the balance of GSI's fixed assets from 1994 (shortly after the company's inception) to 2019. The value of fixed assets shown on GSI's balance sheet [REDACTED]
- [REDACTED] By 2012, GSI held [REDACTED] that would be necessary to collect and process new seismic data to continue as a going concern.²⁷⁶

²⁷³ **BR-12:** Brattle Workpapers, Workpaper 7.

²⁷⁴ **CWS-06:** Witness Statement of Paul Einarsson, ¶ 32.

²⁷⁵ **C-109:** Financial statements of GSI (Bates C-109_0210).

²⁷⁶ This conclusion is based on the balance of fixed assets. We have not seen the underlying financial statements beyond 2008 to see the composition of its fixed assets.

FIGURE 26: GSI FIXED ASSETS (C\$ MILLIONS)²⁷⁷

174. GSI had laid off virtually all of its staff prior to 2012. In addition to being capital intensive, Mr. Paul Einarsson noted that the marine data business is also time intensive.²⁷⁸ Thus, an effective marine seismic company requires skilled employees. Nevertheless, GSI had laid off most of its staff long before 2012. Although we are not aware of any data in the record on GSI's employee counts, email correspondence with the National Energy Board highlighted that GSI had laid off more than 90% of its staff by early 2010.²⁷⁹ As a result, GSI lacked the qualified staff to satisfy even some of its routine regulatory commitments in a timely manner.²⁸⁰ Indeed, Mr. Paul Einarsson indicates that he had no active role in operating GSI as a seismic data company since 2011, with his GSI-related work largely related to the ongoing litigation.²⁸¹

²⁷⁷ **BR-12:** Brattle Workpapers, Workpaper 20.

²⁷⁸ **CWS-06:** Witness Statement of Paul Einarsson, ¶ 32.

²⁷⁹ **BR-7:** Email from Paul Einarsson to Bharat Dixit, dated 4 February 2010.

²⁸⁰ **BR-7:** Email from Paul Einarsson to Bharat Dixit, dated 4 February 2010.

²⁸¹ **CWS-06:** Witness Statement of Paul Einarsson, ¶¶ 43 and 54.

175. GSI had damaged customer relationships. As a result of the lawsuits against customers, the company's customer relationships were harmed. According to Mr. Paul Einarsson, GSI had "destroyed our ability to do business with customers because our reputations were tarnished."²⁸² Mr. Sharp confirmed that these lawsuits harmed GSI's customer relationships: "[w]e understand that as GSI became embroiled in disputes related to and stemming from the Disclosures, many of GSI's customers ceased paying for services and license fees that GSI would have been entitled to."²⁸³ Thus, any goodwill that GSI had built in the marketplace dissipated.
176. GSI ceased to operate as a seismic data collection company before the end of 2012. Mr. Paul Einarsson confirms that GSI ceased operation, stating that the company had to "limit its creation of new data, limit new investment, liquidate assets, lay off its remaining staff and, ultimately, halt its operations entirely."²⁸⁴ Indeed, a Canadian court found that GSI had ceased its operations in Canada in 2009,²⁸⁵ [REDACTED]
[REDACTED]
[REDACTED] Although Mr. Einarsson does not tie this to a specific date, it is clear that GSI had effectively ceased to operate as a seismic data collection business by the end of 2012. [REDACTED]
[REDACTED]
177. Therefore, we consider that GSI was not a going concern beyond 2012 and may have ceased to be a going concern earlier. We have not been provided with audited financial statements for GSI beyond 2008, [REDACTED] about [REDACTED]
[REDACTED] However, given the deterioration in market conditions and GSI's decision to cease operations, it would be unsurprising [REDACTED]
[REDACTED]
178. ***GSI's business collapsed long before the alleged breaches.*** The demise of GSI's business was largely complete by the end of 2012, five years before the alleged breaches in November 2017. As discussed above, GSI acknowledges the corrosive effects of many factors outside the alleged breaches, including: (1) financial distress; (2) significant losses in the Falkland Islands; (3) the global financial crisis; (4) foreign competition for its vessels; (5) failure to invest in data acquisition; (6) loss of its productive capacity in assets and employees; and (7) management

²⁸² CWS-06: Witness Statement of Paul Einarsson, ¶ 159(c).

²⁸³ CER-02: Sharp Report, ¶ 92.

²⁸⁴ CWS-06: Witness Statement of Paul Einarsson, ¶ 157.

²⁸⁵ BR-4: Geophysical Service Incorporated v. Encana Corporation, 2015 ABQB 196, dated 19 March 2015, ¶ 8.

turning its attention to litigation against its customers rather than business development. By that time, much of GSI's seismic data was relatively old, and the more recent data remained within the non-disclosure period and should have generated sales if it was valuable, but actual revenues were limited.

B. GSI's But-For Value Was Less than the Value of its Seismic Data Library as of 30 November 2017

179. Mr. Sharp's decision to use CCF is premised on the assumption that GSI would have been a going concern but for the alleged breaches: "our analysis and the assumptions provided to us, in the But-for Scenario, GSI would have been a going concern."²⁸⁶ Indeed, Mr. Sharp refers to the result of the CCF model as interchangeable with the concept of going concern value: "[t]he maintainable earnings determined based on these results are then divided by a capitalization rate in order to arrive at the capitalized earnings value or going-concern value of the operations."²⁸⁷ However, GSI was not a going concern immediately before the alleged breaches.
180. The International Valuation Standards Council ("IVSC") is an independent global standard-setting organization for the valuation profession. The IVSC standards explain that the income method of valuation relies critically on the "income-producing ability of the asset" and the ability to develop "reasonable projections of the amount and timing of future income."²⁸⁸ However, at the valuation date, GSI could not expect meaningful future cash flow and it no longer had a core seismic data business by the end of 2012.²⁸⁹ [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED] As noted above, a Canadian court had found that GSI had ceased marine and seismic data collection operations entirely by 2009, long before the date of the alleged breaches in November 2017.²⁹¹ Indeed, Mr. Paul Einarsson himself recognized that GSI had "halt[ed] its operations entirely."²⁹² Given that GSI had little "income-producing ability" prior to the alleged

²⁸⁶ CER-02: Sharp Report, ¶¶ 1–2.1.

²⁸⁷ CER-02: Sharp Report, ¶ 79.

²⁸⁸ BR-32: IVSC, International Valuation Standards Effective 31 January 2022, ¶ 40.2, p. 41.

²⁸⁹ See paragraph ¶ 176.

²⁹⁰ C-109: Financial statements of GSI, year ended 31 December 2008, Note 1 (Bates C-109_0209). Emphasis added.

²⁹¹ BR-4: Geophysical Service Incorporated v. Encana Corporation, 2015 ABQB 196, dated 19 March 2015, ¶ 8.

²⁹² CWS-06: Witness Statement of Paul Einarsson, ¶ 157.

breaches since it had divested the bulk of its fixed assets and most of its customer relationships were “destroyed,” income-based valuation methods cannot be applied.

181. For a business that is not a going concern, the liquidation approach is a more appropriate way to value a business. Without a viable business, the best approach is to capture the value from disposing of the assets. This is particularly true because, as we discuss in paragraph 201, GSI’s data library could have greater value to another owner. The liquidation approach assesses “the amount that would be realised when an asset or group of assets are sold on a piecemeal basis.”²⁹³ In other words, liquidation value represents the excess of the expected proceeds from selling the firm’s assets over the amount needed to satisfy the firm’s liabilities, if any.
182. Similarly, the Legal Framework for the Treatment of Foreign Investment published by The World Bank Group highlights that, where an entity is not a going concern or demonstrates lack of profitability, compensation should be “on the basis of the liquidation value.”²⁹⁴ The liquidation value “means the amounts at which individual assets comprising the enterprise or the entire assets of the enterprise could be sold under conditions of liquidation to a willing buyer less any liabilities which the enterprise has to meet.”²⁹⁵
183. Mr. Sharp agrees that the asset approach is appropriate if “[l]iquidation is contemplated because the business is not viable as an ongoing operation.”²⁹⁶
184. The value of GSI on a liquidation basis is likely to be no more than the value of its seismic data library immediately prior to 30 November 2017. The reported book value of GSI’s assets prior to the alleged breaches was approximately [REDACTED] as shown in Table 2. This amount is comprised primarily of [REDACTED]. [REDACTED] According to the Claimants, the book value of these assets approximates their fair market value,²⁹⁷ and we have no basis to conclude that the alleged breaches materially affected the value of any of these assets.

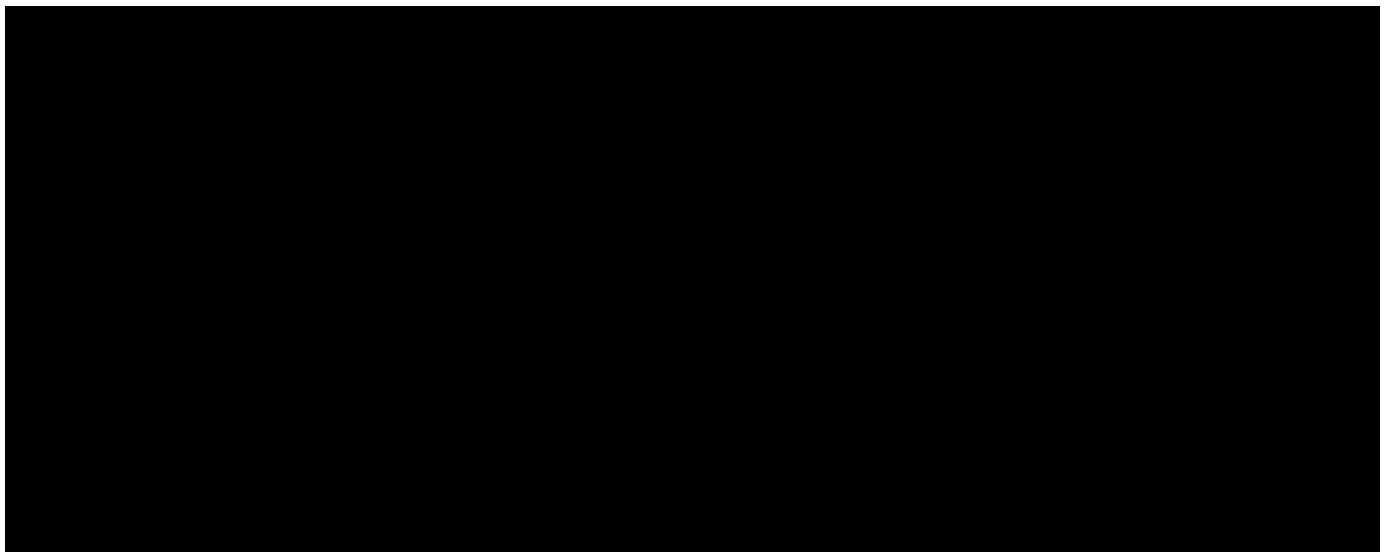
²⁹³ **BR-32:** IVSC, International Valuation Standards Effective 31 January 2022, ¶ 80.1, p. 26.

²⁹⁴ **BR-6:** World Bank, Legal Framework for The Treatment of Foreign Investment Volume II, dated 25 September 1992 ¶ 6(ii), p. 42.

²⁹⁵ **BR-6:** World Bank, Legal Framework for The Treatment of Foreign Investment Volume II, dated 25 September 1992, ¶ 6, p. 42 and 43.

²⁹⁶ **CER-02:** Sharp Report, Appendix ¶ 25.1.

²⁹⁷ **CER-02:** Sharp Report, ¶ 31.



185. The value of liabilities as of 30 November 2017, [REDACTED]
[REDACTED] These liabilities comprised primarily of [REDACTED] and, to a lesser extent,
[REDACTED] Again, we have no basis to conclude that the alleged breaches materially
affected the value of these liabilities, so that their value was the same immediately before the
alleged breaches. Because the [REDACTED]
[REDACTED] immediately before the alleged breaches.³⁰⁰ Apart from any value
of the data library as it existed at 30 November 2017, GSI had [REDACTED] of
approximately [REDACTED]

186. [REDACTED]
[REDACTED] therefore, does not
mean that GSI [REDACTED] GSI's data collection and processing efforts were recorded by GSI
as [REDACTED] Therefore, they appear on the [REDACTED]
[REDACTED]
[REDACTED] which
Mr. Sharp finds was the case for GSI.³⁰¹ GSI's lawsuits against its customers may also have had
(and retain) some value, but this is speculative and no corresponding analysis was provided in
the Sharp Report.

²⁹⁸ **BR-12:** Brattle Workpapers, Workpaper 2.

²⁹⁹ **C-109:** Financial statements of GSI (Bates C-109_0237-8).

³⁰⁰ **C-109:** Financial statements of GSI (Bates C-109_0238).

³⁰¹ **CER-02:** Sharp Report, ¶ 59. We have not been able to verify this independently as we do not have the detail underlying GSI revenue to confirm Mr. Sharp's statement. However, Mr. Sharp's claim is consistent with testimony by Mr. Hobbs and the extremely strong relationship between direct expenses and revenue shown in Figure 12 above. **RER-02:** Robert Hobbs Expert Report, ¶ 76(1).

187. Given that GSI had [REDACTED] [REDACTED] the FMV of GSI but for the alleged breaches is capped at the value of GSI's seismic data library but for the alleged breaches [REDACTED]

C. The Value of GSI's Seismic Data Library Is Uncertain

188. The value of GSI's seismic data library but for the alleged breaches is key to assessing the company's liquidation value. The Claimants have not attempted to assess it. Indeed, Mr. Sharp argued that it was not feasible:

We also considered an asset-based approach, which would consider, as part of it, a standalone value analysis for GSI's seismic data collection. Our research did not yield sufficient independent data points in order to facilitate a robust analysis and accordingly, this analysis has not been included in this Report.³⁰²

189. We agree that there is uncertainty about the value of GSI's seismic data library. Mr. Uffen explains the steps that he would take to conduct such a valuation,³⁰³ but we understand that information and access necessary to perform this assessment have not been provided to the Respondent. There are a number of considerations that would be important for the valuation.
190. **The availability and quality of alternative data.** Potential customers have alternatives to licensing seismic data from GSI. Other seismic data companies have re-shot data, sometimes at higher quality, in areas overlapping or adjacent to GSI data.³⁰⁴ Some of the alternative seismic material may be licensed from GSI's competitors, while others may be available through the Boards without paying a license fee. Where available, these alternatives may be more attractive to potential customers than licensing from GSI.
191. **The location targeted by the data matters.** The prospectivity (*i.e.*, exploitation potential) differs across offshore areas. As Mr. Uffen explains, much of GSI's data is located in regions that

³⁰² CER-02: Sharp Report, ¶ 5.

³⁰³ RER-03: Doug Uffen Expert Report, Section VII.

³⁰⁴ RER-02: Robert Hobbs Expert Report, Section IV.B.1.

are considered “low activity” areas, which affect the prospects for future data licensing revenues (e.g., Arctic and Labrador).³⁰⁵

192. **Most of GSI’s data was old by November 2017.** As discussed in paragraph 122, GSI ceased nearly all of its efforts to build its seismic data library following 2008. By November 2017, virtually all of GSI’s data library would have been at least nine years old.³⁰⁶ We understand that the majority of GSI’s data (about 58%) was acquired from Halliburton and would be at least 23 years old as of Mr. Sharp’s valuation date. Indeed, GSI’s data library descriptions indicate that many of its data sets were collected from surveys done in the 1970s and 1980s.³⁰⁷
193. The age of the data can have a significant impact on value. GSI’s predecessor (“Old GSI”) recognized that data of this age would have limited value, noting there would be limited harm from data releases after 15 years because by this time “presumably it would have little or no commercial value.”³⁰⁸ That remains the case today. Mr. Sharp notes that “[h]istorically, revenues primarily consisted of licensing of data shot within the year.”³⁰⁹ That is consistent with [REDACTED] Other offshore MC seismic data companies capitalize their investments in data acquisition and amortize them over their estimated economic life. As discussed by Mr. Hobbs, 4 years is now a standard period for amortizing data.³¹⁰ This accounting treatment reflects an expectation that most revenues from survey data will be realized within a relatively short period after the data has been shot. Therefore, by 2017, revenue that would be generated by GSI’s data library would likely be very limited given its age, as discussed above. More importantly, by the 2017 valuation date, some of GSI’s more recent data would not yet be available through the Boards, as discussed in paragraph 195.
194. The declining value of older data is consistent with the terms at which GSI acquired the Halliburton seismic data library, which comprised a significant share of the data in GSI’s library as of November 2017. Mr. Davey Einarsson suggests that the Halliburton data library cost

³⁰⁵ **RER-03:** Doug Uffen Expert Report, ¶¶ 55 and 58.

³⁰⁶ Data collected in 2008 would have been about 9 years old by late 2017. See **BR-3:** Geophysical Service Incorporated, Acquired Data Library.

³⁰⁷ See Figure 4.

³⁰⁸ **C-165:** Letter from John Clink to Marcel Masse, dated 7 October 1986, p. 3.

³⁰⁹ **CER-02:** Sharp Report, ¶ 59.

³¹⁰ **RER-02:** Robert Hobbs Expert Report, ¶ 82. In earlier periods, 8 years was used by more aggressive companies, while more conservative companies used shorter periods. See **BR-10:** Jeffries & Company Inc., “The Seismic Industry – Survival of the Fittest,” dated December 2003, p. 14.

previous companies more than US\$400 million to create.³¹¹ However, GSI's affiliate (Geophysical Speculative Investment Corp.) was able to purchase the Halliburton seismic data library for US\$450,000 in 1993.³¹² The purchase price paid by GSI was equal to about [REDACTED] of the cost of acquiring the data, a [REDACTED] discount relative to the cost of creating the data.³¹³ Given the considerations discussed by Mr. Hobbs and in Mr. Clink's letter to the Respondent on behalf of Old GSI,³¹⁴ the value of the [REDACTED] seismic data from Halliburton would have been reasonably expected to decline further between its acquisition in 1993 and the November 2017 valuation date.

195. ***Some of GSI's seismic materials submitted to the Boards remained subject to the applicable confidentiality periods as of November 2017.*** We understand that some of the seismic materials that GSI submitted to the Boards remains subject to the applicable confidentiality periods under the Regulatory Regime. Thus, as of the November 2017 valuation date, some of this information would not yet have been available from the Boards.
196. ***GSI was not required to submit its reprocessed data to the Boards under the Regulatory Regime.*** As discussed by Messrs. Uffen and Hobbs, seismic data companies can increase the value of older data through reprocessing it using newer processing technologies.³¹⁵ Reprocessed data is not automatically subject to the submission and disclosure requirements under the Regulatory Regime. Only certain companies can voluntarily apply for an allowable expenditure credit.³¹⁶ Thus, the GSI's reprocessed seismic data may not be publicly available and could continue to have value even if the original data were released.
197. ***Whether GSI's seismic materials have been maintained.*** As discussed by Mr. Uffen, if GSI was not properly maintaining its seismic materials, this could have an adverse impact on the value of its library.³¹⁷

³¹¹ **CWS-03:** Witness Statement of Theodore David Einarsson, ¶ 25. Research and development costs for the recording systems and processing hardware and software that made their creation possible would have increased the costs over the US\$400 million estimate suggested by Davey Einarsson.

³¹² **C-049:** Seismic Data Purchase Agreement, § 2. We understand that there was later transferred to GSI in a separate transaction that had a price of [REDACTED]. **C-050:** Seismic Data Purchase Agreement, § 2.

³¹³ This is calculated as US\$450,000 divided by US\$400 million.

³¹⁴ **RER-02:** Robert Hobbs Expert Report, ¶¶ 57-60 and **C-165:** Letter from John Clink to Marcel Masse, dated 7 October 1986, p. 3.

³¹⁵ **RER-03:** Doug Uffen Expert Report, ¶ 66; **RER-02:** Hobbs Expert Report, ¶ 73.

³¹⁶ **RWS-01:** Dixit Witness Statement, ¶ 51; **RWS-02:** Bennett Witness Statement, ¶ 53; **RWS-03:** Makrides Witness Statement, ¶ 53.

³¹⁷ **RER-03:** Doug Uffen Expert Report, ¶ 51.

D. The Alleged Breaches Did Not Destroy the Full Value of GSI's Seismic Data Library

198. The Claimants' damages seek compensation equal to the FMV of equity in GSI but-for the alleged breaches.³¹⁸ By assessing damages equal to FMV, the Claimants assume the actual value of GSI as of the valuation date was zero. Mr. Sharp similarly argues that "[w]e understand that the Disclosures and the subsequent Canadian Court decisions have had the effect of decreasing the fair market value of GSI at the Valuation Dates to \$nil."³¹⁹ Mr. Sharp has not tested this assumption.
199. This assumption would be reasonable if GSI's seismic data library had no value following the alleged breaches. However, there are reasons to believe that the GSI seismic data library retains some value. As discussed in the previous section, GSI's data library could retain some value despite the alleged breaches because:
- a. Some of GSI's data was still subject to the privilege period as of November 2017, which would be expected to be the most valuable part of its library given its more recent collection.
 - b. GSI was not required to submit reprocessed data to the Boards.
 - c. Some of GSI's data might benefit from the ability to reprocess it beyond November 2017.
200. In fact, GSI has continued to generate some revenue from data even beyond November 2017. As shown in Schedule D1 of Mr. Sharp's report, GSI generated revenue of [REDACTED] and [REDACTED] from [REDACTED].
201. It is likely that GSI's data library had more value to a competitor than to itself. As Mr. Paul Einarsson noted, it was GSI's ability to license seismic materials to customers that was allegedly destroyed.³²¹ While this could reasonably be anticipated to reduce (but not eliminate) GSI's ability to enter into licensing agreements for its data to generate revenue, it would still be possible to capture the value of the data library by selling the library itself.³²²

³¹⁸ Claimants' Memorial, ¶¶ 488 and 489.

³¹⁹ CER-02: Sharp Report, ¶ 71.

³²⁰ CER-02: Sharp Report, Schedule D1.

³²¹ CWS-06: Witness Statement of Paul Einarsson, ¶ 159(c).

³²² CER-02: Sharp Report, Schedule B6. Mr. Sharp provides the example of the acquisition of a 2D seismic data library in the Western Canada Sedimentary Basin by Pulse Seismic Inc.

202. In other words, by the valuation date, the highest and best use of GSI's data library could be a sale to a third party that maintains good relationships with existing or potential customers. This would have been (and may remain) an economically rational step for GSI to take and would have mitigated any harm to the Claimants. We are not aware of any efforts by GSI to sell its seismic data library, but if they exist such terms may be relevant to an assessment of damages here.³²³
203. There may also have been value in GSI's contemporaneous and future lawsuits against its customers, but this is speculative and relevant information has not been provided.

VII. Damages from the Shareholder Loans

204. As of the 30 November 2017 valuation date, each of the Einarssons had made loans to GSI. The Claimants are seeking damages because "GSI is not able to repay the Loans due to the destruction of its business as a result of Canada's breaches of Articles 1110 and 1106(1)(f) of NAFTA."³²⁴ Mr. Sharp assumes the balance of the loans as of 30 November 2017 as damages and adds pre-award interest.
205. Mr. Sharp's analysis of losses related to the loans is flawed for two reasons.
206. **Mr. Sharp did not evaluate the terms of the shareholder loans.** Knowing only the outstanding balance of a loan is not sufficient to value a loan. For example, investors buy and sell bonds that trade for a premium or discount to the face value (*i.e.*, the outstanding balance) of the bond, depending on the terms of that bond and the financial condition of the borrower. The loans would have a FMV equal to their face value only if the interest rate was at a market rate on the day of valuation. It does not appear that Mr. Sharp has analyzed the terms and conditions associated with these loans, and we have been unable to identify this documentation in the record.

³²³ We note that GSI may have another potential asset. To the extent that GSI had meritorious lawsuits against customers for violations of their license agreements, we are instructed that the alleged breaches would not prevent them from pursuing these cases.

³²⁴ Claimants' Memorial, ¶ 491.

207. **Mr. Sharp ignores the fact that GSI could repay at least some of these loans despite the alleged breaches.** As of 30 November 2017, GSI had a total cash balance of [REDACTED]

[REDACTED]³²⁵ [REDACTED]

[REDACTED]²⁶ [REDACTED]

[REDACTED]

[REDACTED] Moreover, if GSI's seismic data library had any remaining value after the alleged breaches, that value could also be used to repay the loans.

VIII. Damages from Lost Employment Earnings

208. The Claimants assert that the alleged breaches harmed each of the Einarssons due to the loss of employment by GSI.³²⁷ Mr. Sharp attempted to quantify this claimed loss. Because GSI paid compensation to the Einarssons that [REDACTED] Mr. Sharp conducts his calculation of lost employment earnings using his estimate of market-based compensation rates for each of the Einarssons based on their assumed roles in GSI.³²⁸ He assumes that the lost employment earnings would continue through an assumed age of retirement.³²⁹ These assumed future earnings were discounted back to the valuation date at either the risk-free rate or a 5% discount rate.³³⁰ Before pre-award interest, damages of Mr. Sharp's estimate of lost employment earnings amount to about [REDACTED] to [REDACTED]

209. Mr. Sharp's analysis is unreliable due to both unreasonable assumptions and implementation errors.³³²

³²⁵ **C-109:** Financial statements of GSI (Bates C-109_0237). [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

³²⁶ **C-109:** Financial statements of GSI (Bates C-109_0237).

³²⁷ **CER-02:** Sharp Report, ¶ 146.

³²⁸ **CER-02:** Sharp Report, ¶¶ 116 and 147.

³²⁹ **CER-02:** Sharp Report, ¶¶ 148.1–2.

³³⁰ **CER-02:** Sharp Report, ¶ 149.

³³¹ **CER-02:** Sharp Report, ¶ 150.

³³² We understand that GSI is claiming recovery of arbitration costs. If the Tribunal awards these costs, we note that it would be important to ensure that they do not include the costs related to salaries for the Einarssons to avoid double counting.

210. **GSI would not have been able to pay these wages.** As we discuss in Section VI.A, GSI was no longer a going concern years before 30 November 2017, the date of the alleged breaches. As such, GSI did not have a seismic data business to generate the cash flows to pay Mr. Sharp's assumed wages for the Einarssons.
211. **The lost employment earnings claim is conceptually flawed.** Lost employment earnings from GSI do not reflect losses to the Einarssons. As Mr. Sharp notes, he estimates lost employment earnings based on market-based wages.³³³ Paul and Russell Einarsson are assumed to remain employed with GSI until 2039 and 2040, respectively.³³⁴ This analysis ignores potential mitigation. Given the alleged expropriation of GSI, Paul and Russell Einarsson would be free to pursue alternative employment opportunities to mitigate their lost GSI wages.³³⁵ Because Mr. Sharp's analysis estimates lost earnings at market-based wages, the Einarssons should have been able to mitigate all, or virtually all, of these losses by pursuing alternative employment.
212. **Mr. Sharp's analysis is economically inconsistent with the facts.** The Claimants state that they are seeking compensation for lost employment earnings due to the alleged breaches of NAFTA Articles 1110 and 1106(1)(f).³³⁶ The date of the alleged breaches is 30 November 2017 according to the Claimants, but the assumed lost wages begin on 18 April 2016 – more than a year before the alleged breaches.³³⁷ No explanation is offered for this inconsistency.
213. **Mr. Sharp's analysis is based on speculative retirement dates.** The assumed retirement dates for Davey (2019, at approximately age 88), Paul (2039, at age 75), and Russell (2040, at age 75) Einarsson are speculative.³³⁸ There is no basis to conclude that the Einarssons would want to or be able to continue working full time at GSI until these future dates. We also note that the assumption that the Einarssons would remain employed with GSI is inconsistent with the fact that, even before the alleged breaches, GSI ceased to be a going concern.³³⁹
214. **Mr. Sharp's discount rate fails to capture risk.** The present value of lost employment over a period of more than 20 years for Paul and Russell Einarsson is calculated using a discount rate

³³³ CER-02: Sharp Report, ¶¶ 116 and 147.

³³⁴ CER-02: Sharp Report, ¶¶ 148.1–2.

³³⁵ While the same is true for Davey Einarsson, given the assumption that he would retire in 2018, it may be reasonable to characterize his earnings as lost.

³³⁶ Claimants' Memorial, ¶ 494.

³³⁷ Claimants' Memorial, ¶ 175.

³³⁸ CER-02: Sharp Report, ¶ 148. We understand Davey Einarsson was born in January 1932.

³³⁹ See Section VI.A.2.

equal to the risk-free rate based on Canadian government bond yields.³⁴⁰ Even if GSI were a going concern as of the assessment date, there would have been a material risk that GSI's business would fail, as confirmed by Mr. Sharp's own recognition that GSI's business was very risky as reflected in the high cost of equity.³⁴¹ Mr. Sharp's alternative ■ discount rate is not supported by any analysis.

IX. Pre-Award Interest

215. Mr. Sharp applies interest on his valuations at two separate rates. These rates are: (1) the 20-year borrowing cost for debt rated BBB by the Standard & Poor's credit rating agency; and (2) the risk-free rate based on 20-year Canadian government debt.³⁴² Neither is consistent with the standard of FMV or full compensation.
216. The use of a BBB borrowing rate as per-award interest does not align risk and return. Expected returns above the risk-free rate are anticipated compensation for bearing risk of a loss – such returns are by no means certain.³⁴³ Awarding pre-award interest at the expected return of risky debt would compensate the Claimants for risk they did not bear.³⁴⁴
217. The interest rate that makes an economic actor whole has two components: the time value of money – a dollar today is worth more than a dollar tomorrow – and compensation for bearing risk. The time value of money corresponds to the risk-free rate because it compensates only for waiting.³⁴⁵

³⁴⁰ **CER-02:** Sharp Report, ¶ 149 and Schedule A1.8, Note 3.

³⁴¹ **CER-02:** Sharp Report, Appendix ¶¶ 40-41 and Schedule B3.

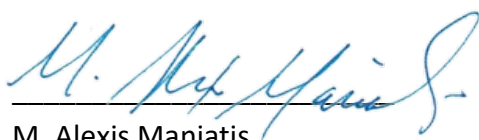
³⁴² **CER-02:** Sharp Report, Schedule B3.

³⁴³ **BR-33:** Maniatis, A., Dorobantu, F., and Nunez, F., "A Framework for Interest Awards in International Arbitration," *Fordham International Law Journal*, Vol. 41, 2018, p. 837.

³⁴⁴ **BR-33:** Maniatis, A., Dorobantu, F., and Nunez, F., "A Framework for Interest Awards in International Arbitration," *Fordham International Law Journal*, Vol. 41, 2018, p. 837. See also **BR-34:** Fisher, F. and Romaine, R.C., "Janis Joplin's Yearbook and the Theory of Damages," *Journal of Accounting, Auditing and Finance*, January 1990, p. 146–147.

³⁴⁵ **BR-33:** Maniatis, A., Dorobantu, F., and Nunez, F., "A Framework for Interest Awards in International Arbitration," *Fordham International Law Journal*, Vol. 41, 2018, p. 825 and 833.

218. Disputing parties sometimes debate whether pre-award interest should include compensation for the risk that the respondent might have defaulted prior to the award, in other words, whether pre-award interest should be paid at the *respondent's* borrowing rate. Here, the respondent is the issuer of risk-free debt and so there is no distinction.
219. Even if GSI is deemed to have been a forced creditor to the Respondent since the date of the alleged breaches, Canada's cost of debt is the measure of the commercial FMV interest rate that attaches to debt.³⁴⁶ Pre-award interest at this rate, therefore, will compensate the Claimants on the same commercial basis as Canada's other creditors.³⁴⁷ The relevant interest rate is the short-term debt rate, compounded over the relevant period, because this isolates the Claimants from bearing the risk of unanticipated changes in interest rates. While longer-term interest rates at times can be higher than short-term rates, the holder of a long-term bond faces the risk of losses should interest rates rise unexpectedly. Short-term rates, in contrast, maintain the value of the principal amount of the award at all times.



M. Alexis Maniatis



Darrell Chodorow

³⁴⁶ **BR-33:** Maniatis, A., Dorobantu, F., and Nunez, F., "A Framework for Interest Awards in International Arbitration," *Fordham International Law Journal*, Vol. 41, 2018, p. 826. See also **BR-35:** Colon, J.M. and Knoll, M.S., "Prejudgment Interest in International Arbitration," *Penn Law: Legal Scholarship Repository*, dated 29 October 2007, pp. 11–12.

³⁴⁷ Note that the FMV interest rate depends on the riskiness of the party that owes the debt rather than the party that holds it. For example, Canadian bonds pay the same rate to anyone who holds them, even if the holder is itself more risky.

Appendix A: Documents Relied Upon in Forming Opinions

- RWS-01:** Bharat Dixit Witness Statement, dated 16 January 2023
- RWS-02:** Trevor Bennett Witness Statement, dated 16 January 2023
- RWS-03:** Carl Makrides Witness Statement, dated 16 January 2023
- RER-01:** Barry Sookman Expert Report, dated 16 January 2023
- RER-02:** Robert Hobbs Expert Report, dated 16 January 2023
- RER-03:** Doug Uffen Expert Report, dated 16 January 2023
- C-047:** Seismic Survey Assets
- C-049:** Seismic Data Purchase Agreement, dated 20 February 1993
- C-050:** Seismic Data Purchase Agreement, dated 8 May 1994
- C-109:** Financial statements of GSI
- C-111:** List of Seismic Works Disclosed by the Boards
- C-112:** Unpaid GSI Invoice Listing
- C-117:** Research regarding historical industry growth indicators used in R-squared analysis
- C-126:** Davey Einarsson, A Life of Adventure (Calgary: Theophania Publishing, 2015), dated 10 September 2016
- C-165:** Letter from John Clink to Marcel Masse, dated 7 October 1986
- C-251:** Paul Einarsson Employment Agreement, dated 20 March 2002
- C-286:** Geophysical Service Incorporated v. Total SA, 2020 ABQB 730, Reasons for Judgment, dated 25 November 2020
- CWS-03:** Witness Statement of Theodore David Einarsson, dated 12 February 2019
- CWS-04:** Witness Statement of Ralph Maitland, dated 24 August 2022
- CWS-05:** Witness Statement of Russell John Einarsson, dated 4 August 2022
- CWS-06:** Witness Statement of Paul Einarsson, dated 27 September 2022
- CER-01:** Expert Report of Nigel Bankes, dated 30 August 2022
- CER-02:** Expert Report of Paul Sharp, PricewaterhouseCoopers LLP, dated 26 September 2022
- CER-03:** Expert Report of “Chip” Gordon C. Gill, dated 13 September 2022
- BR-1:** Geophysical Service Incorporated v. Encana Corporation, 2016 ABQB 230, dated 21 April 2016
- BR-2:** Geophysical Service Incorporated v. Sable Mary Seismic Incorporated and Mathew Kimball, 2009 NSSC 404, dated 31 December 2009
- BR-3:** Geophysical Service Incorporated, Acquired Data Library

- BR-4:** Geophysical Service Incorporated v. Encana Corporation, 2015 ABQB 196, dated 19 March 2015
- BR-5:** Geophysical Service Incorporated v. Encana Corporation, 2016 ABQB 49, dated 22 January 2016
- BR-6:** World Bank, Legal Framework for The Treatment of Foreign Investment Volume II, dated 25 September 1992
- BR-7:** Email from Paul Einarsson to Bharat Dixit, dated 4 February 2010
- BR-8:** S&P Capital IQ, PGS ASA Company Tearsheet Report
- BR-9:** S&P Capital IQ, TGS ASA Company Tearsheet Report
- BR-10:** Jeffries & Company Inc., "The Seismic Industry – Survival of the Fittest," dated December 2003
- BR-11:** Bank of America Merrill Lynch, "Seismic: stick to quality - initiate TGS at Buy, reinstate CGG Neutral, PGS - U/P", dated 26 September 2019
- BR-12:** Brattle Workpapers
- BR-13:** Joseph E. Stiglitz and Robin W. Boadway, "Principals of Microeconomics and the Canadian economy," 2nd edition W.W. Norton & Company, Inc., 1997
- BR-14:** Jeffries & Company, Inc., "Seismic Technology Takes Center Stage," dated October 1998
- BR-15:** Geophysical Service Incorporated v. Occidental Corp., Case 4:20-cv-1396, Order of Dismissal, dated 24 March 2021
- BR-16:** Geophysical Service Incorporated, Exhibit C - Occidental Corp. Cover Letter, dated 14 August 2019
- BR-17:** Geophysical Service Incorporated v. Plains Midstream Canada ULC, 2022 ABKB 722, dated 1 November 2022
- BR-18:** Geophysical Service Incorporated v. Suncor Energy Inc, 2017 ABQB 465, dated 26 July 2017
- BR-19:** Geophysical Service Incorporated v. Falkland Oil and Gas Limited 2019 ABQB 162, dated 7 March 2019
- BR-20:** Pulse Seismic, Data Library and Services
- BR-21:** Richard A. Brealey, Stewart C. Myers, and Franklin Allen, "Principles of Corporate Finance," 10th edition McGraw-Hill/Irwin, 2010
- BR-22:** S&P Global Ratings, CGG Outlook, dated 7 March 2018
- BR-23:** S&P Global Ratings, PGS Outlook, dated 8 May 2018
- BR-24:** Moody's Investors Service, "Moody's withdraws IGSS's rating for business reasons", dated 27 October 2017
- BR-25:** NAIC Generic Rating Symbol Mapping
- BR-26:** Credit Spreads by Rating from NYU Professor Aswath Damodaran
- BR-27:** IFRS, "Going concern - a focus on disclosure," dated January 2021

- BR-28:** Geophysical Service Incorporated v. Falkland Islands, Claim No. SC/CIV/05/14, Approved Judgment, dated 9 December 2016
- BR-29:** U.S. Energy Information Administration, 2008 Cushing, OK WTI Spot Price FOB
- BR-30:** Schlumberger Limited, 2010 Annual Report
- BR-31:** PGS, 2009 Annual Report
- BR-32:** IVSC, International Valuation Standards Effective 31 January 2022, dated 31 January 2022
- BR-33:** Maniatis, A., Dorobantu, F., and Nunez, F., "A Framework for Interest Awards in International Arbitration," Fordham International Law Journal, Vol. 41, 2018
- BR-34:** Fisher, F. and Romaine, R.C., "Janis Joplin's Yearbook and the Theory of Damages," Journal of Accounting, Auditing and Finance, January 1990
- BR-35:** Colon, J.M. and Knoll, M.S., "Prejudgment Interest in International Arbitration," Penn Law: Legal Scholarship Repository, dated 29 October 2007
- BR-36:** U.S. Energy Information Administration, Annual Brent Crude Prices, dated 29 December 2022
- BR-37:** S&P Capital IQ, Pulse Financials
- BR-38:** S&P Capital IQ, Canadian Dollars per US Dollars Monthly Exchange Rate
- Claimants' Memorial, dated 27 September 2022
- October 10, 2018 Notice of Intent to Submit a Claim to Arbitration Under NAFTA Chapter Eleven

Appendix B: Maniatis CV

Mr. M. Alexis Maniatis has more than 30 years of experience as a consultant providing advice and expert testimony on the application of economics, accounting, and corporate finance in estimating commercial damages, project valuation, and regulation. Many engagements have required the communication of complex analyses to international courts and the coordination of multiple experts.

A respected leader in the firm, Mr. Maniatis has previously served several terms as the firm's President and one term as the Chairman of the Board, directed Brattle's Washington and London offices, and led the Litigation practice. He has been recognized as a Global Elite Thought Leader in *Who's Who Legal's* Arbitration Expert Witness and Quantum of Damages lists, among other accolades. Mr. Maniatis currently serves as a member of the ICCA-ASIL Task Force on Damages.

He has particular expertise in international arbitrations, commercial litigation, and finance and asset valuation. His experience in those areas includes the following:

- *International Arbitrations:* Mr. Maniatis has served as a testifying and consulting expert in a number of cases before tribunals under rules of the International Centre for the Settlement of Investment Disputes (ICSID), the International Chamber of Commerce (ICC), and the Permanent Court of Arbitration, involving businesses, and in Asia, Europe, Latin America, and North America. Mr. Maniatis has addressed issues including the development of expected cash flows, discount rates, control premia, country risk adjustments, prejudgment interest, and interpretation of acquisition transactions and publicly-traded company values.
- *Other Commercial Litigation:* Mr. Maniatis has testified and advised on cases before US courts and arbitration panels and foreign courts. He has provided testimony and consulting expertise on cases involving antitrust, corporate acquisitions, environmental disputes, intellectual property, product liability, tax, and securities violations.
- *Finance and Asset Valuation:* Mr. Maniatis provides consulting and testimony in cases involving profitability measurement, asset and business valuation, cost of capital estimation, taxation, the estimation of country risks, joint ventures, reasonable royalties, and restructurings.
- *Environmental Litigation:* consulting and testimony on a wide range of cases, including noncompliance penalties, Superfund allocation, cost recovery, NCP consistency, and ability-to-pay.
- *Industry Experience:* Mr. Maniatis's work has involved a very wide range of industries, including agribusiness, airlines, banking and finance, cement, construction, electricity generation and distribution, food and beverage, forestry, medical devices, ports, oil and gas, pharmaceuticals, pipelines, pulp and paper, and retail.

Mr. Maniatis served as a teaching assistant at Yale University in Accounting and earned letters of distinction in Corporate Finance and International Finance.

He has published on environmental economics, country risk, interest, and valuation methods.

EDUCATION

- Yale University, MBA with distinction in Corporate Finance and International Finance
- Wesleyan University, BA in Economics

Appendix C: Chodorow CV

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Mr. Chodorow has more than 25 years of experience in commercial damages, valuation, and tax matters.

He specializes in analyzing complex business and financial issues in the context of damages quantification, asset valuation, and evaluating the substance of transactions. His work has covered a wide variety of industries, and he has specialized expertise in the energy and natural resources sectors. *Who's Who Legal's* guides have identified Mr. Chodorow as a global leader in Arbitration, Litigation, and Financial Advisory & Valuation: Quantum of Damages.

Commercial Damages: Mr. Chodorow advises clients on damages in investor-state arbitration, commercial arbitration, and litigation. He has served as a damages expert in disputes involving investment treaties, commercial contracts, M&A transactions, intellectual property, insurance claims, and antitrust disputes. He has served as an expert in cases before US federal and state courts; the District Court of Cyprus; and arbitrations before AAA, BCCC, ICC, ICDR, ICSID, JAMS, LCIA, PCA, and ad hoc tribunals.

Business and Asset Valuation: Mr. Chodorow has valued businesses, financial instruments, and tangible and intangible assets. He has valuation experience in multimillion- and multibillion-dollar matters in a variety of sectors, including agricultural products, cement, chemicals, financial products, gaming, mining, oil and gas, and electricity.

Tax Disputes: Mr. Chodorow has advised the Internal Revenue Service, the US Department of Justice, and taxpayers on matters related to economic substance, business purpose, research tax credits, transfer pricing, hedging, and asset valuation. He has been engaged as an expert for disputes in US Tax Court and federal court.

EDUCATION

1995 Yale School of Management | MBA
1991 Brandeis University | BA, Economics

PROFESSIONAL EXPERIENCE

1997–Present The Brattle Group
Principal (2005–Present)
Associate (1997–2005)

1995–1997 Booz Allen & Hamilton
Associate | Energy, Chemicals and Pharmaceuticals Group

1991–1993	The Brattle Group Research Analyst
1989–1991	Global Petroleum Trading Assistant

SELECTED CONSULTING EXPERIENCE

Commercial Damages – Investor-State and Commercial Arbitration

- **International Centre for the Settlement of Investment Disputes**
In *Legacy Vulcan, LLC v. United Mexican States*, filed an expert report estimating damages of US\$1.1 billion for the claimant arising from that alleged NAFTA violations by the respondent.
- **London Court of International Arbitration**
A distributor brought a claim against a solar module manufacturer for providing alleged non-conforming products under the United Nations Convention on Contracts for the Sale. Retained by the respondent to testify about the reliability of the distributor’s €200 million damages claim.
- **ICC International Court of Arbitration**
In the acquisition of a Japanese cosmetics business, the seller was alleged to have misrepresented its ownership of certain intellectual property. Testified on behalf of the seller about the proposed adjustment to purchase consideration to account for the alleged misrepresentation in a Singapore arbitration.
- **Permanent Court of Arbitration in The Hague**
In *Bilcon of Delaware, et al. v. Government of Canada*, testified on behalf of Canada evaluating the reliability of the claimant’s US\$443 million damages calculation arising under NAFTA from a flawed permit review process.
- **Brazil-Canada Chamber of Commerce**
A manufacturer experienced a major equipment failure at its largest production facility, and entered into arbitration with its insurance provider over covered losses. On behalf of the manufacturer, estimated the recoverable business interruption losses and material damages in excess of US\$400 million.
- **International Centre for Dispute Resolution**
In a corporate acquisition, the buyer obtained an insurance policy to protect against breaches of the seller’s representations and warranties. In a dispute between the buyer and its insurer, estimated the buyer’s losses to be approximately US\$120 million from the seller’s alleged breach.

Commercial Damages – Court Proceedings

- In a lawsuit brought by the City of Ontario, California against Los Angeles World Airports, submitted an expert report evaluating the reliability of the plaintiff's claim for over US\$3 billion in damages for alleged mismanagement of the Ontario airport.
- On behalf of plaintiffs' counsel, submitted a declaration evaluating whether the proposed distribution plan for a US\$2.7 billion settlement fund was economically reasonable for *In Re Blue Cross Blue Shield Antitrust Litigation, MDL 2406*.
- Provided expert testimony assessing the damages analysis underlying the request for a US\$50 million bond in a Lanham Act matter.
- In a lawsuit over an exclusive pharmaceutical distribution agreement for the former Soviet Union, testified on the reliability of a damages claim in excess of US\$300 million arising from the supplier's alleged breach of contract.
- Served as an expert on damages cases involving intellectual property disputes in the biotechnology, consumer products, chemicals, infrastructure, and the entertainment & leisure sectors.
- For a manufacturer of industrial pumps, served as an expert on damages in a dispute over a distribution agreement and the accompanying option to purchase the supplier.

Valuation

- **Oil and gas industry engagements**
 - Advised a board of directors on the valuation impact of a proposed refinery upgrade.
 - Evaluated the reliability of the methodology and conclusions reached in an appraisal of a multibillion-dollar petroleum refining and marketing business.
 - Valued crude oil reserves.
 - Valued the impact of a proposed injunction delaying a coalbed methane project.
 - Valued lease interests in the Marcellus shale.
 - Analyzed the value of liquefied natural gas (LNG) supply agreements.
- In a dispute over a gaming license in Macau, valued the gaming business resulting from a multibillion-dollar investment program relying on the license.
- Advised on the fair market value of assets during negotiations over the sale of a controlling stake in a large cement, aggregates, and ready-mix concrete business.
- For an entrepreneur considering the purchase of hydroelectric generating assets, estimated the fair market value of the target assets.

- Advised a client on the valuation of online gaming assets that generated net gaming revenues of nearly US\$1 billion per year.
- On behalf of a potential acquirer, assisted in the valuation of transmission assets being offered for sale by a vertically-integrated electric utility.
- Experienced in valuing a wide variety of financial instruments.

Tax

- ***Roy E. Hahn and Linda G. Montgomery v. Commissioner of Internal Revenue***
Testified on behalf of the IRS regarding the potential for economic profit and non-tax business purpose of a custom adjustable rate debt structure (CARDS) transaction.
- Retained to serve as an expert on behalf of the US Government to evaluate the potential for economic profits and non-tax business purpose for structured transactions referred to as distressed asset/debt (DAD), bond-linked issue premium structure (BLIPS), and oil & gas development partnership transactions. All three cases settled prior to report filings.
- Submitted an expert report valuing crude oil reserves worth nearly US\$1 billion in a tax basis dispute and presented on behalf of the taxpayer before an IRS appeals panel.
- Served as consulting expert on high-profile tax cases, including:
 - *Klamath Strategic Investment Fund LLC v. U.S.* (BLIPS)
 - *United States v. Woods* (Son of Boss)
 - *Country Pine Finance, LLC v. Commissioner of Internal Revenue* (CARDS)
 - *Southgate Master Fund LLC. v. United States* (DAD)
 - *Wells Fargo & Company v. United States* (STARS)
- In a variety of matters, advised taxpayers on transfer pricing issues both for advance pricing agreements and in the course of litigation. Industries analyzed include liquefied natural gas, mining, commodities trading, insurance, and pharmaceuticals.
- On behalf of taxpayers, evaluated the economic benefits and burdens borne by companies under contracts involved in disputes over research tax credits and Section 199 domestic production deductions.
- On behalf of the IRS, evaluated the economic reasonableness of a taxpayers' claimed tax treatment of hedging transactions conducted using exotic derivatives in multiple cases.

TESTIMONY AND EXPERT REPORTS

Agrizap, Inc. v. Woodstream Corp., et al.

- US District Court for the Eastern District of Pennsylvania, Civil Action No. 04-3925
 - Expert Report

Alabama S&G, LLC v. Commissioner of Internal Revenue

- US Tax Court, Docket No. 7703-19
 - Expert Report and Court Testimony

AMG Vanadium LLC v. Mitchell E. Kidd, et al.

- US District Court for the Eastern District of Pennsylvania, Civil Action No. 18-cv-4301 (JLS)
 - Expert Report

Bilcon of Delaware Inc. et al v. Government of Canada

- Permanent Court of Arbitration, Case No. 2009-04
 - Expert Report and Hearing Testimony

City of Ontario v. City of Los Angeles, Los Angeles World Airport, and Los Angeles Board of Airport Commissioners

- Superior Court of California, Case No. RIC 1306498
 - Expert Report and Deposition Testimony

Confidential AAA Arbitration

- Related to the mutual fund industry (New York)
 - Expert Report, Deposition Testimony, and Hearing Testimony

Confidential Brazil-Canada Chamber of Commerce Arbitration

- Related to economic losses in an insurance dispute in the paper and allied products industry
 - Expert Report

Confidential ICC Arbitrations

- Regarding alleged misrepresentations in a cosmetics industry acquisition (Singapore)
 - Expert Report and Hearing Testimony
- Related to the alleged breach of a share purchase agreement in the pulp & paper industry
 - Expert Report
- Regarding the construction contract for a hydroelectric dam in Central America (New York)
 - Expert Report and Hearing Testimony
- Regarding the alleged breach of a pharmaceutical distribution agreement
 - Expert Report and Hearing Testimony

Confidential ICDR Arbitration

- Related to a claim on an insurance policy covering the alleged breach of representations and warranties in an energy industry acquisition (New York)
 - Expert Report and Hearing Testimony

Confidential JAMS Arbitration

- Regarding the alleged breach of contract to administer and underwrite home warranties
 - Expert Report and Deposition

Confidential LCIA Arbitration

- Regarding the delivery of allegedly defective solar modules (Singapore)
 - Expert Report

Confidential Tax Dispute Over the Value of Crude Oil Reserves

- Expert Report and Presentation to IRS Appeals Panel

Confidential Tax Dispute Regarding Claimed Hedge Using Credit Default Swaps

- Presentation to IRS Appeals Panel

Coverings Space NJ, Inc. v. Adele, et al.

- Superior Court of New Jersey, Civil Action HUD-L-3730-06
 - Expert Report and Deposition Testimony

Embrex, Inc. v. Avitech, L.L.C.

- US District Court for the Middle District of North Carolina, Civil Action No. 1:04CV00693
 - Expert Report

Enel Green Power S.p.A. v. Republic of El Salvador

- ICSID, Case No. ARB/13/18
 - Expert Report

ErinMedia, LLC v. Nielsen Media Research, Inc.

- US District Court for the Middle District of Florida, Civil Action No. 8:05-CV-1123-T24-EAJ
 - Expert Report and Deposition Testimony

Excelsior Aggregates, LLC v. Commissioner of Internal Revenue

- US Tax Court, Docket No. 20608-18
 - Expert Report and Court Testimony

Hydro-Fraser Inc., Société d'énergie Columbus Inc., Ayers Ltée v. Hydro Québec

- Ad hoc arbitration

- Expert Report and Hearing Testimony

IC Power Asia Development Ltd. v. Republic of Guatemala

- UNCITRAL Arbitration
 - Expert Report and Hearing Testimony

In Re Blue Cross Blue Shield Antitrust Litigation, MDL 2406

- Northern District of Alabama Southern Division, Master File 2:13-cv-20000-RDP
 - Expert Declaration

Kaloti Metals & Logistics, LLC v. The Republic of Peru

- ICSID Case No. ARB/21/29
 - Expert Report

Kayat Trading Ltd. v. Genzyme Corporation

- Cyprus District Court, Nicosia District
 - Expert Report and Court Testimony

Legacy Vulcan, LLC v. United Mexican States

- ICSID, Case No. ARB/19/1
 - Expert Reports and Hearing Testimony

Norfolk Southern Railway Company v. Drummond Coal Sales, Inc.

- US District Court for the Western District of Virginia, Civil Action No. 7:08CV00340
 - Expert Report

Perfetti Van Melle USA and Perfetti Van Melle Benelux v. Cadbury Adams USA LLC

- US District Court for the Eastern District of Kentucky, Civil Action No. 2:10-CV-35-DLB
 - Expert Declaration and Court Testimony

PDZ Holdings Pty Ltd et al v. Republic of Poland

- Permanent Court of Arbitration, Case No. 2020-52
 - Expert Report and Hearing Testimony

PDZ (UK) Limited and PD Co Holdings (UK) Limited v. Republic of Poland

- Permanent Court of Arbitration, Case No. 2021-06
 - Expert Report and Hearing Testimony

Petroplast Petrofisa Plasticos S.A. and Petrofisa Do Brazil, Ltda v. Ameron International Corp.

- Delaware Court of Chancery, Civil Action No. 4304-VCP
 - Expert Report, Deposition Testimony, and Court Testimony

Robert Rockwood and Roxanna Marchosky v. SKF USA, Inc.

- US District Court for the District of New Hampshire, Civil Action No. 1:08-CV-00168
 - Expert Report

Roy E. Hahn and Linda G. Montgomery v. Commissioner of Internal Revenue

- US Tax Court, Docket No. 1910-14
 - Expert Report and Court Testimony

SCS Interactive, Inc. and Whitewater West Industries Ltd v. Vortex Aquatic Structures International Inc.

- US District Court of Colorado, Civil Action No. 09-cv-01732-REB-KLM
 - Expert Report

SoBe Entertainment International, LLC v. Paul Wight a/k/a “The Big Show,” Bess Wight f/k/a Bess Katramados, and World Wrestling Entertainment, Inc.

- Circuit Court for Miami-Dade County, Case No. 09-45461 CA 09
 - Expert Declaration

The Northern Cheyenne Tribe v. Gale A Norton, Secretary of the Interior and Fidelity Exploration and Production Company

- US District Court for the District of Montana, Billings, Civil Action No. CV-03-00078-RWA
 - Expert Declaration

PUBLICATIONS AND PRESENTATIONS

“Quantum in Oil and Gas and Mining Arbitrations,” *The Guide to Damages in International Arbitration*, Fifth Edition, with F. Dorobantu and F. Bañez (November 2022).

“Introduction to M&A Disputes,” with Y. Austin Smith (June 2021).

“Damages in Oil & Gas and Mining Arbitrations,” *The Guide to Damages in International Arbitration*, Fourth Edition, with F. Dorobantu (February 2021).

“Valuing Natural Resources Investments,” *Contemporary and Emerging Issues on the Law of Damages and Valuation in International Investment Arbitration*, with R. Caldwell and F. Dorobantu (May 2018).

“An Economic Evaluation of ‘Funding’ for Research Tax Credits,” with S. Ledgerwood. *Tax Notes*, Volume 144, Number 13: 1593 (September 2014).

Credit, Where Credit is Due: An Economic Approach to Evaluating the Issue of ‘Funding’ in Research Tax Credit Claims, with S. Ledgerwood, white paper (February 2014).

“The BP Royalty Trust: Warning of Impending Price Declines or a Failing Economic Indicator,” *Notes at the Margin*, with P. Verleger (September 2012).

The Economic Implications of the Texas Waiver on Petroleum Markets and the Broader Economy, with P. Verleger, white paper, (June 2008).

“Regulation and Deregulation of US Industries,” guest lecturer, University of Virginia School of Law (February 2008).

“Standards for Consulting Firms Working with Academic Experts,” presented Law Seminars International’s Expert Testimony in Litigation Conference, Reston, VA (December 2004).

“Stages of Power Plant Development – A Survey,” with F. Graves, presented at “Boom-Bust” in the Electric Power Industry, Cambridge, MA (August 2000).

“The FERC, Stranded Cost Recovery, and Municipalization,” coauthor, *Energy Law Journal*, Vol. 19 (2), pp. 351–386 (1998).

“What’s in the Cards for Distribution Companies,” with P. Hanser and J. Pfeifenberger, presented at The Electricity Distribution Conference, Denver, CO (April 1998).

“Distributed Generation: Threats and Opportunities,” with P. Hanser and J. Pfeifenberger, presented at The Electricity Distribution Conference, Denver, CO (April 1998).