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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PETROLEUM GEO-SERVICES INC.
Petitioner

v.

WESTERNGECO LLC
Patent Owner

Case IPR2014-00678
U.S. Patent No. 6,691,038

PATENT OWNER PRELIMINARY RESPONSE

Pursuant to 37 C.F.R. § 42.107(a), Patent Owner, WesternGeco L.L.C (“WesternGeco” or “Patent Owner”), submits this Preliminary Response to the Petition for *Inter Partes* Review (“Petition”) of U.S. Patent No. 6,691,038 (the “’038 patent”) filed by Petitioner, Petroleum Geo-Services, Inc. (“PGS” or “Petitioner”).

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I. Claim 14 of the '038 Patent Recites a 4D Seismic Surveying System

The '038 patent (Ex. 1001) describes marine seismic surveying technology used to image subsurface layers of the earth to search for natural resources, typically oil. As shown in Figure 1 of the '038 patent, reproduced below, marine seismic surveys employ vessels that tow “sources” (14) to periodically fire waves at the subsurface layers. Towed “streamers” (12) with hydrophones record the reflected waves as the vessel (10) traverses an area of investigation.

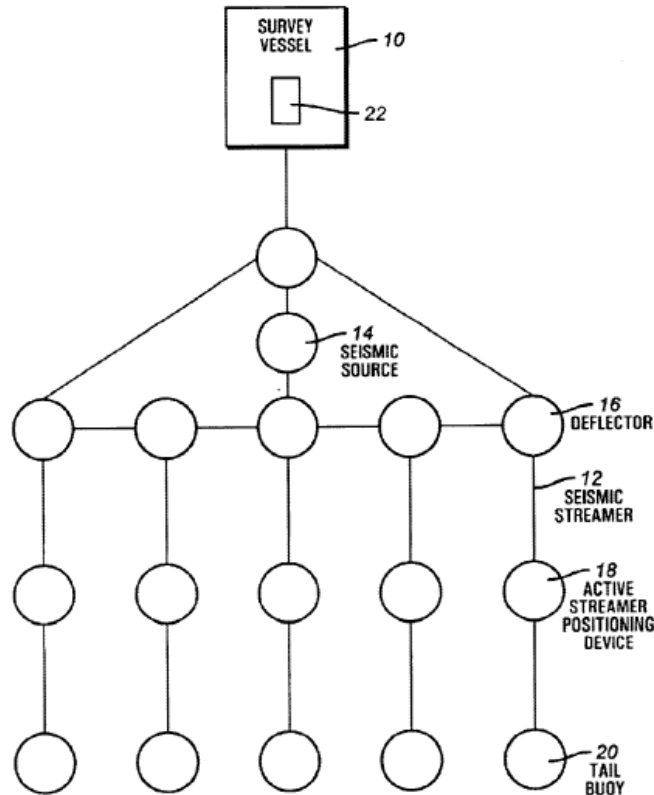


FIG. 1

As explained in the Related Art section of the '038 patent, towed marine seismic tracking and positioning systems were generally known at the time of

filing the '038 patent. (Ex. 1001, 1:25-32.) For example, 2D surveys were performed with a single streamer to provide an image of a vertical slice of the subsurface. A 3D survey could be performed using an array of streamers, to provide data over an entire area. As can be appreciated, a 4D survey (time being the fourth dimension) monitors a formation over time, *e.g.*, as oil is produced by a well, to ensure the optimal management of that formation.

The '038 patent identifies several limitations with known seismic cable tracking and positioning systems in the Description of the Related Art (background section), and further explains that:

[T]here is no known seismic tracking and positioning system that tracks the geometry of the seismic streamer array and the relative positions of the individual streamers comprising array elements with respect to time and with respect to the earth's latitude and longitude so that towed seismic array data acquisition runs are repeatable, thereby enabling acquisition of four-dimensional geophysical data (x, y, z, time).

(Ex. 1001, 2:16-24.)

The '038 patent discloses and claims a novel tracking and positioning system for 4D seismic surveys by tracking both streamer positions and streamer array geometries by employing a master controller to steer streamers for maintaining those positions and geometry **versus time** (x, y, z, time). By

accurately repeating position and geometry, despite variable environmental factors such as ocean currents, the '038 patent pioneered the ability to monitor subtle changes in reservoirs over time to manage oil production.

A. Claim 14 Recites a System to Set & Maintain Streamer Positions Versus Time for 4D Surveying

The specification of the '038 patent summarizes the surveying invention as follows:

The **present invention** controls streamer positions horizontally and vertically using active control units positioned on each streamer within the seismic array. The three component (x, y, z) position of each streamer element, relative to the vessel, relative to each other and relative Earth coordinate latitude and longitude is controlled, tracked and stored with respect to time during **each seismic data acquisition run**.

(Ex. 1001, 2:53-2:60, emphasis added.)

The specification teachings are anchored to “time” and “repetition,” as this is how time lapse, 4D surveying is performed. For example, as explained in the Summary of the Invention section of the '038 patent: “The acquisition of legacy data enables repetition of seismic data acquisition runs,” *i.e.*, a critical part of the '038 patent's 4D approach. (Ex. 1001, 2:66-2:67.) And in the Description of the Related Art, the '038 patent distinguishes the art as lacking a “seismic tracking and positioning system that tracks the geometry of the seismic streamer array and the

relative positions of the individual streamers comprising array elements with respect to time and with respect to the earth's latitude and longitude **so that towed seismic array data acquisition runs are repeatable, thereby enabling acquisition of four-dimensional geophysical data.**" (Ex. 1001, 2:17-2:24, emphasis added.)

B. Known Surveying Varied Significantly

Seismic surveyors attempted to conduct periodic surveys to create 4D data for many years prior to the '038 patent, and many different approaches were known. However, none of these early attempts used the approach to 4D surveys recited in Claim 14 of the '038 patent. For example, one of the references cited in the Petition, Morice, (Morice *et al.*, "4D-ready marine seismic data," 2000, 70th Annual International Meeting, SEG Expanded Abstracts, 1607-1614, Ex. 1005), focuses on sensor sensitivity and shot-signature variation rather than employing a master controller to steer streamers to maintaining positions and geometry **versus time**, as is recited in Claim 14. A nearly identical paper by Mr. Morice is cited on the face of the '038 patent and was considered by the Patent Office during the prosecution of the patent. (See "4D-Ready Towed-Streamer Data and the Foinaven Benchmark", Ex. 2002.) Both articles discuss the same commercial embodiment of another reference cited in the Petition, the '895 Application (PCT Publication WO 00/20895, Ex. 1003). (Compare Ex. 1005 at 1609-10 and Ex.

2002 at 6.) Notably, the '895 Application is cited on the face of the '038 patent and was discussed extensively during prosecution of the application that resulted in the '038 patent.

The method of conducting 4D surveys disclosed in Morice relies on data-processing techniques to deal with undesired movement of the streamers. While streamers might be steered for “optimal coverage, towing efficiency or minimal risk of tangling,” there is no teaching or suggestion of a tracking and positioning system, or using such a system for maintaining position and array geometry versus time as recited in Claim 14 of the '038 patent.

Another reference cited in the Petition, the Canter PCT (PCT Publication WO/01/380 A2, Ex. 1004), discloses yet another unreliable way of attempting to conduct 4D surveys. Because of the “vast amount of positional data” generated during a given survey, the Canter PCT used a “path-tracking” approach which would use only “sufficient positional data from the previous survey” to define a new track to follow in a subsequent acquisition. (See Ex. 1004 at 6-7.) The Canter PCT recognizes that, under its approach, “it will not be possible to reproduce precisely the tracks followed by all the equipment of the previous survey.” (*Id.* at 8.) Rather, the Canter PCT hoped that creating new paths would allow the sensors to be “close” for “parts of the survey” so that the 4D survey will be “much improved.” (*Id.*) No tracking and positioning system for array geometry is

disclosed, nor any system for maintaining positions and array geometry versus time as recited in Claim 14 of the '038 patent.

C. Overview of Patentable Distinctions

The Petition includes eight redundant grounds that each allege that Claim 14 of the '038 patent (“Claim 14”) is not patentable. None of Petitioner’s proposed grounds account for each and every element recited in Claim 14, and, therefore, none of Petitioner’s grounds establish a reasonable likelihood of prevailing as to the unpatentability of Claim 14.

The Petition includes two main arguments: (1) the seismic streamer array tracking and positioning system recited in Claim 14 is not limited to four-dimensional seismic data acquisition, and (2) even if Claim 14 is so limited, the general concept of four-dimensional seismic data acquisition was known in the art in the relevant time frame. These arguments miss the mark, because they rely on an erroneous interpretation of Claim 14. The system of Claim 14 is not merely limited to four-dimensional seismic data acquisition, but is in fact limited to a particular type of four-dimensional seismic data acquisition system – one in which desired streamer positions and array geometry are **maintained versus time**. No reasonable combination of references cited in the Petition discloses this particular type of four-dimensional seismic data acquisition system.

The same or similar prior art presented in this Petition was utilized to challenge the validity of Claim 14 of the '038 in a recent District Court litigation between WesternGeco and ION Geophysical Corporation (“ION”), Petitioner’s partner for streamer steering technology. During that litigation, ION argued that the '895 Application (Ex. 1003) both anticipated and rendered obvious Claim 14 of the '038 patent. That challenge was unsuccessful on both counts. WesternGeco successfully differentiated Claim 14 from the '895 Application by noting that the '895 Application does not disclose the 4D survey inventions claimed in the '038 patent—maintaining positions and array geometry versus time. The testimony of multiple witnesses, including the challenger’s own expert, Robert Brune, corroborated this point: “the ['895 Application] does not deal with 4D time lapse kind of concepts.” (Ex.2003, 3987:8-3987:9.)

Further, although Morice (Ex. 1005), the EAGE paper (,Hillesund, Bittleston, *et al.*, “Marine Seismic Cable Steering and Control,” EAGE 62nd Conference and Technical Exhibition-Glasgow, Scotland, May 29 - June 2, 2000, Ex. 1006) and the Canter PCT (Ex. 1004) all mention the desirability of repeating streamer positions in subsequent runs for the purpose of improving repeatability of a seismic image in four-dimensional data acquisition, none of these references disclose or suggest tracking and maintaining streamer positions and array geometry versus time, as required by Claim 14.

Patent Owner itself makes very clear that the general concept of four-dimensional seismic data acquisition was known at the time of the invention recited in Claim 14. Nevertheless, Petitioner presents page-upon-page of argument and declarant statements addressing this well-settled background art. (*See* Petition, at 36-41, for example.) This deliberate littering of the record is provided only to distract the Board.

Patent Owner plainly distinguished known streamer positioning systems that simply control the position of streamers (but that fail to track the geometry of the seismic streamer array and the relative positions of the individual streamers comprising array elements with respect to time so that towed seismic array data acquisition runs are repeatable), thereby enabling acquisition of four-dimensional geophysical data. (Ex. 1001, 1:45-2:23); *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1344 (Fed. Cir. 2001) (“Where the specification makes clear that the invention does not include a particular feature, that feature is deemed to be outside the reach of the claims of the patent, even though the language of the claims, read without reference to the specification, might be considered broad enough to encompass the feature in question.”)

What was not known at the time of the invention, and what the Petitioner has failed to demonstrate was known or would have been obvious to one of ordinary skill in that art at the time of the invention, was the particular seismic streamer

array tracking and positioning system recited in Claim 14. This system: (1) tracks horizontal and vertical streamer positions **versus time** during a seismic data acquisition run, (2) tracks array geometry **versus time** during a seismic data acquisition run, and (3) compares the vertical and horizontal positions of the streamers **versus time** and the array geometry **versus time** to desired streamer positions and array geometry **versus time** and issues positioning commands to the ASPDs to maintain the desired streamer positions and array geometry **versus time**. Such a system enables control of the horizontal, vertical and depth position of the entire array geometry comprising the individual streamers and attached ASPDs, with respect to time. (Ex. 1001, 7:64-67.) The result is four-dimensional data acquisition that has a higher level of accuracy and repeatability than what was possible with prior systems.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Unlike the system in Claim 14, merely steering streamers according to a simple acquisition plan, such as a new path with constant streamer separation, will result in different streamer tracks over subsequent runs as environmental influences will necessarily vary from run to run. In practice, if the streamers are deviated by a current, the streamers are then steered, in reaction to the current, to recover to the ideal path. If no such current exists in a subsequent run, the streamer paths will vary from run to run as the adjustments to the streamers, or lack thereof, will also vary.

By contrast, maintaining streamer positions versus time, as recited in Claim 14, allows deviations in streamer paths to be **repeated** over subsequent runs, regardless of variations in environmental influences across the runs. For example, if a streamer array is subject to a large current as its horizontal position, vertical position, and array geometry are tracked versus time during a seismic data acquisition, maintaining the desired streamer positions and array geometry versus time will repeat deviations in the streamer paths that are attributable to the current, regardless of the presence or absence of the current in the subsequent run. When surveying marine areas on the order of hundreds of square miles, repeatability is a critical aspect of survey quality.

Morice and the EAGE paper fail to disclose a particular technique for repeating positions in four-dimensional data acquisition, and the Canter PCT

discloses a system of steering the streamers to pre-selected nodes. Accordingly, Petitioner's proposed grounds fails to account for each and every element recited in Claim 14, and, therefore, none of Petitioner's grounds establish a reasonable likelihood of prevailing as to the unpatentability of Claim 14.

II. PETITIONER PARTNERED WITH ION TO COPY THE '038 PATENT

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] And the development documents echo the '038 patent's claimed steering method, such as "steering against preplot or vessel track mode." (Ex. 2008, ION15987-93.)

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

III. THE PETITION NEED NOT BE CONSIDERED ON THE MERITS

A. The Petition is Time-Barred under 35 U.S.C. § 315(b)

Patent Owner filed a complaint for patent infringement against ION on June 12, 2009 alleging, *inter alia*, that ION infringed the '038 patent by virtue of making, using or selling DigiFIN. (Ex. 2010.) Patent owner then filed a complaint against Fugro for its related infringement as an ION DigiFIN customer, which was consolidated with *ION*. (Ex. 2040.) On December 8, 2009, Patent Owner noticed Petitioner of its related infringement liability for using DigiFIN by providing it with a copy of the complaint. (Ex. 2011.) When Petitioner did not cooperate with providing litigation discovery, Patent Owner subpoenaed Petitioner through service of process on January 22, 2010 and identified "DigiFIN" as the accused product in the litigation. (Ex. 2012 [service copy with affidavit].) And in a subsequent motion to compel discovery, Patent Owner identified Petitioner as one of the ION

“customers who assemble [DigiFINs] into infringing systems either within the United States or abroad.” (Ex. 2013, *ION* D.I. 81.)

On February 8, 2010, after being served with process, Petitioner appeared in the *ION* litigation through its outside counsel, Heim, Payne & Chorush. (Ex. 2014). On March 14, 2011, Patent Owner filed its Amended Complaint alleging DigiFIN’s infringement of the ‘038 patent. (Ex. 2015.) Petitioner was served with this Amended Complaint that same day via the court’s electronic filing system (“ECF”). *See* Ex 2016; *see also* S.D. Tex. L.R. 5-1 (“The notice of electronic filing that is automatically generated by the Court's electronic filing system constitutes service of the document on those registered as filing users of the system.”).

“An inter partes review may not be instituted if the petition requesting the proceeding is filed more than 1 year after the date on which the petitioner, real party in interest, or privy of the petitioner **is served with a complaint alleging infringement of the patent.**” 35 U.S.C. § 315(b). (emphasis added). “The word ‘served’ has a definition that include ‘to make legal delivery of (a notice or process)’ or ‘to present (a person) with a notice or process as required by law.” *Motorola Mobility LLC v. Arnouse*, IPR2013-00010 (MT), Paper #20 at 4, (quoting Black’s Law Dictionary, 1491, Ninth Edition (2009)). “Served” as used in 35 U.S.C. § 315 means this legally operative act, rather than the colloquial “to

receive,’ ‘to deliver,’ or ‘to present.’” *Id.* at 3; *see also TRW Automotive US LLC v. Magna Elecs., Inc.*, IPR2014-00251, Paper #13 (finding that email did not comprise legal “service”). Interpreting “served” in accordance with Black’s Law Dictionary is in accord with the legislative purpose of § 315(b), “to provide defendants sufficient time to fully analyze the patent claim, *but not to create an open-ended process.*” *Motorola*, Paper #20 at 4 (citing legislative history). Patent Owner’s service of the Amended Complaint on Petitioner was legal “service,” and therefore satisfies § 315(b).¹

¹ In dicta, *Motorola* implies that service *of a summons* is also required. This requirement is contrary to the plain language of § 315(b). *Motorola*’s discussion was based in part on Fed. R. Civ. Pro. 4, but that Rule is titled “Summons” and concerns only when service of a summons is effective, not service of a complaint. *Motorola* also relied on *Murphy Bros. v. Michetti Pipe Stringing*, 526 U.S. 344 (1999). *Id.* at 3. But *Murphy* addressed removal under 28 U.S.C. § 1446, which concerned receipt “through service *or otherwise*, of a copy of the initial pleading,” and the Court was concerned that the “or otherwise” provision was too broad to trigger legal consequence in the absence of due process notification. 526 U.S. at 347, 350. In *ION*, in contrast,

It was unusual for Petitioner to be served with process, appear in litigation, and be served with an infringement complaint, yet not be a named defendant in the *ION* litigation. But the plain language of § 315(b) does not require that Petitioner be a defendant. Applying the legally-operative definition of “served,” § 315(b) is limited, as here, to situations where the Petitioner has entered an appearance in the litigation and is actively involved, *i.e.*, ***because they are interested in the infringement***. Should the policy behind 315(b) be considered here, it favors this plain language reading—once parties identified as liable for infringement are served pursuant to formal legal process, they should promptly seek IPR rather than lay-in-wait and engender duplicative proceedings years down the road.

The April 23, 2014 Petition filed by PGS is precluded by the plain language of 35 U.S.C. § 315(b)—it is years overdue. Petitioner was not only “served with a

Petitioner was served with process and formally appeared. See Murphy at 1327 (“Accordingly, one becomes a party officially, and is required to take action in that capacity, only upon service of a summons *or other authority-asserting measure*.”). In other words, PGS was “brought under a court’s authority, by formal process” before being served with the amended complaint, satisfying any due process concerns . *Id.* at 347.

complaint alleging infringement of the [‘038] patent” on March 14, 2011, but its specific liability for infringement from DigiFIN was outlined therein. Therefore, no review may be instituted based on this Petition.

B. The Petition Fails to Name All Real-Parties In Interest

As the Board is aware, disputes regarding identifying real-parties in interest (“RPIs”) have already permeated these proceedings. Petitioner initially identified no RPIs in its Petition. After discovery proceedings before the Board, Petitioner amended its disclosures and added PGSAS and Petroleum Geo-Services ASA as RPIs, receiving a new filing date and resetting the schedule for these proceedings. Patent Owner then requested, and received, additional RPI discovery from Petitioner. Based on the record adduced to date, two defects still taint Petitioner’s disclosures and preclude consideration of the Petition under 35 U.S.C. § 312(a)(2).

1. PGSAI Is an Unnamed RPI

[REDACTED]

[REDACTED] ION contacted Mr. Hart in 2011 to discuss the *ION* litigation, the ‘038 patent, and using an inventor deposition to try to invalidate the patent. (Ex. 2018, PGSI-T2725-WG-46640) Mr. Hart attended the 2012 *ION* trial, discussed the invalidity of the ‘038 patent with ION’s trial counsel, and obtained prior art and invalidity contentions for Petitioner’s trial counsel. (Ex. 2019) Mr. Hart retained trial counsel on behalf of Petitioner and

PGSAS. (Ex. 2020) Petitioner recently identified various emails, calls and meetings regarding the validity of the ‘038 patent in which Mr. Hart acted as “PGS [*i.e.*, Petitioner] in-house counsel” or otherwise “on behalf of ‘PGS/Irell’ (Irell & Manella LLP is PGS’ trial counsel).” (Ex. 2021 .) In short, Mr. Hart, *i.e.*, PGSAI, controlled the review, dissemination and discussion of the prior art that was presented in the Petition.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]² In other words, unnamed PGSAI controlled Petitioner’s DigiFIN

² In the pending litigation between Petitioner and Patent Owner, Petitioner similarly transferred PGSAI’s patents to Petitioner on the eve of its counterclaims so that Petitioner could assert PGSAI’s infringement claims in

activities and those of the named RPIs. (Petitioner has so far refused to reveal whether PGSAI likewise controlled the retention or invoices for Petitioner's counsel in this proceeding. (Ex. 2021, Interrogatory Responses at 11-12))

Because PGSAI's counsel is controlling PGS' interests in the validity and infringement of the '038 patent, PGSAI is an RPI. Because Petitioner has failed to identify PGSAI as such, the Petition is deficient and cannot be considered. 35 U.S.C. § 312(a)(2).

Patent Owner invited Petitioner to amend its disclosures to identify PGSAI as an RPI and to "discuss a modest adjustment of the existing opposition schedule based on the new filing date." (Ex. 2028) Petitioner refused.³ Accordingly, the Petition must be dismissed.

Petitioner's name. (Ex. 2027) For whatever reasons, Petitioner has expended considerable effort attempting to hide PGSAI from these various proceedings.

³ On the eve of this Opposition, Petitioner produced a vague "Human Resources" memorandum stating that PGSAI's employees were "transferred" to Petitioner on January 1, 2013. (Ex. 2029) This "memo" is irrelevant to PGSAI's role prior to that date, and there is no indication that Mr. Hart stopped representing PGSAI after that date. Mr. Hart never notified ION of any change to their

2. ION Is an Unnamed RPI

██████████ Petitioner and ION have coordinated efforts across multiple forums to promote their joint interests regarding the '038 patent. Shortly after infringement allegations were raised against the two entities, ION reached out to Petitioner to coordinate on its attempt to invalidate the '038 patent:

Speaking plainly, several PGS employees previously worked for WesternGeco . . . One of these gentlemen, Mr. Hillesund, is a named inventor of the WesternGeco patents . . . ION intends to depose Mr. Hillesund and others . . . ***ION would be very interested in discussing mutually beneficial opportunities to improve our access to PGS***

express agreement that he represented only PGS AI in dealings concerning the validity of the '038 patent. And there is no indication that Mr. Hart believed he was representing anyone other than PGS AI. PGS AI still exists as an independent corporation today, and if “all employees” were transferred out of it last year then other PGS employees--like Mr. Hart--must still be representing PGS AI's interest and acting on its behalf.

employees . . . It is our belief that such testimony will help, at least, to invalidate the WesternGeco patents.

(Ex. 2018)

ION's attempts to protect Petitioner's rights to use DigiFIN comprised multiple invalidity attacks at trial, including many arguments similar to those raised in the Petition. Petitioner attended the trial at ION's invitation, and raised comments and questions regarding the same between their respective counsel during those proceedings. (Ex. 2019) During this period, Petitioner began claiming a "common interest privilege" over its communications with ION regarding "WG litigation" and "litigation interests." (Ex. 2031) Petitioner has based this privilege assertion on "Western[Geco]'s litigiousness on the subject of DigiFIN gives rise to a common legal interest regarding the patent infringement assertions." (Ex. 2032) And Petitioner is currently arguing in the district court litigation that ION's trial arguments and damages now protect Petitioner from any infringement liability. (Ex. 2033)

ION's invalidity arguments failed at trial, and ION filed a notice of appeal and docketing statement indicating that it would appeal those issues. (Ex. 2034) Petitioner continued to meet with ION to discuss specific references and invalidity theories, and potential arguments to raise in these proceedings. (Ex. 2021 (rog response and letters, etc.)) Petitioner has refused to produce the majority of these communications through its continued invocation of a common interest privilege. (Ex. 2031) But now that Petitioner has challenged the validity of the '038 patent, ION has dropped that issue from its pending appeal, apparently relying on potential collateral effects of Petitioner's current efforts under a lessened burden instead.⁴

This web of interlaced interests and unified legal efforts regarding the '038 patent, infringement liability therefor and the validity thereof, renders ION and Petitioner real-parties-interest with respect to this Petition. Petitioner and ION have coordinated their invalidity attacks against WesternGeco's patents and are each relying on the collateral effects of the other's legal proceedings to protect their own interests. Notably, Petitioner's invocation of a common interest

⁴ Conversely, ION has filed an opposition to WesternGeco's EPO counterpart to the '038 patent, whereas Petitioner has not, apparently piggy-backing on ION's efforts in that forum.

privilege under 5th Cir. law is limited to actual or “potential co-defendants.” *In re Santa Fe*, 272 F.3d 705, 711 (5th Cir. 2001). This jibes with the PTAB Practice Guide, which notes that to establish an RPI relationship, “it should be enough that the nonparty has the actual measure of control or opportunity to control that might reasonably be expected between two formal coparties.” PTAB Trial Practice Guide at 48759. ION’s involvement with the Petition is at least as comprehensive as if ION and Petitioner were formal codefendants--and arguably significantly more given ION’s ultimate responsibility for Petitioner’s infringement liability and ION’s role as the source for references and arguments for the Petition. ION is an unnamed RPI, and also was served with an infringement complaint more than one year prior to the Petition. The Petition therefore fails under both § 312(a)(2) and § 315(b), and need not be considered on the merits.

3. ION Is a Privy Regarding Validity of the ‘038 Patent

If not a real-party in interest, ION is at least in privity with Petitioner and other real-parties in interest regarding the validity of the ‘038 patent:

- ION and Petitioner share the same interests regarding the validity of the ‘038 patent. (Ex. 2018 (2011 email discussing “mutually beneficial opportunities . . . to invalidate the WesternGeco patents”)).

- [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
- ION and Petitioner invoked a common-interest privilege beginning in 2012 regarding their discussions and cooperation regarding the ‘038 patent, the *ION* litigation and the Petition. (Ex. 2033)
- Petitioner has relied on ION to represent Petitioner’s substantive interests in the *ION* litigation and appeal. (Ex. 2035 at 1, n1. (representing that “reversal or remand on substantive patent grounds [in *ION*] would curtail or extinguish Western’s claims against ION, ***and by extension, Geo [i.e., Petitioner PGS].***”))

Additionally, as discussed above, ION and Petitioner having been cooperating and coordinating regarding the validity of WesternGeco’s patents across multiple forums for years, evidencing their respective control over, and use of each other as a proxy regarding validity challenges. Petitioner has gone so far as to invoke res judicata based on the *ION* litigation, reinforcing its belief that its interests regarding, *inter alia*, the validity of the ‘038 patent were already full

represented and litigated by ION from 2009-12. (Ex. 2035) ION is a privy with regard to the validity of the '038 patent and, because ION was served with an infringement complaint in 2009, the Petition is time barred under § 315.

IV. If Considered, the Petition is Time-Barred under 35 U.S.C. § 315(b)

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]⁵ [REDACTED]

[REDACTED]

[REDACTED]

Patentee filed a complaint for patent infringement against ION on June 12, 2009 alleging, *inter alia*, that ION infringed the '038 patent by virtue of making, using or selling DigiFIN. On December 8, 2009, Patent Owner noticed Petitioner of its infringement liability for using DigiFIN by providing it with a copy of the

⁵ As a separate matter, Patent Owner is currently investigating ION's role in the filing of the Petition in the present proceeding, as well as the participation and control of related PGS entities.

complaint. Petitioner then entered an appearance in the suit, and was subsequently **served with a new complaint** (Ex. 2015, Amended Complaint on March 14, 2011). This amended complaint, like the original, also identified the use of DigiFIN as infringing the '038 patent.

- The plain language of 35 U.S.C. 315(b) is clear: service of a complaint alleging infringement of the patent is sufficient to trigger the 12-month window; nothing else is required. “An inter partes review may not be instituted if the petition requesting the proceeding is filed more than 1 year after the date on which the petitioner, real party in interest, or privy of the petitioner **is served with a complaint alleging infringement of the patent.**” 35 U.S.C. § 315(b). (emphasis added)
- The S.D. Tex. Local Rules specify that “The notice of electronic filing that is automatically generated by the Court's electronic filing system constitutes service of the document on those registered as filing users of the system.” (Ex. 2036, LR5.1.)
- Petitioner entered an appearance in the suit on February 8, 2010. (Ex. 2014.)
- Petitioner received notice of the amended complaint, which named its practices relative to DigiFIN as constituting infringement of the '038 patent, via the S.D. Tex. electronic filing system on March 14, 2011. (Ex. 2016, email receipt.) This constitutes service of the Amended Complaint on PGS Inc. under the local rules.

- It is rare that any non-party is formally served with a complaint. Such circumstances are, as here, limited to situations where the Petitioner has entered an appearance in the litigation and is actively involved. Should the policy behind 315(b) be considered here, it favors this plain language reading—once parties identified as liable for infringement are served, they should promptly seek IPR rather than lay-in-wait and engender duplicative proceedings years down the road.

The April 23, 2014 Petition filed by PGS is precluded by the plain language of 35 U.S.C. § 315(b) — it is years overdue. Petitioner was not only “served with a complaint alleging infringement of the [’038] patent” on March 14, 2011, but its liability for infringement was outlined therein by virtue of the continued use of DigiFIN. Therefore, no review may be instituted based on this Petition.

V. Claim Construction

A. Applicable Law

If the merits are addressed, in an *inter partes* review, claim terms in an unexpired patent are interpreted according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b). Also, claim terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

B. “Versus Time”

Claim 14 recites a seismic streamer array tracking and positioning system that includes, among other things, a tracking system for tracking the streamer horizontal and vertical positions **versus time** during a seismic data acquisition run; an array geometry tracking system for tracking the array geometry **versus time** during a seismic data acquisition run; and a master controller that compares the vertical and horizontal positions of the streamers **versus time** and the array geometry versus time to desired streamer positions and array geometry **versus time** and that issues positioning commands to the ASPDs to maintain the desired streamer positions and array geometry **versus time**. In view of the specification and use of the term within the claims, the recitation of versus time in Claim 14 should be construed as relating to the time dimension of four-dimensional seismic data acquisition.

A broader reading of versus time, one that would **not** enable 4D surveying, would be unreasonable as the advancement in the art described by the '038 patent would no longer be possible. Rather, versus time is properly read to relate to a time dimension of four-dimensional seismic data acquisition. That is because Claim 14 requires a seismic streamer array tracking and positioning system that (1) tracks positions and array geometry **versus time**; (2) compares positions and array geometry **versus time** to desired positions and array geometry **versus time**; and

(3) issues positioning commands to ASPDs to maintain the desired streamer positions and array geometry **versus time**.

In construing claims of an unexpired patent challenged at the U.S. Patent and Trademark Office, the Board must give primacy to the language of the claims, followed by the specification. *See Tempo Lighting, Inc. v. Tivoli, LLC*, 109 USPQ2d 1599, 1602 (Fed. Cir. 2014). In this case, both the language of the claims and the corresponding disclosure in the specification provide guidance that the recitation of versus time in Claim 14 should be construed as relating to the time dimension of four-dimensional seismic data acquisition.

1. The Language of Claim 14

The first step involved in proper claim construction is to look at the language of the claims and understand how a particular term is used within the context of the surrounding language. As the Federal Circuit has explained, “[p]roper claim construction ... demands interpretation of the entire claim in context, not a single element in isolation.” *Hockerson-Halberstadt, Inc. v. Converse Inc.*, 183 F.3d 1369, 1374 (Fed. Cir. 1999). See also *Kyocera Wireless Corp. v. International Trade Commission*, 545 F.3d 1340, 1347 (Fed. Cir. 2008) (“this court does not interpret claim terms in a vacuum, devoid of the context of the claim as a whole.”); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc) (“the context in which a term is used in the asserted claim can be highly instructive”);

ACTV, Inc. v. Walt Disney Co., 346 F.3d 1082, 1088 (Fed. Cir. 2003) (“While certain terms may be at the center of the claim construction debate, the context of the surrounding words of the claim also must be considered in determining the ordinary and customary meaning of those terms.”).

Claim 14 recites a seismic streamer array tracking and positioning system that: (1) tracks positions and array geometry versus time; (2) compares positions and array geometry versus time to desired positions and array geometry versus time; and (3) issues positioning commands to ASPDs to maintain the desired streamer positions and array geometry versus time. When Claim 14 is read as a whole, the common thread of tracking, comparing, and issuing position commands is that **all of these actions** are done **versus time**. The related nature of these actions as presented in Claim 14 reinforces that “versus time” necessarily relates to the time dimension of a 4D survey.

2. The Specification of the '038 Patent

“The broadest-construction rubric coupled with the term ‘comprising’ does not give the PTO an unfettered license to interpret claims to embrace anything remotely related to the claimed invention. Rather, claims should always be read in light of the specification and teachings in the underlying patent.” *In re Suitco Surface, Inc.*, 603 F.3d 1255, 1260 (Fed. Cir. 2010) (citing) *Schriber-Schroth Co.*

v. Cleveland Trust Co., 311 U.S. 211, 217 (1940) (“The claims of a patent are always to be read or interpreted in light of its specifications.”).

Understood in the context of the specification, the “versus time” language in Claim 14 refers to the time-lapse aspect of repeatable 4D seismic surveys. Every time the phrase “versus time” is used in the specification, it is used to denote repeating a parameter at varying times, *i.e.*, in a 4D survey: “tracking the streamer positions versus time...for repeating the positions”; “tracking the array geometry versus time...for repeating the array geometry.” This specification language describing repeating positions and geometries versus time, *i.e.*, as part of a 4D survey, has the same structure as Claim 14, confirming its relevance in construing the terms of that claim. As opposed to other approaches to 4D surveys, the specification teaches that repeating or maintaining positioning and geometries versus time is the heart of the ’038 patent’s novelty, and the continuous tying of this “versus time” repetition or maintenance to 4D surveys confirms that the patentee used “versus time” and “as part of a 4D survey” interchangeably.

In the body of the specification, the “versus time” language is discussed in the context of “a tracking system for tracking the streamer positions versus time during a seismic data acquisition run and storing the positions versus time in a legacy database for repeating the positions versus time in a subsequent data acquisition.” (Ex. 1001, 4:61-4:65) The same language is used to describe the

tracking and storage of array geometries to be repeated in a subsequent survey.

(Ex. 1001, 4:65-5:3) The explicit language shows that “versus time” involves the repetition of streamer positions and array geometry in subsequent surveys—the crux of the method of conducting 4D surveys disclosed in the ’038 patent. The term “versus time” further relates to the comparison made by the master controller of desired streamer position and array geometry to actual streamer position and array geometry in order to issue positioning commands, another integral part of the method of conducting 4D surveys disclosed in the ’038 patent. (Ex. 1001, 5:5-5:10.)

The Abstract of the ’038 patent states “[t]he **present invention** enables a seismic array to be maneuvered as the towing vessel maintains course, enables **maintenance of specific array position and geometry in the presence of variable environmental factors and facilitates four-dimensional seismic data acquisition by sensing and storing the position of the array and each array element with respect to time.**” (Ex. 1001, at Abstract, emphasis added.)

Likewise, the Summary of the Invention section of the ’038 patent states “[t]he three component (x, y, z) position of each streamer element, relative to the vessel, relative to each other and relative Earth coordinate latitude and longitude is controlled, tracked and stored with respect to time during **each** seismic data acquisition run. This stored data is referred to as legacy data...The acquisition of

legacy data enables repetition of seismic data acquisition runs.” (Ex. 1001, 2:55-67, emphasis added.) The Summary of the Invention section of the ’038 patent also highlights “a tracking system for tracking the streamer positions versus time during a seismic data acquisition run and storing the positions versus time in a legacy database for **repeating the positions versus time in a subsequent data acquisition**; and an array geometry tracking system for tracking the array geometry versus time during a seismic data acquisition run and storing the array geometry versus time in a legacy database **for repeating the array geometry versus time in a subsequent data acquisition run**. (Ex. 1001, 4:61-5:3; emphasis added.) This description of “the invention” of the ’038 patent is not merely a feature of a preferred implementation, but instead, the very foundation of the patent—to find otherwise would be unreasonable.

Aligning this four dimensional, *i.e.*, 4D, meaning with the language of Claim 14 is not an importation of limitations from the specification, which is of course improper. *See In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993) (“limitations are not to be read into the claims from the specification”). Instead, reading “versus time” in the context of the surrounding language of Claim 14 as the time component of four dimensional data acquisition ensures that the claim is not interpreted so unreasonably broadly as to exclude the basic operating principle of the ’038 patent—maintaining and positioning streamer geometries for 4D

surveying. *On-Line Techs., Inc. v. Bodenseewerk Perkin-Elmer GmbH*, 386 F.3d 1133, 1138 (Fed. Cir. 2004) (a claim interpretation that excludes a preferred embodiment from the scope of the claim is rarely, if ever, correct).

Because “versus time” is employed in the specification of the ’038 patent to describe temporal repetition for 4D surveys and repetition and comparison of streamer positions and array geometries, its broadest reasonable construction in light of the specification must involve the time dimension of four-dimensional seismic data acquisition by the claimed system.

3. Petitioner Improperly Construes “Versus Time” in Isolation

Petitioner’s construction improperly parses the recited claim limitation to arrive at an unreasonable result. This construction construes the phrase “versus time” in isolation, and fails to give proper weight to the context of how the phrase is used in Claim 14 and is inconsistent with the specification of the ’038 patent.

Petitioner argues that the phrase “versus time” in Claim 14 should be construed as “the temporal aspect of streamer positioning and control that is a fundamental component of all seismic surveys.” (Petition, at 24.) Petitioner’s argument that “versus time” simply refers to the temporal aspect of streamer positioning renders that term superfluous to the remaining language in Claim 14. If “versus time” referred to a “fundamental component of all seismic surveys” as

Petitioner contends, it would be unnecessary to include in Claim 14 at all.

(Petition, at 24.) Claims should not be construed such that they render surrounding claim language superfluous. *Digital-Vending Servs. Int'l, LLC v. Univ. of Phoenix, Inc.*, 672 F.3d 1270, 1275 (Fed. Cir. 2012). The context in which “versus time” is used in Claim 14 must be considered. Claim 14 recites tracking, comparing, and issuing commands to maintain streamer positions and array geometry versus time. This contextual language requires something more of “versus time” than Petitioner argues. In the context of the tracking, comparing, and issuing commands recited in Claim 14, “versus time” is the time dimension that enables acquisition of four-dimensional geophysical data.

Petitioner also attempts to point to a contradiction that does not exist, arguing that “versus time” cannot refer to the “repeating surveys for 4D seismic data acquisition” because streamers positions are tracked and controlled versus time in “each seismic data acquisition run.” (Petition, at 26-27.) Petitioner fails to grasp that each individual seismic data acquisition run is part of the 4D data set. A surveyor may want to repeat a survey that took place at a given time with a given array geometry or the surveyor may want to run a new survey with a different array geometry to be potentially repeated later. The potential for repeatability based on the storage of legacy data with respect to time is what is relevant, not whether a given survey in the 4D analysis is earlier or later in time.

Petitioner provides the testimony of its expert, Dr. Evans, to bolster its position that the temporal aspect of streamer positioning “is so fundamental to the goal of marine seismic surveys that well before the priority date, it had been ensconced in the industry standard data format called ‘SEG-Y.’” (Petition, at 25.) This testimony is improper and cannot be accorded weight.

Dr. Evan’s testimony is purportedly offered as one of skill in the art to which the ‘038 patent pertains. As such, it may only be considered as to the meaning of claim terms when properly referencing *claim language*—not an abstraction of such—or when referencing the scope and content of the ‘038 patent.

Advocacy as to the unpatentability of an individual claim term is neither of those accepted forms of testimony. The specification of the ‘038 patent makes clear that the actual claim language, “versus time,” refers to a variable that facilitates four-dimensional seismic data acquisition by the seismic streamer array tracking and positioning system recited in the claims.

C. “Array Geometry”

Claim 14 recites “a master controller for issuing vertical and horizontal positioning commands to each ASPD for maintaining a specified **array geometry**,” “an **array geometry** tracking system for tracking the **array geometry** versus time during a seismic data acquisition run,” “the master controller compares...the **array geometry** versus time to...**array geometry** versus time and

issues positioning commands to the ASPDs to maintain the desired streamer positions and **array geometry** versus time.” Claim 14 separately recites “vertical and horizontal positions” and “array geometry” because they address different aspects of the towed streamer array. For example, as described in the specification of the ’038 patent, maintaining array geometry is important to reduce infill when the geometry is “too broad, too narrow, or simply out of position.” (Ex. 1001, 10:11-10:15.) Whether individual streamer positions are correct or not would not address these array-level concerns. Accordingly, consistent with the language of Claim 14 and the specification of the ’038 patent, the broadest reasonable interpretation of the term “array geometry” is distinct from the streamer positions, and the phrase “maintaining a specified array geometry” requires maintaining a specified array shape, rather than simply replicating particular streamer positions.

VI. Redundancy of Petitioner’s Grounds

In addition to the technical deficiencies described *infra*, Petitioner’s proposed grounds are both vertically and horizontally redundant. *Liberty Mutual Ins. Co. v. Progressive Casualty Ins. Co.*, (CBM 2012-00003, Paper 7).

37 CFR 42.104(b)(5) discourages notice style pleadings such as those submitted here. That is, “[t]he Board may exclude or give no weight to the evidence where a party has failed to state its relevance or to identify specific

portions of the evidence that support the challenge.” *See also* 37 C.F.R. §§ 42.22(a)(2), 42.104(b)(4).

Petitioner’s proposed grounds identify the ’895 Application (Grounds 1 and 2), as well as the Canter PCT (Grounds 5 and 6), as independent grounds under both 35 U.S.C. § 102 and § 103. These grounds are vertically redundant at least because the Petition fails to identify what is missing in the ’895 Application or the Canter PCT that necessitates a § 103 ground rather than a § 102 ground. Multiple grounds, which are presented in a redundant manner by a petitioner who makes no meaningful distinction between them, are contrary to the regulatory and statutory mandates, and therefore are not all entitled to consideration. *Liberty Mutual Ins. Co. v. Progressive Casualty Ins. Co.*, (CBM 2012-00003, Paper 7).

A petitioner has the burden of proof to establish that it is entitled to the requested relief. 37 C.F.R. § 42.20(c). Differences between the claimed invention and the prior art are a critically important underlying factual inquiry for any obviousness analysis. *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17 (1966). Yet here, Petitioner does not state the differences between the challenged claim and the prior art, and relies instead on the Patent Owner and the Board to determine those differences. The invitation to embark on an examination of the patent, rather than an adjudication of fully-developed grounds, is an abuse of PTAB resources and places an unfair undue burden on the Patent Owner. As such,

these grounds must be declined. *Zetec Inc., v. Westinghouse Electric Company LLC.*, IPR2014-00348, Order July 23, 2014 at pg. 14. (Unsupported assertions of inherency and/or “common sense” are improper bases for initiating IPR.)

Further, Petitioner’s proposed grounds which rely upon the ’895 Application in view of Morice (Ground 3), and those which rely upon the ’895 Application in view of the EAGE paper (Ground 4) are horizontally redundant. As is apparent from the discussion on pages 43-45 of the Petition, Petitioner relies on Morice and the EAGE paper for the same feature in each of its proposed grounds without any explanation as to why the Board need devote resources to both grounds.

Consideration of these overlapping and redundant grounds would unnecessarily consume time and resources for both the PTAB and the Patent Owner.

VII. Petitioner’s Grounds for Instituting *Inter Partes* Review Fail to Show a Reasonable Likelihood that the ’038 Patent is Anticipated or Obvious

A. Grounds 1 and 2: The ’895 Application Neither Anticipates Claim 14 Nor Renders it Obvious

The ’895 Application, titled “Control System for Positioning Marine Seismic Streamers,” (Ex. 1003) does not disclose every limitation of Claim 14.

The ’895 Application discloses a system for steering marine seismic streamers to desired positions. The streamers are manipulated via commands sent from a global control system to individual “streamer positioning devices” known

as “birds.” (Ex. 1003, at 6.) That control system compares the measured positions of the streamers to the desired positions in order to calculate the forces necessary to impart on the streamers.

1. Ground 1: The '895 Application Does Not Anticipate Claim 14.

a. The “Versus Time” Feature of Claim 14

The '895 Application does not disclose the time-lapse aspects of repeatable surveys that are necessary components of Claim 14. Specifically, nothing in the '895 Application discloses Claim 14’s “versus time” limitations with regards to the tracking system and the master controller’s operations. In the entirety of the '895 Application, there are no references to repeating surveys over time or 4D surveys. There are no references to surveying formations versus time. Without some disclosure of these temporal concepts, the '895 Application does not disclose every limitation of Claim 14 and cannot anticipate the claim under the Patent Owner’s proposed construction, as Petitioner appears to recognize.

Even under Petitioner’s proposed construction, its argument fails as Petitioner attempts to argue that the “versus time” limitation is somehow inherent in the '895 Application disclosure because “*all* seismic systems before the priority date tracked the horizontal and vertical positions of the streamers versus time.” (Petition, at 37.) Petitioner further contends that “[a] marine seismic survey cannot

achieve its purpose without this information,” referring to “the precise time and position at which the acoustic data were obtained.” *Id.* But this argument misses the mark. This “position versus time” data referenced by Petitioner relates merely to how data is processed to form seismic images. It has nothing to do with “positioning commands” or “tracking and positioning systems.” And there is no inherent disclosure that this “time and position” information is used to control steering. Even if an inherent disclosure could be argued to exist—which it cannot based on the mere *ipse dixit* of Petitioner’s retained expert—it does not teach a “master controller” that “compares positions...versus time and the array geometry versus time” to desired values or issues positioning commands to ASPDs as a result.

Petitioner separately argues that the “dynamic model” referenced in the '895 Application teaches “versus time.” (Petition, at 38.) But the “dynamic model” language in the '895 Application does not refer to a model that tracks streamer positions versus time. (Ex. 1003 at 7.) The “dynamic model” refers to the position (*i.e.*, location) prediction system of the U.S. Patent No. 7,080,607 which claims priority from the '895 Application. The dynamic model estimates streamer position and predicts streamer behavior based on the complex interaction between various physical forces on the streamers. The dynamic model is used as a solution to errors in streamer location data caused by signal latency. The dynamic model

referenced by the '895 Application has no relation to a system of tracking streamer positions versus time in order to repeat surveys versus time, or a master controller that compares positions and geometries versus time in order to issue positioning commands.

b. The “Array Geometry” Feature of Claim 14

The '895 Application also fails to disclose the claimed tracking and maintenance of array geometry. The system of the '895 Application does not attempt to track or maintain array geometry at all. The '895 Application contains no mention of array geometry or overall array shape. Rather, the patent application is directed only towards moving streamers “from their actual positions to their desired positions.” (Ex. 1003, at 7.) This addresses at most the “positions” limitation of Claim 14. Petitioner’s argument that “array geometry” comprises “nothing more than the vertical and horizontal positions” improperly reads “array geometry” out of Claim 14, which separately recites tracking, comparing, and maintaining “the vertical and horizontal positions.” Petitioner’s arguments improperly read limitations out of the claim and must fail accordingly.

Along the same lines, Dr. Evans’ conclusory statements that a “dynamic model” was commonly used in the industry as a method of tracking streamer positions versus time are incorrect. The '895 Application makes no reference to repeatability of surveys or any 4D time-lapse concepts while discussing the

dynamic model. In fact, the '895 Application discusses the concept of a “dynamic model” in the same context described above, using estimation to improve the accuracy of streamer location data. This is not related to Claim 14’s concept of “versus time” which relates to repeating parameters at a later time and comparing those parameters in order to issue commands by a master controller. Anticipation requires disclosure of all the claimed limitations arranged as in the claim. Pulling only facially similar language out of its context and using such language for different purposes than intended fails to carry Petitioner’s burden, let alone demonstrate that the claimed features are **necessarily present**, as would be required for inherency.

2. Ground 2: The '895 Application Does Not Render the Time-lapse 4D Surveying in Claim 14 Obvious.

As a backup argument, Petitioner also asserts that the '895 Application renders Claim 14 obvious. But the 4D “versus time” concepts, as discussed above, are still missing from the disclosure, and Petitioner’s bare assertion that it would have been obvious to a person of ordinary skill to use the '895 Application technology for 4D surveys has no merit. Petitioner notes that 4D surveys were becoming increasingly popular, and claims that repetition of streamer positions was recognized as important for 4D surveys. (Petition, at 42.) Regardless of the interest level in 4D surveys, Claim 14 recites a particular type of 4D survey that is

not disclosed or rendered obvious by any reasonable combination of the references cited by Petitioner. Nothing in the Petition discloses how a person of ordinary skill in the art would have modified the system in the '895 Application to be capable of what is recited in Claim 14. A conclusory assertion that it would be obvious to “improve” the '895 Application to perform the complex, automated procedure in Claim 14 is insufficient to even show a reasonable likelihood that Claim 14 is obvious. The '895 Application lacks the storage, repeatability, and real-time constant adjustment necessary for the 4D surveys that Claim 14 enabled, and the '895 Application shows no disclosure of tracking or repeating array geometries versus time. While Petitioner claims that “numerous publications ... recognized that the key requirement for 4D time-lapse seismic was the ability to repeat the streamer positions and array geometry as closely as possible,” the two references that Petitioner actually cites show no such thing, as discussed above. (Petition, at 43-46.)

While conclusorily asserting that it would have been obvious to add the “versus time” limitation to the '895 Application, Petitioner does not even attempt to address how it would be obvious to a person of ordinary skill in the art to add the other elements missing from the '895 Application. Specifically, Petitioner's theory fails to remedy the absence of tracking and maintaining array geometry versus time in the '895 Application. As discussed above, this is an important

limitation in Claim 14 that is not disclosed in the '895 Application. Because Petitioner's obviousness theory does not even include every limitation of Claim 14, it cannot establish a likelihood of success on the merits.

B. Ground 3: The Combined Teachings of the '895 Application and Morice Do Not Render Claim 14 Obvious

Morice is a trade-show article that discusses the development of various aspects of 4D seismic survey technology. It is substantially similar to another article authored by Morice, "4D-Ready Towed-Streamer Data and the Foinaven Benchmark", which was cited on the face of the '038 patent. (Ex. 2002) It does not render Claim 14 obvious.

1. Petitioner Fails to Prove that Morice is Prior Art.

Petitioner has alleged that Morice comprises a "printed publication" under § 102(a), *i.e.*, that it comprised prior art before the invention of Claim 14. (Petition, at 43.) Petitioner, however, offers no evidence that Morice was either printed or published prior to the application that led to the '038 patent, let alone the system recited in Claim 14.⁶ Petitioner's exhibit recites only dates for a Society of

⁶ The challenge to the *sufficiency* of the evidence presented by Petitioner is properly and timely made in a Patent Owner Response. *See Groupon, Inc. v. Blue Calypso, LLC* (CBM2013-00033, Paper 29) (noting there are "two separate and

Exploration Geophysicists (“SEG”) conference, with no indication that the exhibit itself existed or was publicly accessible as of those dates. (*See* Petition, at 15-16.)

Although the standard for an *inter partes* review is preponderance of the evidence, the burden still remains on Petitioner to prove that Morice is actually prior art, *e.g.*, that it was “publicly accessible.” *See Kyocera Wireless Corp. v. Int’l Trade Comm’n*, 545 F.3d 1340, 1350 (Fed. Cir. 2008) (“Because there are many ways in which a reference may be disseminated to the interested public, ‘public accessibility’ has been called the touchstone in determining whether a reference constitutes a ‘printed publication’.”) The Federal Circuit has made clear that, like any other aspect of an invalidity attack, the burden is on the party challenging the validity of the patent at issue to prove that a publication was publicly accessible.

distinct challenges: (1) the *admissibility* of evidence (*e.g.*, authenticity or hearsay), which requires the opposing party to serve an objection to evidence under 37 C.F.R. § 42.64(b), in order to preserve the right to file a motion to exclude evidence; and (2) the *sufficiency* of evidence to prove a particular fact (*e.g.*, whether the evidence is *sufficient* to demonstrate, by a preponderance of evidence, that a reference is a “printed publication” under 35 U.S.C. § 102(b)),” and that arguments regarding sufficiency can be made in a response).

Id. (“A reference is publicly accessible ‘upon a satisfactory showing that such document has been disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence, can locate it.’”).

Petitioner has not met, let alone even attempted to meet, its burden here. Without an actual publication date or some showing that Morice was actually released publicly, Morice cannot be considered prior art. No evidence establishes Morice as a printed publication, and it cannot be used as art.

2. If Considered As Prior Art, Morice Uses Different Techniques Than Claim 14.

The method for conducting 4D surveys disclosed in Morice differs from the invention of Claim 14. The majority of Morice describes “receiver perturbations” and “source perturbations”—which are unrelated to tracking or positioning—in addressing 4D surveys. (Ex. 1005, at 1608) Morice’s scant reference to streamer steering states that “[s]treamers may be steered for optimal coverage, towing efficiency or minimal risk of tangling, and the streamers can be towed with cross-line separations of as little as 25 m with no significant risk of tangling.” (Ex. 1005, at 1610.) To improve 4D surveys, Morice focuses on reducing sensor sensitivity variations, air-gun signatures, acquisition configuration (number and spacing of streamers), and sail lines. There is no disclosure of maintaining positions or array

geometries versus time. Morice pursues different goals and focuses, and therefore, combined with the '895 Application, does not invalidate Claim 14.

3. Morice Discloses Only the Commercial Embodiment of the '895 Application Which Fails to Invalidate Claim 14.

Morice was authored by individuals within the WesternGeco (Patent Owner) family, and describes only the potential use of the commercial embodiment of the '895 Application for 4D surveys. With no additional disclosure of a system beyond what is disclosed in the '895 Application, this combination of references fails to invalidate Claim 14 for the same reasons that the '895 Application alone fails to invalidate Claim 14. Specifically, Morice fails to address at least tracking and maintaining array geometry versus time. Petitioner does not even attempt to argue that the combination of Morice and the '895 Application renders this feature obvious.

4. Claim 14 Requires More Than Merely Using the '895 Application to Perform 4D surveys.

Petitioner cites Morice as clear evidence that there was a motivation to use the technology in the '895 Application to conduct 4D surveys given the desire for accurate repeatability. (Petition, at 43.) But the mere recitation of the term “4D” does not disclose all of the limitations recited in Claim 14. Instead, Petitioner needs to provide some explanation of or evidence for the proposition that a person of ordinary skill in the art could “to the extent necessary, modify successfully” the

system in the '895 Application to all of the limitations of Claim 14. (Petition, at 44.) Once again, Petitioner has made conclusory assertions that it would be trivial to modify the '895 Application to convert it to the complex system claimed in the '038 patent, merely because the term "4D" is used in some references. The burden is on Petitioner to show that its prior art discloses or renders obvious the actual claimed invention in Claim 14, a burden Petitioner's conclusory analysis cannot carry.

C. Ground 4: The Combined Teachings of the '895 Application and the EAGE Paper Do Not Render Claim 14 Obvious

The EAGE Paper is a technical article entitled "Marine Seismic Cable Steering and Control." It is authored by multiple employees within the WesternGeco (Patent Owner) family, including the inventors of the '895 patent and the Canter PCT.

1. Petitioner Fails to Prove that the EAGE Paper is Prior Art.

Petitioner has alleged the EAGE Paper as a printed publication under § 102(b). (Petition, at 14.) Just as with Morice, however, Petitioner has failed to offer any evidence that the EAGE Paper is a printed publication, let alone made public more than one year prior to the application that led to the '038 patent. Again, the document itself only provides conference dates and no actual publication date for this article. And simply showing that the EAGE Paper

accompanied a presentation at a conference is not enough to indicate that it was “disseminated or otherwise made available” to people interested in it. *Kyocera Wireless Corp.*, 545 F.3d at 1350. Thus, the EAGE Paper has not been shown to be a printed publication for the purposes of this IPR and it cannot be combined with the ’895 Application, or any reference, in an attempt to render Claim 14 obvious.

2. If Considered Prior Art, the EAGE Paper Discloses Only the Commercial Embodiment of the ’895 Application Which Fails to Invalidate Claim 14.

Just like Morice, the EAGE Paper only discloses the commercial embodiment of the system in the ’895 Application. Given that the ’895 Application alone is missing many limitations of Claim 14, the combination of the ’895 Application and the EAGE Paper is necessarily missing those components as well. Namely, the combination of the ’895 Application and EAGE Paper still fails to address the tracking and maintaining of array geometry versus time limitations of Claim 14. Petitioner has not even attempted to argue that the combination of the EAGE Paper and the ’895 Application renders those limitations obvious, and therefore failed to show a likelihood of success on the merits.

Much of the language in the EAGE Paper related to 4D surveys is merely aspirational, *e.g.*: “[b]y making use of old navigation data, it is *possible* to steer streamers towards streamer positions in previous seismic surveys.” (Ex. 1006, at

4.) There is no disclosure of what this “old navigation data” comprises or how this “old navigation data” is used. It may comprise the same “sail-lines and sail directions” taught in Morice and have nothing to do with tracking and monitoring positions versus time. (Ex. 1005, at 1609.) Nor is there any disclosure of tracking or maintaining array geometry.

D. Ground 5: Cantor Does Not Anticipate Claim 14

The Canter PCT discloses a system that conducts 4D seismic surveys, but only by using a different approach from the one used in the '038 patent. There is no tracking and maintenance of positions and array geometry versus time. Accordingly, the Canter PCT does not anticipate Claim 14.

The system in the Canter PCT attempts to repeat surveys using “**sufficient positional data** from the previous survey” to “define the respective tracks” which are followed in new survey. (Ex. 1004, at 7.) Because prior surveys involve “a vast amount of positional data” and because “it will not be possible to reproduce precisely the tracks followed by all the equipment of the previous survey,” the Canter PCT uses a subset of the prior positions to define new tracks to follow, and then uses these new tracks to calculate “nodes” to steer toward. (Ex. 1004, at 7, Fig. 4C) The system then uses lateral steering to make sure that each streamer aligns with these calculated nodes at the correct time to presumably follow the

newly created tracks. (*Id.* at 7.) Tracking and maintaining positions and geometry versus time—as required by Claim 14—is not disclosed.

Even if these “nodes” could be considered tracked positions, by only checking the positioning of streamers at discrete nodes, the Canter PCT fails to track and maintain array geometry as required in Claim 14. The Canter PCT contains no disclosure of array geometry or overall array shape. That is because the process is not used to maintain array geometry, but rather to have streamers follow a track generated based on sparse prior survey data.

Additionally, the Canter PCT does not disclose issuing vertical positioning commands to streamer positioning devices as required by Claim 14. The Canter PCT’s only mention of positioning commands notes that “a steering controller ... produces ... control signals for the birds, to cause them to **laterally steer the streamer** so that the nodes are as close as possible to their desired positions at the correct time.” (Ex. 1004, at 7.) There is no mention of the steering controller issuing any positioning commands that affect the vertical positioning of the streamers. The Canter PCT does note that the streamer positioning devices can control the depth of the streamers. (Ex. 1004, at 5.) However, this disclosure alone does not meet the limitation in Claim 14 that a master controller issue vertical positioning commands to each streamer positioning device in order to maintain a specified array geometry. It is unclear how the depth of the streamers is

controlled but it is indisputable that the Canter PCT omits any mention of a master controller that issues vertical positioning commands. For this reason as well, the Canter PCT does not anticipate Claim 14.

Finally, Petitioner concedes that the Canter PCT does not explicitly disclose the use of an environmental sensor. (Petition at 53.) Its concession notwithstanding, Petitioner instead argues that an environmental sensor is inherently disclosed simply because every marine seismic survey system includes such a sensor. (*Id.*) In making this argument, Petitioner misunderstands the law of inherent disclosure and the nature of Claim 14.

The disclosure of a streamer tracking and positioning system in the Canter PCT does not inherently disclose an environmental sensor simply because all marine seismic survey systems use an environmental sensor. “[A]nticipation by inherent disclosure is appropriate only when the references disclose prior art **that must necessarily include the unstated limitation.**” *Rexnord Indus. v. Kappos*, 705 F.3d 1347, 1355 (Fed. Cir. 2013). Petitioner’s inherency argument contains a fatal defect. Just because marine seismic survey systems contain environmental sensors does not mean that those environmental sensors are included **as part of** the seismic array tracking and positioning system as disclosed in Claim 14. Dr. Evans’ testimony that an environmental sensor will exist somewhere in every marine seismic survey system says nothing about whether an environmental sensor will be

a necessary component of the streamer positioning system disclosed in the Canter PCT. (*See* Ex. 1002, ¶99.) Thus, Petitioner has not shown that the system in the Canter PCT necessarily includes an environmental sensor. Given that Petitioner has already conceded that there is no explicit disclosure of the environmental sensor, the Canter PCT does not anticipate Claim 14.

E. Ground 6: The Canter PCT Does Not Render Claim 14 Obvious

1. Petitioner Does Not Address “Array Geometry” or Other Elements Missing from the Canter PCT.

Petitioner does not even attempt to address how it would be obvious to a person of ordinary skill in the art to add the other elements missing from the Canter PCT. Specifically, Petitioner fails to remedy the lack of tracking and maintaining array geometry in the Canter PCT. Without even attempting to address this limitation, Petitioner cannot meet its burden of showing a likelihood of success in proving that Claim 14 is obvious in view of the Canter PCT.

The Canter PCT discloses a technique that is distinct from tracking and maintaining array geometry. By employing a method that only checks streamer positions at discrete calculated nodes, “sufficient positional data,” the Canter PCT cannot track and maintain array geometry. The Canter PCT uses a “checkpoint” approach to manufacture an *estimated* track. But monitoring and maintaining streamer positions and array geometry, not just at specific nodes but during an

entire survey, is required by Claim 14. While the '038 patent and the Canter PCT share the ultimate goal of a 4D survey, their approach diverges. The Canter PCT employs a method that is substantially and necessarily different from the method employed by the system in Claim 14. In light of this specific teaching—to use a subset of positional data to manufacture a surrogate path—Petitioner cannot credibly argue that it would be obvious to modify the Canter PCT to meet the limitations in Claim 14.

2. Petitioner Has Not Shown That it Would Be Obvious to Add an Environmental Sensor to the Canter System.

Petitioner's lengthy discussion of the prevalence of environmental sensors aboard marine seismic survey vessels fails to address any motivation to modify the system disclosed in the Canter PCT to add such a sensor to a "tracking and positioning system" as recited in Claim 14. Taking input of several environmental factors and using them as part of calculations directed to issuing positioning commands is a complex process, as taught in the '038 patent.

F. Ground 7: The Combined Teachings of '895 Application and the Canter PCT Do Not Render Claim 14 Obvious.

As discussed above, neither the '895 Application nor the Canter PCT disclose or suggest tracking and maintenance of positions and array geometry versus time. Accordingly, no reasonable combination of the '895 Application and the Canter PCT would result in all of the features recited in Claim 14.

G. Ground 8: The Combined Teachings of the Canter PCT and Morice Do Not Render Claim 14 Obvious.

1. Petitioner Does not Address “Array Geometry” in Its Obviousness Argument.

Petitioner does not address how it would be obvious to a person of ordinary skill in the art to add the array geometry limitation missing from the combination of the Canter PCT and Morice. Petitioner has not met its burden of showing a likelihood of showing that Claim 14 is obvious in light of the Canter PCT and Morice.

Beyond not mentioning tracking and maintaining array geometry, the method disclosed in the Canter PCT of checking streamer positions at discrete calculated nodes is not capable of tracking and maintaining array geometry. The Canter PCT employs a method that is substantially and necessarily different from the method employed by the system in Claim 14. Petitioner cannot credibly argue that it would be obvious to modify the Canter PCT to meet the limitations in Claim 14.

2. The Combination of The Canter PCT and Morice Does Not Disclose the Claimed “Environmental Sensor”

Morice mentions that environmental factors can negatively impact accurate streamer positioning. But nothing that Morice discloses teaches a remedy to this problem. As previously mentioned, the Canter PCT also fails to propose any remedy to this problem or use of an environmental sensor as part of a tracking and

positioning system. Petitioner argues that a mere awareness of this negative impact is all that would be necessary for a person of ordinary skill in the art to overcome the problem. (Petition, at 59.) However, environmental factors interact to create extremely complex systems of fluid dynamics that Claim 14 takes into account when being used to repeat surveys. Petitioner cannot ignore the effort and experimentation it took to use inputs from an environmental sensor to calculate and issue positioning commands. The bare assertion that “Morice therefore resolves any doubt regarding the . . . ability of a person of ordinary skill to successfully combine prior art environmental sensors . . . with Canter’s system” is unsupported and insufficient to prove the likelihood that one of ordinary skill in the art would have modified the prior art to arrive at the claimed invention. (Petition, at 59.)

3. Petitioner has Failed to Meet its Burden to Show that Morice is Prior Art

As discussed above, Petitioner has not proven that Morice is a printed publication that was publicly accessible. Petitioner provided, at most, conference dates when it may have been shown, and no actual publication date for this article. This is not enough to indicate that it was “disseminated or otherwise made available” to people interested in it. *Kyocera Wireless Corp.*, 545 F.3d at 1350. Thus, Morice has not been shown to be a printed publication for the purposes of

this IPR and it cannot be combined with the Canter PCT, or any reference, in order to attempt to render Claim 14 obvious.

H. The Petition Is Legally Insufficient Because Petitioner Fails to Address the Secondary Indicia of Non-Obviousness of Claim 14.

Ample evidence of secondary considerations were adduced throughout the *ION* litigation and at trial. Despite demanding—and receiving—access to these materials many months ago, Petitioner fails to address them in its Petition. The record evidence established the long-felt need and commercial success of the patented inventions, as well as initial industry skepticism followed by praise once the inventions were commercialized. By way of just one example, there was a long-felt need for a system that could properly repeat surveys to enable the generation of higher quality 4D seismic data. The commercial embodiment of Claim 14 was very successful, driving multiple third parties to inform WesternGeco that “[their] abilities to repeat 4D surveys [were] unmatched in the industry.” (Ex. 2037, at 873:8-873:13; *see also* Ex. 2038, Excerpt of Trial Testimony of Robin Walker, at 1624:25-1626:16 (evidencing customers gave direct award contracts for 4D surveys); *see also* Ex. 2039, Excerpt of Trial Testimony of Raymond Sims, at 2277:24-2280:7 (evidencing industry demand for steerable streamers for 4D surveys).) Petitioner’s failure to address these secondary considerations renders its obviousness analyses deficient as a matter of

law. *See Crocs, Inc. v. Int’l Trade Comm’n*, 598 F.3d 1294, 1310-11 (Fed. Cir. 2010) (“Secondary considerations can be the most probative evidence of non-obviousness in the record, and enables the court to avert the trap of hindsight.”); *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 667 (Fed. Cir. 2000) (“[S]econdary considerations, when present, must be considered in determining obviousness.”); *Knoll Pharm. Co., Inc. v. Teva Pharm. USA, Inc.*, 367 F.3d 1381, 1385 (Fed. Cir. 2004) (“The so-called ‘objective’ criteria must always be considered . . . and given whatever weight is warranted by the evidence presented.”).

VIII. Conclusion

For at least the reasons noted above, Petitioner has failed to meet their burden that that Claim 14 of the ’038 patent is anticipated or rendered obvious. The arguments in the Petition fall far short of demonstrating a reasonable likelihood of success of proving Claim 14 unpatentable. Therefore, the Board must decline to institute *inter partes* review of the ’038 patent.

Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that the foregoing **PATENT OWNER PRELIMINARY RESPONSE**, the associated Exhibit List, and all associated Exhibits were served electronically via e-mail on September 16, 2014, in their entirety upon the following counsel for Petitioner Petroleum Geo-Services, Inc.:

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