2020-1237

United States Court of Appeals for the Federal Circuit

SEABED GEOSOLUTIONS (US) INC.,

Appellant,

– v. –

MAGSEIS FF LLC,

Appellee.

On Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. IPR2018-00960

BRIEF FOR APPELLEE

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U.S. Patent No. RE45,268, Claims 1–3, 5–7, 10, 12, 13, 15–18, 21–30, 32–34, and 38–43.

1. A seismic data collection unit comprising:

a. a fully enclosed, single case formed of a housing, said case having a wall defining an internal compartment within said housing;

b. at least one geophone internally fixed within said housing;

c. a clock disposed within said housing;

d. a power Source disposed within said housing; and

e. a seismic data recorder disposed within said housing;

f, wherein each of said elements b-e include an electrical connection and all electrical connections between any elements b-e are contained within said housing; and

g. wherein said geophone is coupled to said seismic data recorder to permit seismic signals detected by said geo phones to be recorded on said seismic data recorder,

h. wherein the single case comprises a first plate having a first periphery and a second plate having a second periphery, wherein the plates are joined along their peripheries by a circular wall.

2. The unit of claim 1, wherein said unit is self contained and requires no external communications or controls during recording.

3. The unit of claim 1, wherein the case is watertight.

5. A seismic data collection unit comprising:

a. a fully enclosed, single case formed of a housing, said single case having a first plate having a first periphery and a second plate having a second periphery, wherein the plates are joined along their peripheries by a circular wall, said wall defining an internal compartment within said housing;

b. at least one geophone internally fixed within said housing;

c. a clock disposed within said housing;

d. a power source; and

e. a seismic data recorder disposed within said housing.

6. The unit of claim 5, wherein said unit is self contained and requires no external communications or controls during recording.

7. The unit of claim 5, wherein , wherein each of said elements b-c include an electrical connection and all electrical connections between any elements b-c are contained within said housing.

10. The unit of claim 1, wherein the case defines an external surface, and the external surface is provided with ridges to enhance coupling of unit with the earth.

12. The unit of claim 1, further comprising

a. three geophones disposed within said case; and

b. a compass.

13. The unit of claim 1, wherein the geophone is a multi-component geophone capable of measuring seismic signals in at least two directions angularly oriented to one another.

15. The unit of claim 1, further comprising a radio unit.

16. The unit of claim 1, further comprising an external connector in electrical communication with at least one of said geophone, clock, power source and seismic recorder, said connector extending through the wall of said case and disposed within said wall so as to be set in from the external surface of said wall.

17. The unit of claim 16, further comprising a water tight, pressure resistant cap disposed over said external connector.

18. The unit of claim 1, further comprising an internal control mechanism for controlling all functions of the unit while deployed.

21. A seismic data collection unit comprising:

a. a fully enclosed, single case formed of a housing, said single case having a first plate having a first periphery and a second plate having a second periphery, wherein the plates are joined along their peripheries by a circular wall, said wall defining an internal compartment within said housing;

b. at least one geophone internally fixed within said housing;

c. a clock disposed within said housing;

d. a power source disposed within said housing;

e. positional electronics disposed within said housing;

f. orientation electronics disposed within said housing; and

g. a seismic data recorder disposed within said housing;

h. wherein each of said elements b-g include an electrical connection and all electrical connections between any elements b-g are contained within said housing.

22. A seismic data collection unit comprising:

a. a non-spherical pod formed of a single housing, said pod comprising a wall defining an internal compartment within said single housing;

b. at least one geophone internally fixed within said internal compartment;

c. a clock disposed within said internal compartment;

d. a power source disposed within said internal compartment; and

e. a seismic data recorder disposed within said internal compartment;

f. wherein each of said elements b-e include an electrical connection and all electrical connections between any elements b-e are contained within said internal compartment; and

g. wherein the at least one geophone is coupled to the seismic data recorder to permit seismic signals detected by said geophones to be recorded on said seismic data recorder.

23. The seismic data collection unit of claim 22, wherein said seismic data collection unit is self contained and requires no external communications or controls during recording.

24. The seismic data collection unit of claim 22, wherein said pod is watertight.

25. The seismic data collection unit of claim 22, wherein a portion of an external surface of the pod comprises at least one projection to enhance coupling of the seismic data collection unit with the earth.

26. The seismic data collection unit of claim 25, wherein the at least one projection is at least one spike, at least one ridge, or at least one groove.

27. The seismic data collection unit of claim 22, further comprising: a compass; and at least two additional geophones disposed within said pod.

28. The seismic data collection unit of claim 22, wherein the at least one geophone is a multi-component geophone capable of measuring seismic signals in at least two directions angularly oriented to one another.

29. The seismic data collection unit of claim 22, wherein a portion of the pod has a circular shape.

30. The seismic data collection unit of claim 22, wherein a portion of the pod has a non-circular shape.

32. The seismic data collection unit of claim 22, further comprising a radio unit.

33. The seismic data collection unit of claim 22, further comprising an external connector, wherein the external connector is disposed in electrical communication with the at least one geophone, the clock, the power source and the seismic data recorder, and wherein the external connector extends through a portion of the wall of the single case.

34. The seismic data collection unit of claim 33, further comprising a water tight, pressure resistant cap disposed over said external connector.

38. The seismic data collection unit of claim 22, further comprising a tilt meter disposed in the internal compartment.

39. The seismic data collection unit of claim 22, wherein the pod comprises at least one internal partition disposed within the internal compartment.

40. The seismic data collection unit of claim 39, wherein the at least one partition is disposed proximate to the power source, and wherein the at least one partition separates the power source from other components in the pod.

41. The seismic data collection unit of claim 39, wherein the at least one partition is disposed proximate to the seismic data recorder, and wherein the at least one partition separates the seismic data recorder from other components in the pod.

42. The seismic data collection unit of claim 39, wherein the at least one partition is disposed proximate to the seismic data recorder, and wherein the at least one partition separates the seismic data recorder from the at least one geophone.

43. The seismic data collection unit of claim 39, wherein the at least one internal partition divides the internal compartment into multiple compartments.

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

CERTIFICATE OF INTEREST

Case Number 2020-1237

Short Case Caption Seabed Geosolutions (US) Inc. v. Magseis FF LLC

Filing Party/Entity Magseis FF LLC

Instructions: Complete each section of the form. In answering items 2 and 3, be specific as to which represented entities the answers apply; lack of specificity may result in non-compliance. **Please enter only one item per box; attach additional pages as needed and check the relevant box**. Counsel must immediately file an amended Certificate of Interest if information changes. Fed. Cir. R. 47.4(b).

I certify the following information and any attached sheets are accurate and complete to the best of my knowledge.

Date: 01/11/2021

Signature: /s/Jeffrey N. Costakos

Name: Jeffrey N. Costakos

1. Represented Entities. Fed. Cir. R. 47.4(a)(1).	**2. Real Party in Interest.** Fed. Cir. R. 47.4(a)(2).	**3. Parent Corporations and Stockholders.** Fed. Cir. R. 47.4(a)(3).
Provide the full names of all entities represented by undersigned counsel in this case.	Provide the full names of all real parties in interest for the entities. Do not list the real parties if they are the same as the entities. ☑ None/Not Applicable	Provide the full names of all parent corporations for the entities and all publicly held companies that own 10% or more stock in the entities. ☐ None/Not Applicable
Magseis FF LLC		Magseis FF AS, Magseis Fairfield ASA

☐ Additional pages attached

4. Legal Representatives. List all law firms, partners, and associates that (a) appeared for the entities in the originating court or agency or (b) are expected to appear in this court for the entities. Do not include those who have already entered an appearance in this court. Fed. Cir. R. 47.4(a)(4).

☐ None/Not Applicable ☐ Additional pages attached

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5. Related Cases. Provide the case titles and numbers of any case known to be pending in this court or any other court or agency that will directly affect or be directly affected by this court's decision in the pending appeal. Do not include the originating case number(s) for this case. Fed. Cir. R. 47.4(a)(5). See also Fed. Cir. R. 47.5(b).

☐ None/Not Applicable ☐ Additional pages attached

Magseis FF LLC v. Seabed Geosolutions (US) Inc., et al., 4:17-cv-01458 (S.D. Tex.)		

6. Organizational Victims and Bankruptcy Cases. Provide any information required under Fed. R. App. P. 26.1(b) (organizational victims in criminal cases) and 26.1(c) (bankruptcy case debtors and trustees). Fed. Cir. R. 47.4(a)(6).

☑ None/Not Applicable ☐ Additional pages attached

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I. STATEMENT OF RELATED CASES

Pursuant to Federal Circuit Rule 47.5, Appellant Magseis FF LLC ("Magseis Fairfield")[1] states that:

(a) No appeal in or from the same proceeding was previously before this or any other appellate court; and

(b) The patent at issue in this appeal are asserted in the following civil action pending before the U.S. District Court for the Southern District of Texas, which is presently stayed: *Magseis FF LLC et al. v. Seabed Geosolutions (US) Inc. et al.,* No. 4:17-cv-01458 (S.D. Tex.).

Additionally, Magseis Fairfield notes that Appeals Nos. 2020-1346 and 2020-1348 in this Court have been designated as companion cases to this appeal.

II. JURISDICTIONAL STATEMENT

This Court has jurisdiction under 35 U.S.C. §§ 141(c) & 319, and 28 U.S.C. § 1295(a)(4)(A).

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[1] During the course of the proceedings before the Board, the original Patent Owner, Fairfield Industries Inc., transferred all assets associated with its seismic data acquisition business, including U.S. Patent No. RE45,268, to Fairfield Seismic LLC. Appx321. Fairfield Seismic LLC subsequently changed its name to Magseis FF LLC, though it continues to do business as "Magseis Fairfield". Appx329.

III. STATEMENT OF THE ISSUES

Whether the Board, upon consideration of both intrinsic and extrinsic evidence, correctly construed the limitation "at least one geophone internally fixed within said internal compartment," as excluding geophones that are gimbaled.

IV. INTRODUCTION

Seabed's argument on appeal relies on a fundamentally incorrect premise: that the Board relied on extrinsic evidence inconsistent with the intrinsic record in determining that the claims at issue do not read on geophones that are gimbaled. *See* Dkt. 22 at 3-4. A simple review of the record demonstrates that not to be the case.

Instead, the Board carefully considered the specification and prosecution history, as well as both sides' arguments relating thereto. Finding neither dispositive, the Board turned to the extrinsic evidence of record, namely the expert testimony of **both sides' experts**, in concluding that a person of ordinary skill in the art would not have reasonably understood the claim limitation "at least one geophone internally fixed within said [housing / internal compartment]" as covering a geophone that was gimbaled.

In order to portray the Board's analysis of the intrinsic record as deficient, Seabed introduces, **for the first time on appeal**, numerous new arguments based on the prosecution histories of three related patents that were never raised before

the Board and, of course, never addressed by the Board. While these arguments were waived and should be disregarded, they nonetheless would not have changed the Board's conclusions.

Before the Board Seabed did not (and could not) dispute that the distinction between "fixed" and "gimbaled" geophones is one commonly known to persons of ordinary skilled in the art—having as to conceded that "'fixed' geophones may have had some meaning to a POSITA generally" Appx450. Of course, how a person of ordinary skill in the art would understand the term in the context of the field of invention is critical to understanding what the claims do and do not cover. Here, the testimony of both experts unequivocally demonstrated that a "geophone internally fixed within a [housing / internal compartment]" is not one that would be gimbaled.

V. STATEMENT OF THE CASE

In the early 2000's, Fairfield Industries, Inc. ("Fairfield") developed a revolutionary new ocean bottom seismic data acquisition system that belied the conventional wisdom in the industry, and launched a new market for the conduct of deep water ocean bottom seismic data acquisition surveys in support of the oil and gas industry. While legacy seismic data acquisition surveys in the industry utilized geophone sensors attached to lengthy cables, whether on the ocean bottom or suspended in the ocean above it, Fairfield's new system utilized what are now

commonly referred to as autonomous ocean bottom units (often referred to as "nodes"). Fairfield even began operating as "FairfieldNodal."

Before Fairfield, no one had invented a seismic data acquisition system utilizing an internally fixed geophone and a single package that was capable of recording seismic data in a seismic exploration survey. The claims at issue of U.S. Patent No. RE45,268 ("the '268 patent), which claim priority to May 30, 2003, are all directed to a seismic data collection system wherein an internally fixed geophone, power source, clock, and seismic data recorder are all disposed within the same single housing. *See* Appx687-688 at Claims 1, 5, 21 and 22.

Seabed's unsuccessful attempt to invalidate the '268 Patent before the Patent Trial and Appeal Board relied on archaic prior art focused on earthquake monitoring (and not seismic data acquisition) and failed because the prior art relied upon did not disclose a geophone that was "fixed" as required by the claims. Instead, the references relied on by Seabed all utilized self-orienting gimbaled geophones wherein the geophone itself moves so that it may orient itself with the prevailing force of gravity.

The principal dispute before the Board, and the only issue on appeal, is whether the limitation "at least one geophone internally fixed within said [housing

/ internal compartment],"[2] which appears in all challenged claims, excludes a geophone that is gimbaled. The Board, upon properly considering both the intrinsic and extrinsic evidence, correctly concluded that gimbaled geophones are not covered by the claims.

The Board began its analysis by considering the specification and the arguments made by both Magseis Fairfield and Seabed with regard to how the specification supported each side's understanding of the claims, concluding that it "d[id] not find the Specification to be dispositive one way or the other." Appx14. The Board then went on to consider the competing arguments advanced by both sides with respect to how the prosecution history, in particular the portions that related to the Thornhill prior art, supported each sides' position, concluding that the prosecution history was ambiguous on the issue. Appx14-15 ("[W]e do not agree that the prosecution history is unambiguous").

Finally, after careful consideration of the intrinsic record, the Board considered the extrinsic evidence. The extrinsic evidence included not only the testimony of Magseis Fairfield's expert, but also that of Seabed's own expert. The testimony of **both** experts overwhelming supported that it would have been unreasonable for a person of ordinary skill in the art to have understood gimbaled

[2] Independent claims 1, 5, and 19 recite the term "housing" while independent claim 22 recites an "internal compartment".

geophones to be covered by the claims. Appx15-19. The Board also considered, and appropriately accorded little weight to, Seabed's effort to "correct" its own expert's testimony with a conclusory supplemental declaration. Appx16-19.

Upon concluding that the claims did not cover geophones that are gimbaled, the Board declined to find any of the claims unpatentable since it was uncontested that all the prior art relied upon in the Petition utilized gimbaled geophones. Appx23-24, Appx26-27.

A. STATEMENT OF THE FACTS

1. Overview of U.S. Patent No. RE45,268

The '268 Patent is entitled "Apparatus for Seismic Data Acquisition." It is directed to a seismic data collection system for use in seismic exploration surveys that involve the collection of information about the subsurface layers of the earth, with the goal of identifying potential oil and gas deposits by propagating an acoustic signal into the earth and collecting reflected signals which contain information about said subsurface layers. Appx339-340.

Unlike the prior art seismic data acquisition systems, all the claims of the '268 Patent require "at least one geophone internally fixed" within a "housing" or "internal compartment" as demonstrated by exemplary claims 1 and 22:

1. A seismic data collection unit comprising:

a. a fully enclosed, single case formed of a housing, said case having a wall defining an internal compartment within said housing;

b. at least one geophone internally fixed within said housing;

c. a clock disposed within said housing;

d. a power source disposed within said housing; and

e. a seismic data recorder disposed within said housing;

f. wherein each of said elements b-e include an electrical connection and all electrical connections between any elements b-e are contained within said housing; and

g. wherein said geophone is coupled to said seismic data recorder to permit seismic signals detected by said geophones to be recorded on said seismic data recorder,

h. wherein the single case comprises a first plate having a first periphery and a second plate having a second periphery, wherein the plates are joined along their peripheries by a circular wall.

Appx687 (emphasis added for limitation principally at issue in this appeal).

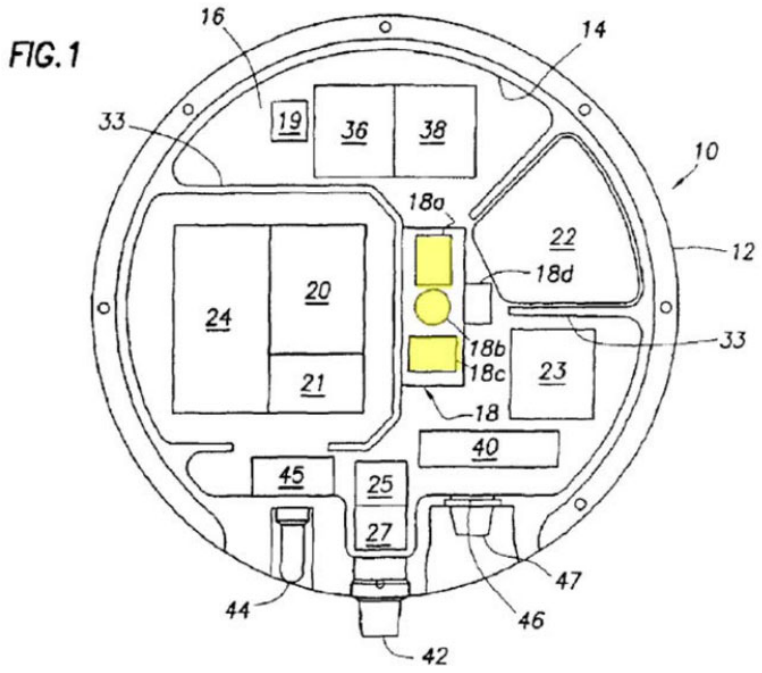
22. A seismic data collection unit comprising:

> a. a non-spherical pod formed of a single housing, said pod comprising a wall defining an internal compartment within said single housing;
>
> **b. at least one geophone internally fixed within said internal compartment;**
>
> c. a clock disposed within said internal compartment;
>
> d. a power source disposed within said internal compartment; and
>
> e. a seismic data recorder disposed within said internal compartment;
>
> f. wherein each of said elements b-e include an electrical connection and all electrical connections between any elements b-e are contained within said internal compartment; and
>
> g. wherein the at least one geophone is coupled to the seismic data recorder to permit seismic signals detected by said geophones to be recorded on said seismic data recorder.

Appx688 (emphasis added for limitation principally at issue in this appeal).

a) The Specification

Figure 1 of the ’268 Patent demonstrates an exemplary orientation of the three different geophones (highlighted in yellow below) disposed within the housing of a seismic data acquisition unit:



Appx680 at Fig. 1, Appx684 at 6:43-49 ("It will be further noted that geophone 18 is internally mounted within pod 10 and thus requires no external wiring or connection. It has been determined that utilizing a compact case and positioning geophone 18 adjacent the casing wall, geophone 18 can be effectively coupled to the earth such that seismic data transmitted through pod 10 to geophone 18 is not corrupted by interference.").

Notably, neither the figures nor the specification refer to or demonstrate utilizing gimbals with any of these geophones. Appx680, Appx684. All indications from the specification point to a "fixed" geophone, and that is consistent with how even Seabed's expert, Mr. Beaudoin, understood the disclosure and claims. At deposition, Mr. Beaudoin, on redirect by Seabed's own

counsel, conceded that a person of ordinary skill in the art reviewing the specification would have understood that the claims would not have covered gimbaled geophones:

> Q. What would this language have suggested, if anything, to a person of ordinary skill in the art in terms of geophones that are mechanically gimbaled?
>
> A. In the context of reading this patent, a POSITA would have understood that geophones and other devices are there, but the geophone is – there is no mention of gimbaling in that – in that sentence. So there is no reference to gimbaling. **Therefore, the geophone is not likely to be – is not gimbaled. It's a geophone without any gimbaling**.

Appx2620 at 347:6-347:21 (objections omitted) (emphasis added).

b) The Prosecution History

The Board eventually concluded that the prosecution history was ambiguous with respect to construing the term "at least one geophone internally fixed within said [housing / internal compartment]." In responding to Seabed's arguments that the prosecution history required that the claims cover gimbals, Magseis Fairfield stressed how the portions of the prosecution history relied on by Seabed actually supported that a POSITA would not reasonably consider a gimbaled geophone to be "internally fixed." The language "internally fixed" was first added to the claims

during prosecution of parent U.S. Patent No. 7,561,493 as part of **one of two amendments** made to distinguish the Thornhill reference. *See* Appx3078. This is the amendment that Seabed relied on before the Board. Appx447-448. The second amendment was to add language claiming a "fully enclosed" case. *See* Appx3078.

The amendment and response demonstrate that applicants were distinguishing Thornhill not only because it disclosed a geophone that would be ejected through holes in the case (for which claiming a **fully enclosed** case was the response) but also because it disclosed a self-orienting mechanism that allowed the geophones to **internally move** within the case, well before ejection:

> Thornhill teaches a seismic device 10 ***that is self-orienting.*** Device 10 includes a housing 12 in which is contained a geophone 20 and an antenna 22. Col. 1, Lines 65-68; Col. 2, Lines 1-5. Housing 12 is comprised of two cylindrical members 32, 34. Col. 2, Lines 19-20. Cylindrical members 32, 34 includes multiple pairs of diametrically opposite ports 156, wherein it is intended that one port is aligned with the geophone 20 and one port is aligned with antenna 22. […] In other words, housing 12 has six opening therein. The opening in housing 12 are provided so that the geophone 20 and antenna 22 can be ejected from housing 12 for operation of device 10. *See* Fig. 1.

> In short, Thornhill does not provide a **fully enclosed** case as is required of Claims 1 and 13 of the Application. The opening or ports 156 of Thornhill are an important aspect of the invention since the self orienting mechanism 24 taught therein is designed to cause device 10 to move until one port 156 is facing downward (and hence allowing geophone 20 to be discharged into the earth) and one port 156 facing upward (and hence allowing antenna 22 to be extended for transmission of data).
>
> Moreover, the geophone is not **internally fixed** inside the case of Thornhill since this would defeat the fundamental invention claimed therein.

Appx3083-3084 (Applicant's remarks in in response to the § 102 rejection under Thornhill) (emphasis added to italicized portions, original as to underlined portions).

That Thornhill's self-orienting mechanism is "the fundamental invention claimed therein," and therefore what was distinguished by adding "internally fixed" to the claims is self-evident. The title of the Thornhill reference is "Earth Self-Orienting Apparatus," while its abstract, drawings, and claims also focus on the rotating mechanism that provides self-orientation to the geophone. Appx1757. In fact, Thornhill's claims are solely focused on this self-orientation mechanism and silent on ejecting any geophones from its case:

1. An earth self-orienting apparatus, comprising:

a body including a plurality of spaced elements lying in a plane at least one of which corresponds to a predetermined orientation of said body with respect to the earth regardless the orientation of the body with respect to earth, said body including means for orienting said body about an axis approximately normal to the force of gravity;

a member to be oriented to said predetermined orientation rotatably mounted to said body for rotation in said plane including locking means having a first neutral position on said member as it rotates and a second locking position which when engaged with any of said elements locks said member to said body in accordance with the orientation of that element, said locking means including means responsive to the earth orientation of said member for causing said locking means to move from said first to said second positions in response to the force of gravity and engage said at least one element and thereby lock said member to said body in said predetermined orientation, and

means for rotating said orientating member with respect to said body.

Appx1764 at 7:57-8:12; *see also* Appx1764-1765 at Claims 2-19, which are similarly focused on self-orientation and silent on ejecting geophones.

While Thornhill does not use the word "gimbal," that its "self-orienting" mechanism is a form of gimbal cannot be seriously disputed. As Seabed's own expert, Mr. Beaudoin, himself explained, a gimbal is simply "a device that allows, in this case, the geophone, to maintain a particular orientation with the surface of the earth" whereby it "rotates as a result of the gimbal mounting into a vertical position." Appx2827 at 65:820 (in response to the basic question "What is a gimbal?") Mr. Beaudoin went on to describe how active self-orienting systems like those in the Willoughby prior art reference (relied on by Seabed for certain combinations under 35 U.S.C. § 103 but not addressed by the Board) are the "1990's version of a gimbaled geophone." Appx2828 at 67:16-69:9. Thornhill's self-orienting mechanism is similar to that of Willoughby and allowed a geophone to move **inside** the case (well before ejection), which applicants distinguished by adding "internally fixed" to the claim—consistent with Magseis Fairfield's understanding of the claim.

c) The Extrinsic Evidence

(1) The Expert Declaration of Magseis Fairfield's Expert, Dr. Detomo

As explained by Dr. Detomo, those of ordinary skill in the art—since at least the 1980's—understood that there are two ways to use a geophone: "on a gimbal"

or "in a fixed manner." Appx2760-2761 at ¶¶ 72, 74, and 75. A "fixed" geophone is not allowed to move or reorient itself and its principal axis does not change with respect to its mounting. Appx2760 at ¶ 72-73. Meanwhile, a "gimbaled" geophone may mechanically reorient itself to align its principal axis independent of its mounting. *See id.* Accordingly, persons of ordinary skill in the art in the field of seismic exploration would understand that references to geophones that are "fixed" are made to stress that a particular geophone is **not gimbaled** and to make clear that **it does not move**. Appx2760-2761 at ¶ 75.

(2) The Testimony of Seabed's Expert, Mr. Beaudoin

The extensive testimony of Seabed's own expert confirmed the same understanding as to the distinction between "fixed" geophones and "gimbaled" geophones as understood by one of ordinary skill in the art. At deposition, Mr. Beaudoin conceded the distinction between gimbaled and fixed geophones—unequivocally explaining how "fixed" geophones are an alternative to gimbaled geophones in the art:

> Q. What is gimbaling?
>
> A. Gimbaling is a way – it goes back to the geophones and how you want to sense the earth. And in the example I gave earlier about land data, one of the things we wanted to do was record what we call the vertical component of the motion of the earth. And, yes,

the earth moves up and down in a response to seismic waves, and recording only that single component has been very useful over decades and decades. So that's vertical.

Well, we wanted to record the same quality of data of vertical component on the seafloor. Gimballing allows you to – I'm going to have to hold the table because I want to use my hands and I know gestures are not required.

But think of gimbaling as a way the device, the vertical geophone, is attached to – well, your shoulder is a gimbaling device. It's a ball-and-socket. So if you were to roll out of bed in the morning and put your arm under the influence of gravity over the side of the bed, it would naturally come to rest in a vertical position, because this ball-and-socket joint is somewhat universal. It has its limits as some of us have found out. But that is a ball-and-socket arrangement. You can put a geophone on a ball-and-socket arrangement like that. There are other ways of doing it, and when the device comes to rest on the seafloor, let's say it comes to rest on a seafloor that's tilting 10 degrees. The whole device is tilted 10 degrees, but the geophone, which you want to record vertical information is on a ball and socket, which under the influence of gravity causes the geophone to come to risk

– rest in a vertical position. It's 10 degrees off from the tilt of the surface. So it's in a vertical position.

Gimbaling is – is one of the things that folks had to do because they didn't understand where these self-landing and ascending devices would land. So gimbaling was their solution to what was otherwise good devices for their time. I'll leave it at that. The question was gimbaling. That's how I describe gimbaling.

Q. So what are the alternatives to gimbaling?

A. The alternative – well, our alternative was how can we mimic the land approach. We wanted to use geophones that did not have gimbaling. There are other problems with gimbaling in terms of noise and instability. There are other issues than what I described, besides being mechanically complex, subject to failure, all these other issues.

We wanted to keep these devices as simple as possible to make them as reliable as possible to reduce failure rates to the bare minimum. **So we wanted to <u>fix</u> these geophones basically to the pressure vessel that they were contained in.**

And I guess—let me think—yeah, that's basically the way you put it. **We wanted it <u>fixed</u> to the pressure vessel that it was contained in.**

> **Q. So what would you refer to those as, if they were not gimbaled and ---**
>
> **A. They were mounted and <u>fixed</u>, yeah, fixed to the casing, that sort of thing.**

Appx2516-2517 at 111:14-114:6 (emphasis added).

Later on in his deposition, and under questioning by Seabed's own attorneys, Mr. Beaudoin admitted, consistent with Magseis Fairfield's and the Board's understanding of the claims, that the '268 Patent itself was directed to a system that used **<u>fixed geophones</u>** and **<u>not gimbaled ones</u>**:

> Q. What would this language have suggested, if anything, to a person of ordinary skill in the art in terms of geophones that are mechanically gimbaled?
>
> A. In the context of reading this patent, a POSITA would have understood that geophones and other devices are there, but the geophone is – there is no mention of gimbaling in that – in that sentence. So there is no reference to gimbaling. **Therefore, the geophone is not likely to be – is not gimbaled. <u>It's a geophone without any gimbaling.</u>**

Appx2620 at 347:6-347:21 (objections omitted) (emphasis added).

(3) Additional Corroborating Extrinsic Evidence

In addition to expert testimony, publications from the industry repeatedly evidence the distinction between gimbaled and fixed geophones. For example, an article describing the Magseis Fairfield Z3000 system (the first system to commercially practice the claimed invention), described the geophones utilized as follows:

> The Z-system contains three **fixed geophones** (**not gimbaled),** one hydrophone, the recording device, a very accurate clock, a compass, and a long lasting battery (Figure 12).

Appx2665, N. Moldoveanu, "Recent and future developments in marine acquisition technology: An unbiased opinion," RECORDER, Vol. 31, Mar. 2006 (emphasis added).

A patent filed by seismic data acquisition company WesternGeco differentiates between fixed and gimbaled geophones as follows:

> Without accurate knowledge of orientation of the seabed seismic sensor (for example in embodiments wherein **gimbaled geophones** are used if the sensor unit rotates, **or fixed geophones** without inclinometers), there would be an uncertainty in the direction along which the seismic signal is recorded, which will be detrimental to the data quality in itself, and which in addition could lead to an erroneous non-linear motion movement compensation.

Appx2445, D. Kok, et al., U.S. Patent No. 7,656,746 at 3:12-20 (emphasis added).

Other industry publications similarly endorse the distinction between gimbaled and fixed geophones:

> Two geophone packages were specified in each borehole, one shallow (~10 m) and one deep (~ 100 m). This provided additional redundancy in the system and resulted in the use of two distinct types of sensors – low frequency (4.5 Hz) **fixed (ie. not gimbal-mounted)** geophones in the shallower section of the wells and higher frequency (30 Hz) gimbaled geophones with magnetic orientation sensors for use at the bottom of the well – giving a broader frequency bandwidth coverage for the network as a whole.

Appx2693, J. Bommer, et al., "Control of Hazard Due to Seismicity Induced by a Hot Fractured Rock Geothermal Project," Engineering Geology, Vol. 83, 2006 (emphasis added).

> Knowing this value is important; for example, since it determines the lowest natural frequency, a spring/moving coil seismometer can function within specifications—the latter being quoted at tilts <1°/4° for 1 Hz units—and whether or not they can be mounted in **fixed** positions **or** needed to be **trunnioned or gimbaled** (Fig. 2, right).

Appx2710, B. Prevedel, et al., "Downhole geophysical observatories: best installation practices and a case history from Turkey," Int. J. Earth Sci. (2015) (emphasis added).

Even articles describing Seabed's own CASE Abyss system and its predecessor the CASE unit rely on the distinction:

> A sensor package usually includes one hydrophone and three mutually orthogonally mounted geophones. The geophones measure either velocity or acceleration and are **either fixed to the sensor housing or mounted onto a gimbal.**

Appx2452, G. Overkil and F. Naes, Seismic Node 4C-3D Acquisition System, GEOHORIZONS, July 2005 (describing Seabed's CASE unit and background of Ocean Bottom Seismic).)

> The geophones measure either velocity or acceleration and are either **fixed to the sensor housing or mounted onto a gimbal.** The **fixed geophone** solution requires determination of the vertical axis and heading to enable all 4C sensors to be numerically rotated into a common coordinate system. The **gimballed solution** required only additional heading information to do the vector rotation.

Appx2718, C. Vuillermoz, et al., "Full Azimuth 4C Node Acquisition for Enhanced PP and PS imaging," 7th Int'l Conference & Expo on Petroleum

Geophysics, 2008 (authored by Seabed and describing the CASE Abyss system, though above quote is from background discussing Ocean Bottom Seismic).

> Each of the nodes is fitted with three **fixed geophones** and one hydrophone…

Appx2654, H. Carstens, GEO ExPro, Dec. 2010 (describing the CASE Abyss).)

(4) Dictionary Definitions

The Board's construction of the term as excluding gimbals is also the only one consistent with dictionary definitions of the word "fixed"—meaning secure in place and not movable. *See* Appx2435, Collins English Dictionary (defining fixed as "1 attached or placed so as to be immovable"), and Appx2436, Merriam Webster Dictionary (defining fixed as "a: securely placed or fastened"); *see also* Appx2761 at ¶ 76 (wherein Dr. Detomo discusses how the ordinary and customary understanding of this term to those of skill in the art is also most consistent with the common dictionary definitions of "fixed.").)

(5) The Supplemental (Conclusory) Declaration of Mr. Beaudoin and Seabed's Attempt to Change Mr. Beaudoin's testimony

After the service of Magseis Fairfield's Patent Owner Response and the taking of Mr. Beaudoin's first deposition, Seabed served a supplemental declaration by Mr. Beaudoin opining that he "disagree[d]" with Magseis Fairfield's proposed construction. Appx1751 at ¶ 3. However, a review of Mr. Beaudoin's declaration demonstrates no analysis or explanation as to this novel

"disagreement." *See id.* Mr. Beaudoin instead cited a number of articles—none of which are inconsistent with Magseis Fairfield's proposed construction. Appx1751-1753 at ¶¶ 4-7. Accordingly, the Board properly gave it little weight. Appx16-19.

Mr. Beaudoin also sought to change one answer from his prior deposition, where he had previously testified that a POSITA would have understood the '268 Patent's specification as describing "a geophone without any gimballing." Appx1753-1754 at ¶¶ 8-10. Mr. Beaudoin, however, did not seek to change any other answers from his deposition. The Board properly accorded this attempt to change testimony little weight. Appx16-19. In the end, the proposed change was actually not relevant to what the Board considered the more salient aspects of Mr. Beaudoin's testimony that Seabed **never** sought to change. Appx16-19. Mr. Beaudoin's testimony with regard to how a POSITA would have understood that using a "fixed" geophone is an alternative to using a "gimbaled" geophone has never been challenged nor disputed by Seabed.

After receiving Mr. Beaudoin's supplemental declaration, Magseis Fairfield deposed Mr. Beaudoin again. At this subsequent deposition Mr. Beaudoin could not identify what it was about the question that confused him or what it was that he did not understand. Appx2826-2827 at 59:13-65:7. Instead, Mr. Beaudoin deflected on the basis of Magseis Fairfield's questioning (and had to be reminded that the allegedly confusing question actually came from Seabed's attorneys.) *See*

id. Mr. Beaudoin also repeatedly referred back to his "first answer"—the one he was in the process of explaining when he became "confused." *See id.* In reality, there was nothing confusing or difficult to understand in the question—the specification simply does not describe using gimbaled geophones, and Mr. Beaudoin understood—as any POSITA would have—that the claims in view of the specification would not cover gimbaled geophones.

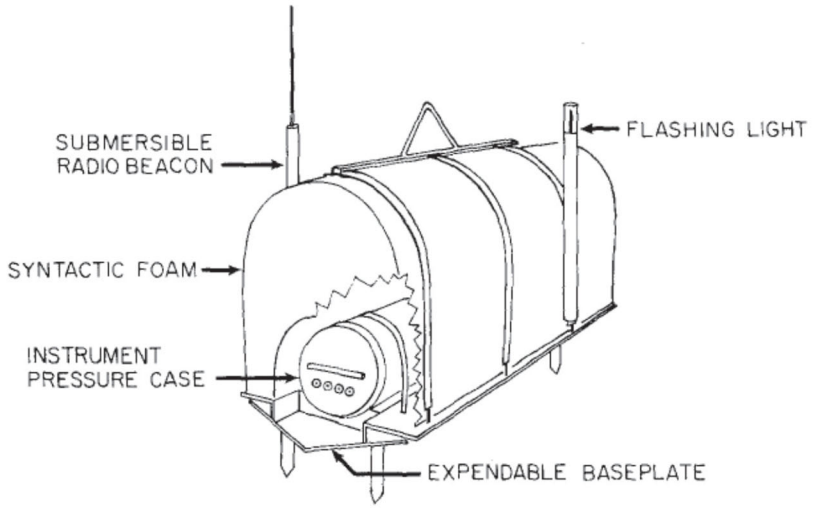
Mr. Beaudoin's deflection to his "first answer" concerning "internally fixed" is also unavailing. Mr. Beaudoin's explanation that the claimed geophone "is not likely to be – is not gimbaled. It's a geophone without any gimbaling," was actually an attempt to ***explain*** a purported "opinion" to the contrary elicited by Seabed's counsel for the first time on redirect at deposition. *See* Appx2620 at 345:10-347:21. Mr. Beaudoin did not address the term in any way in his original declaration and the questioning by Seabed's attorney soliciting it was well beyond the scope of Fairfield's cross-examination. That upon further probing it was revealed that Mr. Beaudoin actually agreed with Magseis Fairfield's understanding of the claims is a fact that Seabed must now live with. *See id*.

2. The Prior Art

a) Cranford

Cranford is a 1976 article that describes an analog earthquake monitoring system from OSU that had limited capabilities and which was not intended for use

on seismic data exploration surveys. Appx1250, Appx1257, Appx2772-2777 at ¶¶ 91-99. The Johnson article from 1977 (Appx1325-1339) also describes the Cranford system. An image depicting the system described in Cranford is also provided below:



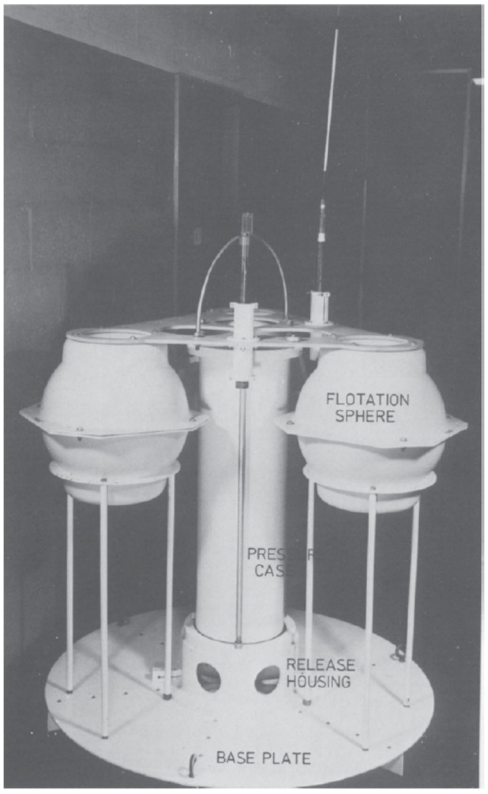
Appx1255.

The Cranford device also utilized a gimbaled—and not fixed—geophone. *See* Appx1251 ("A Mark Products L1-G 2.0 Hz geophone, the main sensing element, is mounted in a specially designed gimbal capable of 360° rotation (Figure 2)."); *see also* Appx2777 at ¶ 98.

b) Mattaboni

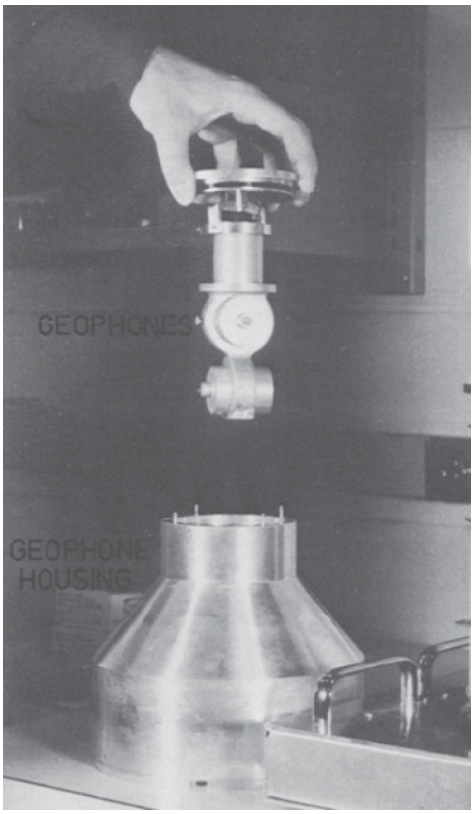
Mattaboni is an article describing an earthquake monitoring system from 1977 with limited capabilities. Appx1259, Appx2768-2772 at ¶¶ 83-90. The Mattaboni article does not describe seismic exploration surveys, nor does it contemplate using the Mattaboni system for seismic exploration surveys.

Appx1259-1271, Appx2768 at ¶ 83. An image depicting the large system described in Mattaboni is provided below:



Appx1261.

The Mattaboni device also utilized gimbaled—and not fixed—geophones, as demonstrated in the below figure:



Appx1262, Appx1263 ("The three geophones are mounted in a single aluminum frame and suspended from a gimbal joint in viscous oil. The gimbal ensures vertical seismometer orientation for instrument tilts up to 30°…"); *see also* Appx2772 at ¶ 89.

3. Proceedings before the Board

The Board properly construed the claims based on its analysis of both the intrinsic and extrinsic evidence, concluding that "the term 'internally fixed' excludes geophones that are gimballed." Appx13. The Board's analysis began by summarizing both Seabed's and Magseis Fairfield's arguments with respect to the

intrinsic record as well as the extrinsic evidence. Appx10-13. The Board went on to correctly note that:

> While the broadest reasonable interpretation standard is broad, it is also true that "[c]onstruing individual words of a claim without considering the context in which those words appear is simply not 'reasonable.'" *Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1062 (Fed. Cir. 2016). Instead, it is the "use of the words in the context of the written description and customarily by those of skill in the relevant art that accurately reflects both the 'ordinary' and the 'customary' meaning of the terms in the claims." *Ferguson Beauregard/Logic Controls, Div. of Dover Res., Inc. v. Mega Sys., LLC,* 350 F.3d 1327, 1338 (Fed. Cir. 2003).

Appx13.

The Board's analysis first turned to the specification of the '268 Patent, concluding that "we do not find the Specification to be dispositive one way or the other." Appx14. The Board noted how the specification on its own (before considering the expert testimony of both experts with respect to how a POSITA would have understood it) could be read as supporting both Magseis Fairfield's and Seabed's proposed constructions. *Id.* The Board then proceeded to further analyze the relevant portions of the specifications identified by both sides and the arguments relating thereto. *Id.*

The Board next turned to the prosecution history, concluding that "[a]s for Petitioner's contention that the prosecution history supports its broad construction, we do not agree that the prosecution history is unambiguous." *Id.* Seabed's Opening Brief criticized the Board's analysis as comprising a "single paragraph," yet it is important to note that, before the Board, Seabed only raised a **single argument** with respect to the prosecution history that based on the amendment adding "internally fixed" to the claims of the parent '493 Patent in response to a rejection under 35 U.S.C. § 102 in view of Thornhill.[3] Appx446-449. It is only now, in this appeal, that Seabed has raised myriad new arguments based on additional portions of the prosecution history of the '493 Patent, the prosecution of the '589 Patent, as well as the prosecution of the '268 Patent itself—arguments that were never raised before the Board and which the Board had no opportunity to address.

The Board's analysis of the arguments before it focused on the fact that Seabed's characterization of the amendments made during prosecution ignored that the amendment could have been made to address the self-orienting aspect of Thornhill's geophone (as Magseis Fairfield had argued):

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[3] The characterization of the Board's analysis as simply one paragraph is also not in any event. Earlier in the FWD the Board had summarized Seabed's position with respect to the prosecution history, and in totality that analysis spans roughly two full pages of the decision. *See* Appx12-15.

> Although the amendment could be read to capture only the idea that the geophone does not leave the case, it could also be read to address the self-orienting aspect of Thornhill's geophone, even when it is within the case. Thus we agree with Patent Owner that, at the very least, the prosecution history is ambiguous and does not preclude Patent Owner's proposed construction.

Appx15.

Having concluded that the specification and prosecution history were ambiguous the Board next evaluated the extensive extrinsic evidence of record that conclusively demonstrated that a POSITA would not have understood the term "at least one geophone internally fixed within" as covering gimbaled geophones:

> We agree with Patent Owner that this evidence demonstrated that in the context of this field, a person of ordinary skill would understand that the term "fixed" indicates that the geophone is not gimballed.

Appx15; *see also* Appx15-19. Principally, the Board relied on the expert testimony of Seabed's own expert witness, Mr. Beaudoin:

> As Mr. Beaudoin persuasively and comprehensively explains, in this field, a geophone that is "fixed" is one that is attached to the case without gimballing. Ex. 2024, 111:14-114:6. Moreover, Mr. Beaudoin also testifies that a person of ordinary skill reviewing the Specification would understand that "internally fixed" refers to a

> geophone that is attached to the case without gimbaling. *Id.* at 347:6-347:21. Mr. Beaudoin's testimony at his deposition is consistent with Dr. Detomo's testimony. Ex. 2056 ¶¶ 72-75.

Appx15.

The Board also found that this testimony was consistent with numerous corroborating patents and other publications. *See* Appx15-16. However, the Board explicitly made clear that it was not relying on these references (which were dated after the priority date of the '268 Patent) to define the term but rather as "merely to show that Mr. Beaudoin's deposition testimony is consistent with nearly contemporaneous usage in the art." Appx16 at n.12.

The Board also considered—and dismissed—Seabed's arguments as to why the overwhelming extrinsic evidence should be ignored. First, as described above, the Board correctly determined that neither the specification nor the prosecution history compelled the construction sought by Seabed—one that would have covered gimbaled geophones. Appx13-15. Second, the Board rejected Seabed's argument that the Board should ignore the testimony of Seabed's own expert, noting how a single answer Mr. Beaudoin gave in support of Seabed's construction was "conclusory" while his answers that supported Magseis Fairfield's proposed construction were "far more detailed and include his review of the Specification as directed by Petitioner's counsel." Appx16. The Board logically concluded that

"Mr. Beaudoin's more detailed answers are entitled to more weight," and concluded that Mr. Beaudoin's testimony overall overwhelmingly supported Magseis Fairfield's position:

> Moreover, weighing the totality of his testimony, including his earlier answers explaining gimbaling and the alternatives to gimbaling used in the project he worked on with Patent Owner, we determine that Mr. Beaudoin's answers explaining that the claims of the f'268 patent do not include gimbaling are entitled to the most weight in our analysis, because they provide the most detail and the most relevant analysis of the claims at issue.

Appx16.

The Board also (correctly) gave little weight to Seabed's attempt to change a portion of Mr. Beaudoin's testimony via a supplemental declaration—what Seabed portrayed as a "correction." *Id.* First, the Board noted that Seabed was not attempting to actually change Mr. Beaudoin's testimony that "a geophone that is 'fixed' to the casing is the alternative to gimbaling in this field." Appx16-17. Next, the Board noted how "[t]he testimony that Mr. Beaudoin attempted to correct was his testimony on re-direct that he agreed with Patent Owner's contention that the claims of the '268 patent excluded gimbaling." Appx17. Ultimately the Board determined that "Mr. Beaudoin's explanation for the change—that he was

confused by the questions—is unpersuasive." *Id.* The Board walked through the testimony Mr. Beaudoin sought to disavow and noted how it consisted of lengthy "multi-page answers explaining in detail why he believed that the claims did not include gimbaling" and not "short responses where someone accidentally answers 'yes,' when they meant 'no.'" Appx17-18. The Board also noted that it was Seabed's own attorneys asking Mr. Beaudoin these questions, and how the transcript reflected that Mr. Beaudoin paused and carefully reviewed the specification before answering. Appx18. The Board further noted that "the testimony Mr. Beaudoin seeks to recant is consistent with his earlier testimony that fixing a geophone to the case was the alternative to gimbaling"—testimony that Seabed sought no change to. *Id.*

Finally the Board considered and rejected Seabed's conclusory argument that despite the overwhelming extrinsic evidence in support of how a person of ordinary skill would understand the use of the term "fixed," the term "internally fixed" should be given some different meaning. Appx19. As the Board noted, Seabed "provide[d] no explanation—and we can discern none independently—why the addition of the word 'internally' would transform the established meaning in the art for 'fixed' geophone, i.e., transform it from a meaning that excludes gimballing into a meaning that includes gimbaling." *Id.*

VI. SUMMARY OF ARGUMENT

The Board properly evaluated the intrinsic and extrinsic evidence in concluding that the claim limitation "at least one geophone internally fixed within said [housing / internal compartment]" excludes geophones that are gimbaled. Seabed's characterization of the Board's analysis as embracing the extrinsic record while ignoring the intrinsic record is not accurate and belied by a simple review of the Final Written decision. The Board first looked to the specification and prosecution history, finding neither dispositive and, at best, ambiguous as to whether the claims would cover gimbaled geophones. The Board then went on to, appropriately, consider the overwhelming extrinsic evidence that demonstrated that a POSITA would have understood the claims as excluding gimbaled geophones—including the testimony of **both sides**' expert witnesses. Of note, Seabed did not dispute below that the term "fixed" had a commonly understood meaning to those in the art, which would have excluded "gimbaled" geophones.

In an effort to portray the Board's review of the intrinsic record as cursory and limited, Seabed has introduced a litany of new prosecution history arguments for the first time on appeal that were **never** before the Board. These arguments were waived. Instead, during trial Seabed advanced only a single prosecution history argument, based on amendments adding "internally fixed" to the claims of the parent '493 patent in response to a rejection under 35 U.S.C. § 102 over the

Thornhill reference—which is what the Board addressed. That said, these new arguments would not have changed the Board's conclusions.

VII. ARGUMENT

A. Standard of Review.

Although the Board's ultimate claim constructions are reviewed *de novo*, underlying factual determinations, including the evaluation of extrinsic evidence, are reviewed for substantial evidence. *Arendi S.A.R.L. v. Google LLC*, 882 F.3d 1132, 1133 (Fed. Cir. 2018); *Mayne Pharma Int'l Pty. Ltd. v. Merck Sharp & Dohme Corp.*, 927 F.3d 1232, 1240 (Fed. Cir. 2019); *Pers. Audio, LLC v. Elec. Frontier Found.*, 867 F.3d 1246, 1250 (Fed. Cir. 2017).

B. The Board Properly Relied on Extrinsic Evidence, and the Board's Evaluation of the Extrinsic Evidence Is Entitled to Deference.

As explained in Section V.A.3 above, the Board properly analyzed the relevant portions of the intrinsic record that the parties placed before it—namely, the specification and the amendments made during the prosecution of the parent '493 Patent in response to a § 102 rejection under Thornhill. *See* Section V.A.3, above. Upon concluding that neither was dispositive on the issue of whether a person of ordinary skill in the art would have understood the claims as excluding gimbals, the Board appropriately considered and weighed the extrinsic evidence, principally the expert testimony of **both sides** experts. Appx15-19.

It cannot be seriously disputed that where the Board finds the specification and prosecution history ambiguous with respect to a claim construction dispute, extrinsic evidence should be considered, which is what the Board did. *Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc.*, 711 F.3d 1348, 1360 (Fed. Cir. 2013) ("Where the intrinsic record is ambiguous, and when necessary, we have authorized district courts to rely on extrinsic evidence…."); *Knowles Elecs. LLC v. Cirrus Logic, Inc.*, 883 F.3d 1358, 1363 (Fed. Cir. 2018) ("Because intrinsic evidence is not definitive, we turn to extrinsic evidence.").

The Board also properly relied on extrinsic evidence when considering background information with respect to the relevant field, and whether the term "fixed" had a particular meaning in the field. *See Apple, Inc. v. Andrea Elecs. Corp.*, 949 F.3d 697, 708 (Fed. Cir. 2020) ("We have regularly held that extrinsic evidence in the form of expert testimony can 'provide background on the technology at issue' and 'ensure that the court's understanding of the technical aspects of the patent is consistent with that of a person of skill in the art, or to establish that a particular term in the patent or the prior art has a particular meaning in the pertinent field.'") (quoting *Philips v. AWH Corp.,* 415 F.3d 1303, 1318 (Fed. Cir. 2005)).

The Board's evaluation of the extrinsic evidence is entitled to deference, and in this case is supported by an overwhelming amount of substantial evidence.

Arendi S.A.R.L. v. Google LLC, 882 F.3d 1132, 1133 (Fed. Cir. 2018); *Mayne Pharma Int'l Pty. Ltd. v. Merck Sharp & Dohme Corp.*, 927 F.3d 1232, 1240 (Fed. Cir. 2019); *see also Knowles Elecs. LLC v. Iancu*, 886 F.3d 1369, 1374 (Fed. Cir. 2018) ("When the PTAB 'look[s] beyond the patent's intrinsic evidence and . . . consult[s] extrinsic evidence' such as expert testimony, dictionaries, and treatises, those underlying findings amount to factual determinations that we review for 'substantial evidence[.]'" (internal citations omitted)).

Here, the Board relied on the extensive testimony of Seabed's own expert, finding it "persuasive" and "comprehensive." *See* Section V.A.3., above, and Appx15. In particular the Board relied on Mr. Beaudoin's extensive explanation as to how, in the relevant field, a POSITA would understand that a "fixed" geophone is the alternative to one that is gimbaled. *See* Section V.A.3., above and Appx10-12 and Appx15-19. The Board further considered, and ascribed weight to, Mr. Beaudoin's testimony that upon careful review of the specification of the '268 Patent he believed a POSITA would understand the claims in light of the specification as excluding gimbaled geophones—despite Seabed's belated attempt to change this testimony. *See* Section V.A.3., above, and Appx17-19. The Board then further relied on the fact that Dr. Detomo's own expert opinions as to how a POSITA would understand the claims as excluding gimbaled geophones were consistent with, and therefore corroborated, Mr. Beaudoin's own testimony. *See*

Section V.A.3., above, and Appx15 ("Mr. Beaudoin's testimony at his deposition is consistent with Dr. Detomo's testimony"). Finally, the Board noted that publications and other patents from the period shortly after the priority date supported Mr. Beaudoin and Mr. Detomo's testimony, while not expressly relying on them as defining any term. *See* Section V.A.3., above, and Appx15-16, n.16.

Seabed's attempt to discredit the testimony of its own expert on appeal is not persuasive for all the reasons previously acknowledged by the Board, and does nothing to change the undisputed fact that, within the field, the term "fixed" is used to distinguish from gimbaled geophones. *See* Appx15-19. Seabed's attempt to portray some of Mr. Beaudoin's testimony as from the perspective of a POSITA in 2019 rather than at the time of the invention is also not accurate. For example, Mr. Beaudoin's explanation of gimbaling, and how "fixed" is an alternative to gimbaling, arose from the discussion of his work with the GeoPro prior art system from **before** the filing of the '268 patent. *See* Appx2515-2517 at 109:23-116:14. Had there been any doubt on this, Seabed could have addressed the issue in Mr. Beaudoin's supplemental declaration, where it attempted to "correct" other aspects of Mr. Beaudoin's testimony—but Seabed never did.

1. The Board Did Not Engage in an "Errant" Analysis of the Prosecution History

Seabed repeatedly criticizes as short the Board's analysis of the prosecution history, and suggests impropriety by Magseis Fairfield in only raising certain

arguments in a sur-reply. *See* Dkt. 22, Opening Brief at 42. However, it cannot be stressed enough that it was Seabed that first raised the prosecution history as supporting its unreasonably broad construction of "internally fixed" when it served its Reply brief—having failed to address the term at all in the original Petition. The length of the analysis is a result of the fact that the Board entertained Seabed's single prosecution history argument, which arose from an amendment made in response to a § 102 rejection in view of Thornhill during the prosecution of the parent '493 Patent—not the litany of new prosecution history arguments that Seabed now raises for the first time on appeal (addressed in more detail in Section VII.C., below).

Seabed also argues that the Board erred, citing to a string of cases describing how the "party seeking to invoke prosecution history disclaimer bears the burden of proving the existence of a 'clear and unmistakable' disclaimer that would have been evident to one skilled in the art." *See* Dkt. 22, Opening Brief at 42. To be clear, Magseis Fairfield **never** argued prosecution history disclaimer to the Board, and the Board did not find any disclaimer in its decision. *See* Appx478, n.3 (Magseis Fairfield's Sur-Reply, which did not argue prosecution history disclaimer and noted that "no prosecution disclaimer need be found where, as here, the agreed-upon use of the term 'fixed' clearly demonstrated how a POSITA would have reasonably understood the term."). Were there any doubt on this point,

Magseis Fairfield explained at the hearing before the Board, in response to a question by the Board noting the ambiguity of the prosecution history and the burden of proving a disclaimer, that Magseis Fairfield was not making a prosecution history disclaimer argument—and was simply responding to Seabed's position. *See* Appx634 ("We don't make a prosecution disclaimer argument. The point of this is to say what they say about Thornhill in their reply is wrong").

Accordingly, Seabed's argument that the Board erred by not applying the standards for determining whether prosecution history disclaimer applies simply has nothing to do with the Board's actual decision in this case.

2. The Board Did Not Engage in an "Errant" Analysis of the Extrinsic Evidence.

Seabed's challenge to the Board's reliance on extrinsic evidence is premised on a fundamental mischaracterization of the Board's final written decision. Seabed pretends that the Board first looked to extrinsic evidence to determine the meaning of the disputed terms, and then merely concluded that the intrinsic record was "not inconsistent with" and "not precluded" by the intrinsic record. *See* Dkt. 22, Opening Brief at 44-45. **That is not what happened.** To the contrary, and as explained in Section V.A.3, above, the Board first looked to the intrinsic record and, concluding it to be ambiguous, then turned to the extrinsic evidence—which is the fundamentally correct approach. *See Power Integrations,* 711 F.3d at 1360; *Knowles*, 883 F.3d at 1363. Additionally, this Court has also endorsed the view

that extrinsic evidence may be helpful in assessing the context in which a term may be used within a particular field. *See Apple,* 949 F.3d at 708.

Of course it is a truism that any construction supported by the extrinsic evidence should not be inconsistent with, or precluded by, the intrinsic record—and Seabed cites many cases stressing that point. *See* Dkt. 22, Opening Brief at 44 (citing *Profectus Tech. LLC v. Huawei Techs. Co., Ltd.*, 823 F.3d 1375, 1379 (Fed. Cir. 2016) ("Legal error arises when a court relies on extrinsic evidence that contradicts the intrinsic record"); *David Netzer Consulting Eng'r LLC v. Shell Oil Co.*, 824 F.3d 989, 997 (Fed. Cir. 2016) ("As we have explained, extrinsic evidence may not be used to contradict claim meaning that is unambiguous in light of the intrinsic record.").) It is therefore unsurprising (and surely not error) that in this case the Board confirmed in its final written decision that the intrinsic record was not inconsistent with the extrinsic evidence.

Seabed's reliance on *In re Smith* in support of this argument is misplaced. There, the Federal Circuit faulted the Board for ignoring "repeated and consistent descriptions in the specification" that indicated that a broad construction of the term "body" was not reasonable. *See In re Smith Int'l, Inc.*, 871 F.3d 1375, 1383 (Fed. Cir. 2017).

Seabed's next argument, that the Board erred by finding that "internally fixed" had the same meaning as "fixed"—a term that Seabed does not dispute has a

specific meaning with respect to geophones in the relevant field—is without merit. The Board did not simply disregard "internally" as Seabed suggests. On the contrary, it noted how Seabed offered no explanation as to how adding "internally" to "fixed" somehow "transform[ed] the established meaning in the art for 'fixed' geophones, i.e., transforms it from a meaning that excludes geophones into a meaning that includes gimbaling." Appx19. It does not follow that "internally" and "within" are somehow meaningless. Indeed, a fixed geophone external to a housing would not be covered by the claims.

Seabed also argues that the word "within" should have somehow affected the Court's construction, yet fails to explain how. *See* Dkt. 22, Opening Brief at 48. Regardless, this appears to be yet another new argument raised for the first time on appeal, since Seabed's reply brief contains no arguments specific to the word "within" and therefore should be disregarded. *See* Appx427-458.

Seabed's argument that "the Board found the claims distinguishable from the prior art based on a feature that is not disclosed in the specification" (Dkt. 22 at 20) misses the point. It was Seabed's burden to prepare a petition that actually met the limitations of the claim as understood by a person of ordinary skill in the art. By exclusively relying on art that taught gimbaled geophones, it failed to meet that burden. To the extent Seabed is implicitly arguing that the claims fail to meet the written description requirement under 35 U.S.C. § 112, the argument is without

merit in view of the expert testimony of record, but it is also a new argument raised for the first time on appeal and one which could not have been raised in an IPR petition anyway. *See, e.g., Samsung Elecs. America, Inc. v. Prisua Eng'g Corp.*, 948 F.3d 1342, 1350 (Fed. Cir. 2020); *Cuozzo Speed Techs., LLC v. Lee*, 579 U.S. __, 136 S.Ct. 2131, 2141-42 (2016).

3. The Board Did Not Err by Noting That Publications from Shortly After the Filing Date of the '268 Patent Helped Corroborate Expert Testimony.

The Board's citation to articles and publications from the time shortly after the priority date of the '268 Patent was not error. First, the Board expressly noted that it was not relying on these documents to define the term. Second, the Board was entitled to consider these relevant documents and weigh them in view of the expert testimony of record for any corroborative value they might have. *See Ohio Willow Wood Co. v. Alps S., LLC*, 735 F.3d 1333, 1348 (Fed. Cir. 2013) ("Corroboration does not require that every detail of the testimony be independently and conclusively supported by explicit disclosures in the pre-critical date documents or physical exhibits. . . . Thus, evidence of corroboration can take many forms and such evidence does not become irrelevant to the credibility determination simply because a [party] questions whether it was created shortly after the critical date."); *Intellectual Ventures II LLC v. Motorola Mobility LLC*, 692 F. App'x 626, 628 (Fed. Cir. 2017) ("The rule of reason requires consideration

of all pertinent evidence. Documents created shortly after the critical date and even undated documents may be relevant to corroborate an inventor's testimony. . . . The Board's complete failure to even consider the evidence here was an error.").

Of note, Seabed never sought to move to strike these materials as irrelevant.

Further, it is not surprising that few documents from around the filing date of the '268 Patent exist to describe the difference between gimbaled and fixed geophones. At the time of filing, Magseis Fairfield was on the cutting edge of using fixed geophones for marine applications, where historically gimbaled geophones were used. Meanwhile, fixed geophones were primarily used for operation on land—as discussed in the expert declaration of Dr. Rocco Detomo, as well as during the deposition of Mr. Beaudoin. *See* Appx2749 ¶ 49; Appx2516-2517 at 111:14-114:6. Contrary to Seabed's assertions, the timing of these disclosures actually supports the understanding that at the time of the invention of what a "fixed" geophone was.

Regardless, the Board made clear that it was not relying on the documents to define the term. There was no error.

C. Seabed's Myriad New Prosecution History Arguments, Raised for the First Time on Appeal, Should Be Disregarded.

It is well established that new arguments raised for the first time on appeal, that were not before the Board and which the Board did not have an opportunity to consider or address, should be considered waived. *See Microsoft Corp v. Biscotti,*

Inc., 878 F.3d 1052, 1075 (Fed. Cir. 2017) ("[A]ny argument not raised before the Board is waived on appeal") (citing *Redline Detection, LLC v. Star Envirotech, Inc.*, 811 F.3d 435, 450 (Fed. Cir. 2015)); *see also Acoustic Tech, Inc. v. Itron Networked Sols., Inc.*, 949 F.3d 1360, 1364 (Fed Cir. 2020).

In its opening brief Seabed has added numerous new arguments arising out of the intrinsic record that were **never** presented to, or considered by, the Board. As explained below, while none would have changed the Board's ultimate determination, they should not be considered on appeal.

1. Seabed's New Argument Concerning the Orban Prior Art Reference and § 103 Rejections Made Concerning Orban During Prosecution of the Parent '493 Patent Should Be Disregarded Since It Was Raised for the First Time on Appeal.

Before the Board, Seabed's arguments based on the prosecution history of the '493 Patent focused exclusively on the amendment adding "internally fixed" to the claims of the parent '493 Patent in response to a § 102 rejection based on the Thornhill prior art reference. *See* Appx446-449 (solely discussing the § 102 rejection with respect to Thornhill and not the § 103 rejection that included Orban, nor the Examiner's characterization of Orban). Despite that fact, Seabed now argues for the first time on appeal that the Examiner's characterization of Orban in a separate rejection under 35 U.S.C. § 103 supports its claim construction. *See* Dkt. 22, Opening Brief at 34-36. This argument was waived and should be disregarded

on appeal. *See Microsoft Corp.*, 878 F.3d at 1075; *Redline Detection,* 811 F.3d at 450; and *Acoustic Tech*, 949 F.3d at 1364.

Regardless, while the Orban reference is not of record in this appeal because it was never previously raised in any argument by Seabed before the Board, a review of U.S. Patent No. 6,353,577 to Orban actually **supports** the Board's conclusion that the claims at issue do not cover geophones that are gimbaled. A review of Orban reveals that the geophone in Orban is not gimbaled or self-orienting—it does not move—it is, indeed, "fixed." As explained above, the amendments made during prosecution to overcome Thornhill addressed **both** the self-orienting nature of Thornhill in addition to the fact that Thornhill ejected a geophone from its case. (*See* Section VII.B. above). That the examiner recognized that a geophone in another reference was, unlike Thornhill, "fixed," only supports the Board's ultimate conclusions.

2. Seabed's New Argument Concerning the Wood Prior Art Reference and Rejections Made Concerning Wood during the Prosecution of the '589 Patent Should Be Disregarded Since It was Raised for the First Time on Appeal.

Before the Board, Seabed's prosecution history argument focused exclusively on the amendment adding "internally fixed" to the claims of the parent '493 Patent in response to a § 102 rejection based on the Thornhill prior art reference. *See* Appx446-449 (solely discussing the § 102 rejection with respect to Thornhill from the prosecution of the '493 patent and not any portion of the

prosecution of the '589 patent). Despite that fact, Seabed now argues for the first time on appeal that the Examiner's characterization of Wood during prosecution of the '589 patent supports its claim construction position. *See* Dkt. 22, Opening Brief at 37-38. This argument was waived and should be disregarded on appeal. *See Microsoft*, 878 F.3d at 1075; *Redline Detection,* 811 F.3d at 450; and *Acoustic Tech.,* 949 F.3d at 1364.

Regardless, while the Wood reference is not of record in this appeal because it was never previously raised in any argument by Seabed before the Board, a review of U.S. Patent No. 5,724,241 to Wood actually **supports** the Board's conclusion that the claims at issue do not cover geophones that are gimbaled. Wood is silent with respect to gimbals and illustrates traditional external fixed geophones used in certain seismic operations. As explained above, the amendment adding both "internally fixed" and "fully enclosed" to the claims in response to the Thornhill reference (the argument actually before the Board) addressed **both** the self-orienting nature of Thornhill in addition to the fact that Thornhill ejected a geophone from its case. (*See* Section VII.B. above). That the examiner and applicant recognized that external geophones would not meet a limitation requiring an internal geophone is not surprising, and does not change how a person of ordinary skill in the art would have understood the term overall.

3. Seabed's New Argument Concerning the Prosecution History of the '268 Patent and 37 C.F.R. § 1.173(c) Should Be Disregarded Since It was Raised for the First Time on Appeal.

Again, Seabed's prosecution history arguments before the Board were based solely on the amendments made during the prosecution of the parent '493 Patent in response to a § 102 rejection based on Thornhill. *See* Appx446-449. Despite that fact, Seabed now argues for the first time on appeal that submissions in conformance with 37 C.F.R. § 1.173(c) during prosecution of the '268 Patent weigh on the interpretation of the claims. *See* Dkt. 22, Opening Brief at 17. This argument was waived and should be disregarded on appeal. *See Microsoft*, 878 F.3d at 1075; *Redline Detection,* 811 F.3d at 450; and *Acoustic Tech.,* 949 F.3d at 1364.

Regardless, the argument has no merit. The parties and the Board have already acknowledged that the phrase "internally fixed" does not appear in the specification, and the portions of the specification identified by the Applicants when submitting their reissue application are the same portions of the specification identified by the parties and considered by the Board when evaluating whether the claims covered gimbaled geophones. That however does not change how a person of ordinary skill would understand the language. Additionally, the portions of 37 C.F.R. § 1.173(c) relied on by Seabed refer solely to identifying support for "changes made to the claims." *See* Dkt. 22 at 17 and 37 C.F.R. § 1.173(c). The

language "internally fixed" was already used in the previously issued independent claims 1, 5 and 21, and was added to other claims in a parent application as well. Applicant's identification of relevant portions of the specification for the purposes of 37 C.F.R. § 1.173(c) simply has no bearing on the proper interpretation of the limitation at issue.

D. Seabed Is Not Entitled to Any Reversal of the Board's Patentability Findings.

While the Board's decision should be affirmed for the many reasons detailed above, were this Court to find any material error in the Board's claim construction analysis, the proper remedy would be to remand the case for further consideration rather than "reverse the Board's patentability findings" as Seabed requests. *See* Dkt. 22 at 2. Magseis Fairfield advanced a number of alternative arguments before the Board in support of the patentability of the claims at issue that the Board never reached in its Final Written Decision, which would need to be revisited were the Court to modify the Board's claim construction. *See* Appx332-402 and Appx1-29.

VIII. CONCLUSION

For the reasons described above, this Court should affirm the Board's construction, as well as its conclusion that the Petition does not demonstrate unpatentability under that construction, which Seabed does not separately challenge.

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Respectfully submitted,

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FORM 19. Certificate of Compliance with Type-Volume Limitations **Form 19**
July 2020

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITATIONS

Case Number: 2020-1237

Short Case Caption: Seabed Geosolutions (US) Inc. v. Magseis FF LLC

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