

EUROPEAN PATENT OFFICE (MUNICH)
80298 MUNICH
Germany

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18 August, 2014

Dear Sir(s),

**European Patent Number EP1850151 (Application number 07113031.4)
of WesternGeco Seismic Holdings Limited
and Services Pétroliers Schlumberger
Our Ref: AJF/JAS/P124484EP00**

In preparation for Oral Proceedings, we file herewith the Patentees' submissions, along with a new Main Request and Auxiliary Requests 1 to 4 (both clean and "tracked changes" versions).

Yours faithfully,

SHORT; James
BOULT WADE TENNANT, Association Number 505

5305285; JAS; EMS

PGS Exhibit 1104, pg. 1
PGS v. WesternGeco (IPR2014-00689)

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European Patent Number EP1850151 of WesternGeco Seismic Holdings Limited and Services Pétroliers Schlumberger and Opposition thereto by ION Geophysical Corporation.

OBSERVATIONS OF THE PATENTEES

1. Introduction

- 1.1 In response to the Preliminary Opinion accompanying the Summons to Oral Proceedings, we file herewith a new Main Request, along with Auxiliary Requests 1 to 4 to be considered in turn in the event that the Opposition Division decide not to maintain the Main Request.
- 1.2 Whilst four Auxiliary Requests are filed, it will be noted that Auxiliary Request 1 represents a fallback positions in case the Opposition Division should consider the Main request to include added subject-matter, while Auxiliary Requests 2 to 4 represent fallback positions in case the Opposition Division should consider there to be a lack of inventive step in the Main Request or Auxiliary Request 1. As will be appreciated, depending on the Opposition Division's conclusion regarding added subject-matter, it is likely that only one of Auxiliary Requests 2 or 3 will require consideration should any inventive step objection be maintained.

2. Main Request

- 2.1 In the Main Request, the claims of the Patent have been amended based on paragraph [0016] of the "A" specification to specify that the method uses a control system distributed between a global control system located on or near a seismic survey vessel and a local control system located on each streamer positioning device. Commensurate amendments have been effected in the independent apparatus claim.
- 2.2 In addition, feature (a) has been amended to specify that "each" of the streamer positioning devices have a wing. This amendment finds basis in the "A" specification in paragraph [0015], which discloses the plurality of streamer positioning devices, and in paragraph [0023], which discloses the structure of a bird suitable for use as each streamer positioning device.
- 2.3 In addition, feature (c) has been amended to specify that the local control system adjusts the angle of the wing with a wing motor. This amendment finds basis in paragraph [0025] of the "A" specification.
- 2.4 Commensurate amendments have been effected in independent claim 15.

3. Auxiliary Requests

- 3.1 In Auxiliary Request 1, instead of inserting the text from paragraph [0016] as in the Main request, the claims have been amended to specify that the method is for controlling streamer positioning devices using a distributed processing control architecture and behaviour-predictive model based control logic. Basis for this amendment can be found in paragraph [0017]. Commensurate amendments have been effected in the independent apparatus claim.
- 3.2 Auxiliary Request 2 is based on the Main Request. Additionally, the subject-matter of granted claim 2 has been introduced into claim 1. Similarly, the subject-matter of granted claim 16 has been incorporated into the independent apparatus claim, now renumbered as independent claim 14.
- 3.3 Auxiliary Request 3 is based on Auxiliary Request 1. Additionally, the subject-matter of granted claim 2 has been introduced into claim 1. Similarly, the subject-matter of granted claim 16 has been incorporated into the independent apparatus claim, now renumbered as independent claim 14.
- 3.4 In Auxiliary Request 4, the claims of Auxiliary Request 1 have been amended to specify that the control logic is part of the global control system. Basis for this amendment can be found in paragraph [0019] of the “A” specification. Whilst it is noted that [0019] refers to “a dynamic model” rather than “behaviour-predictive model-based control logic”, it is noted that the model of paragraph [0017] is the only dynamic model described in the application and thus must be that referred to in paragraph [0019].
- 3.5 Indeed, in this regard, it is noted that paragraph [0020] also describes predictor software relating to the behaviour of the complete streamer array being located on the global control system. That is, behaviour prediction is carried out by the global control system.

4. Article 100(c) EPC

- 4.1 In the Preliminary Opinion accompanying the Summons, the Opposition Division followed four of the Opponent’s objections in relation to claim 1, and followed equivalent objections in respect of claim 15. Three of these objections are dealt with by amendments in the Main Request, as follows.
- 4.2 In Section 3.2.1.4, the Opposition Division considers that there is added subject-matter in the recitation of “at least one of the streamer positioning devices having a wing”. In the Main Request, claim 1 has been amended to specify that each of the streamer positioning devices has a wing. Thus, the objection had been overcome. An equivalent amendment has been made in claim 15, thus overcoming the objection of Section 3.2.2.5.
- 4.3 In Section 3.2.1.7, the Opposition Division considers that there is added subject-matter in the omission of the feature that it is the angle of the wing that is controlled by the local control system. In the Main Request, claim 1 has been amended to specify that the local control system adjusts the angle of the wing. Thus, the objection had been overcome. An equivalent amendment has been made in claim 15, thus overcoming the objection of Section 3.2.2.8.

- 4.4 In Section 3.2.1.9, the Opposition Division considers that there is added subject-matter in the omission of the feature that the angle of the wing is actuated using a wing motor. In the Main Request, claim 1 has been amended to specify that the angle of the wing is adjusted with a wing motor. Thus, the objection had been overcome. An equivalent amendment has been made in claim 15, thus overcoming the objection of Section 3.2.2.10.
- 4.5 In Section 3.2.1.5, the Opposition Division objects that the global control system is only disclosed in combination with a “distributed processing control architecture and behaviour-predictive model based control logic to properly control the streamer positioning devices”, suggesting that this feature should be incorporated into the independent claims. In this regard, the Patentees respectfully disagree for the following reasons.
- 4.6 The inventive feature of claim 1 to which the objection is directed is introduced, not in the final paragraph on page 6 (to which the Opposition Division refers), but in the preceding paragraph. This paragraph provides basis for distributing the control system between the global and local control systems. It is this passage which gives basis for granted claim 1. Thus, it is not correct that the global control system is disclosed only in combination with the feature of “distributed processing control architecture and behaviour-predictive model based control logic to properly control the streamer positioning devices”; it is described separately from this feature when it is first introduced.
- 4.7 The question is therefore whether the Skilled Reader would find anything in the final paragraph on page 6 to suggest that such a feature is essential. In this regard, it is noted that the Skilled Reader would not seek to answer this question by analysing the passage in a linguistic way, but would instead look to the inherent technical and functional interrelationship between the claimed feature of distributed global and local control systems and the control architecture and model.
- 4.8 In this regard, there are two distinct and separate aspects to the omitted feature: (1) “a distributed processing control architecture”; and (2) “a behaviour-predictive model based control logic”. The Patentee has introduced the first of these into the independent claims. Furthermore, the hardware that provides the recited control systems is considered to be implicitly “processing control architecture”.
- 4.9 The second feature, a behaviour-predictive model-based control logic, is not only presented separately in a linguistic sense, but has no technical or function relationship with the distribution of processing between global and local control systems. Irrespective of whether control logic is used or whether it is implemented with such a model, the separation of global and local control systems provides an entirely separate single general inventive concept.
- 4.10 It is inferred that the Opposition Division may have considered the second feature to be essential because the final paragraph on page 6 includes the phrases “the inventive control system” and “to properly control”. However, the Patentee submits that this form of linguistic analysis unfairly represents what is technically disclosed to the Skilled Person. That is, it is entirely incorrect to infer from that sentence that the Skilled Person would consider that it is not possible to “properly control the streamer positioning devices”

without a behaviour-predictive model; there is no technical reason why this would be the case.

- 4.11 Indeed, the first sentence of the second paragraph on page 7 explicitly states that a dynamic model is merely preferable. This is a positive disclosure that a dynamic model, whether behaviour-predictive or otherwise, is not essential.
- 4.12 In any event, if a linguistic approach is to be used to construe the last sentence on page 6, it can be seen even then that there is no suggestion that behaviour-predictive model based control logic is essential. The sentence presents one way in which streamer positioning devices may be “properly controlled”, and does not imply that no other way is possible. Whilst the sentence describes one way that can define an invention, this does not mean that is the only invention disclosed in the description as originally filed.
- 4.13 It is thus submitted that the claims are allowable under Article 123(2) EPC.

5. Article 100 (a) EPC – Novelty

US 5200930 (E1)

- 5.1 The Patentee notes that the Opposition is of the *preliminary* opinion that E1 discloses all of the features of claim 1. This is respectfully disputed for the following reasons.

(i) Lateral position

- 5.2 E1 fails to disclose birds that can control lateral position. Indeed, the birds are referred to as cable-levelling birds (column 4, line 8 and 9). There is no basis for deriving any further functionality of the birds.
- 5.3 The preliminary opinion suggests that there is *implicit* disclosure of lateral control in column 4, lines 45 to 47, because the wings are controlled to control the depth of the bird. From this it has been understood that the wings must implicitly also control lateral position. The Opposition Division is reminded that an objection of implicit disclosure can only be raised “where there can be no reasonable doubt as to the practical effect of the prior teaching” (GL-G-VI-6). That is certainly not the case here, where every indication is contrary to the inferred disclosure for the following reasons.
- 5.4 The disclosure in column 4, on lines 22 to 25 explicitly states that the bird is used to control the depth of the streamer. Furthermore, lines 45 to 47 of column 4 explicitly state that the control signals control the depth of the bird.
- 5.5 As explained in paragraph [0005] of the Patent, prior art streamer control devices are only intended for, and only capable of, controlling depth. Lateral position was not controlled; the forward motion of the towing vessel produced a tension in the streamer to pull it into line and this was considered sufficient at that time. Depth, on the other hand, required more accurate control owing to the problem of surface reflection noise and it was this that motivated the development of cable-levelling birds.

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