

## STATEMENT OF GROUNDS OF APPEAL FOR EP1850151

### 1. INTRODUCTION

This is the Statement of Grounds of Appeal from ION Geophysical Corporation of 2015 CityWest Blvd, Suite 400, Houston, Texas, TX77042-2839 USA (the Opponent). This statement follows the filing of the Notice of Appeal by the Opponent on 15 December 2014.

The Appeal relates to European patent No EP1850151.

European patent No 1850151 was opposed by the Opponent and oral proceedings took place before the Opposition Division on 17 September 2014. In the Decision dated 15 October 2014, the Opposition Division allowed the patent to be maintained in amended form according to auxiliary request form 1 (the amended Patent).

The Opponent requests the Decision of the Opposition Division is set aside and the amended Patent is revoked in its entirety. The Opponent requests oral proceedings under Article 116 EPC.

The request for revocation of the amended Patent is based on the grounds that:

- the subject matter of the amended Patent does not involve an inventive step in accordance with Article 56 EPC (Article 100(a) EPC);
- the amended Patent does not disclose the invention in a manner that is sufficiently clear and complete for it to be carried out by a person skilled in the art in accordance with Article 83 EPC (Article 100(b) EPC);
- the amended Patent was granted on a divisional application and the patent extends beyond the content of the Parent as originally filed in accordance with Article 76(1) EPC (Article 100(c) EPC);
- The amended claims of the amended Patent are not clear, concise or supported by the description in accordance with Article 84 EPC (Article 101(3) EPC).

### 2. OVERVIEW

European patent No 1850151 is based on European patent application No 07113031.4. This application was filed as a divisional of European patent application No 99943180.2, which in turn stems from International patent application No PCT/IB99/01590. The International patent application has a priority date of 1 October 1998 and was published as WO 00/20895 (hereinbefore the Parent application as originally filed).

### 3. INDEPENDENT CLAIMS OF THE AMENDED PATENT

Amended independent claim 1 now defines:

- 1a A method of controlling streamer positioning devices
- 1a1 using 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, comprising:
  - 1b (a) towing an array of streamers
  - 1c each having a plurality of streamer positioning devices there along,
  - 1d each of the streamer positioning devices having a wing used to control the lateral position of the streamer positioning device;

- 1e (b) transmitting from the global control system
- 1f location information to at least one local control system
- 1g on at least one of the streamer positioning devices; and
- 1h (c) adjusting the angle of the wing with a wing motor using the local control system,
- 1i wherein the adjusting comprises calculating with a localized conversion program of the at least one local control system, a desired force on the at least one streamer positioning device using the location information,
- 1j the desired force selected from a desired horizontal force, a desired vertical force, and both.

Amended independent claim 14 now defines:

- 14a An array of seismic streamers
- 14b towed by a towing vessel comprising:
- 14c (a) a plurality of streamer positioning devices on or along each streamer,
- 14d each of the streamer positioning devices having a wing used to control the lateral position of the streamer position device; and
- 14e (b) a control system for controlling the streamer positioning devices,
- 14f the control system distributed between a global control system located on or near the towing vessel and a local control system located on each streamer positioning device,
- 14g the global control system transmitting location information to at least one local control system on at least one of the streamer positioning devices,
- 14h the local control system adjusting the angle of the wing with a wing motor,
- 14i wherein the at least one local control system calculates forces
- 14j selected from a desired horizontal force, a desired vertical force and both,
- 14k on the at least one streamer positioning device with a localized conversion program using the location information.

#### 4. SUPPORTING DOCUMENTS

The following is a list of supporting documents referred to in this Statement.

D1: WO 98/28636 A1 - Published 2 July 1998 - Previously referred to as E2 in the Opposition proceedings

D2: EP 0613025 B1 - Published 31 August 1994 - Previously referred to as E4 in the Opposition proceedings

D3: US 5,200,930 - Published 6 April 1993 - Previously referred to as E1 in the Opposition proceedings

D4: Extract from "Aerodynamics of the Airplane" by Clark B Millikan - Published 1941

D5: Letter dated 25 November 2010 filed by Applicant during prosecution of application

## 5. ADDED MATTER - ARTICLE 76 EPC

The amended Patent allowed by the Opposition Division contains subject matter beyond the content of the Parent application as originally filed.

### 5.1 "a control system"

Amended independent claims 1 and 14 specify the control system is distributed between a global control system located on or near the towing vessel and a local control system located on each streamer positioning device (features 1a1 and 14f).

The Opponent submits that the Opposition Division was wrong to conclude that the independent claims need not further specify the control system utilizes a distributed processing control architecture and behavior-predictive model-based control logic to control the position of the devices.

As submitted previously by the Opponent during the Opposition proceedings, the control architecture and behavior-prediction feature of the control system are disclosed in lines 17 to 29, page 6 of the Parent as being essential to the control process. Without it, the proper positioning of the streamers cannot be achieved and tangling will occur. Teaching throughout pages 7 to 18 of the Parent shows how the control architecture and behavior-prediction feature is inherent to different aspects and embodiments of the invention.

The Opposition Division's reasoning that the particular control system embodiment disclosed in lines 5 to 27, page 8 of the Parent (and now defined in amended claims 1 and 14) is able to transmit information without the need for behaviour prediction is also spurious - because this control system embodiment is actually an enabling disclosure based on the control architecture and behaviour-prediction model.

Therefore, the omission of this feature from amended independent claims 1 and 14 contravenes Article 76(1) EPC and should be corrected.

### 5.2 "towing an array of streamers"

Amended independent claim 1 refers to towing an array of streamers (feature 1b), but it does not specify the towing apparatus for towing the streamers.

As previously submitted by the Opponent during the Opposition proceedings, the Parent discloses that the towing is always done by a seismic survey vessel. See lines 1 to 3 of page 1, lines 12 to 14 of page 4, line 17 of page 5 to line 6 and Figure 1 of the Parent.

However, contrary to the Opposition Division's decision, the way in which the seismic survey vessel and towing streamers features are listed in amended claim 1 does not allow for the seismic survey vessel to be defined in the context of towing the streamers.

Therefore, the disparity between the towing feature disclosed in the Parent and the towing feature defined in amended claim 1 does not comply with Article 76(1) EPC.

### 5.3 "a wing to control the lateral position"

Amended independent claims 1 and 14 specify the streamer positioning device has a wing to control the lateral position of the device (features 1d and 14d).

This broad device feature encompasses device with only one wing to control only the lateral position of the device.

However, there is no direct and unambiguous basis in the Parent for a device that is able to control *only* its lateral position using only a *single* wing.

Instead, lines 7 to 27, page 9 of the Parent explain that the invention is able to control the position of seismic streamers by using laterally and vertically steerable devices with a number of alternative possible designs, including those utilizing one full-moving wing with ailerons, a pair of independently moveable wings, three full-moving wings and four full-moving wings. The preferred embodiment of the device has a pair of independently movable wings that are rotatable by wing motors to change the angle of each wing relative to the horizontal axis of the device body to control the lateral position and vertical position.

Moreover, lines 5 to 27 of page 11 of the Parent only disclose the embodiment of the control system now defined in amended claims 1 and 14 (where the local control system calculates the desired force using a localized displacement/force conversion program) in relation to using the preferred two-winged device that is both laterally and vertically steerable.

Therefore, since the wording of the device feature introduces subject matter which extends beyond the Parent, amended independent claims 1 and 14 contravene Article 76(1) EPC.

#### 5.4 "adjusting the angle of the wing"

Amended independent claims 1 and 14 specify the local control system adjusts the angle of the wing with a wing motor (features 1h and 14h).

In its current form, this wing adjustment feature should be interpreted broadly as meaning any angle of at least one wing is adjusted by at least one wing motor.

However, there is no direct and unambiguous basis in the Parent across the full scope of the wing adjustment feature as claimed in amended claims 1 and 14.

The wing adjustment feature should be interpreted in the context of the control system as described in lines 5 to 27, page 11 of the Parent where the global control system transmits location information to the local control system and the local control system calculates a desired horizontal force and/or desired vertical force from the location using a localized conversion program.

Crucially, the Parent only discloses the use of the control system in relation to the preferred two-winged embodiment of device. As explained in lines 7 of page 9 to line 4 of page 13 and Figures 2 to 4 of the Parent, the preferred embodiment of the device is vertically and horizontally steerable and comprises a pair of independently movable wings that are arranged to extend generally laterally from the device body to create lift and are rotatable to change the wing angle relative to the horizontal axis of the device body. The wings are rotatable using a corresponding wing motor or a single motor and a selectively actuatable transmission mechanism. (The change in the wing angle has the effect of tilting the leading edge of the wing relative to the trailing edge, along the chord axis of the wing. This wing angle is analogous to the "angle of attack" and "pitch angle" in the field of hydrodynamics.)

Therefore, in order to comply with the Article 76(1), independent claims 1 and 14 should be limited to the preferred two-winged embodiment of the device, where the angle of each wing relative to the horizontal axis of the device body is adjustable to provide lateral and vertical control.

#### 5.5 "calculating a desired force with a localized conversion program"

Amended independent claims 1 and 14 now specify that as part of the wing adjustment process, the local control program uses a localized conversion program to calculate the desired horizontal force and/or the desired vertical force using the location information (features 1i, 1j, 14i, 14j and 14k).

This force calculation feature was added after the Opposition Division came to the conclusion that the omission of this force feature from the independent claims violated Article 76(1) EPC.

The Opponent agrees with the Opposition Division's conclusion because, as submitted previously during the Opposition proceedings, the force calculation using a localized conversion program is an essential feature of the control system disclosed in lines 5 to 27, page 11 of the Parent and that the omission of this essential feature from the independent claims constitutes a generalization of the control system that extends beyond the subject matter of the Parent.

#### 5.6 "a plurality of streamer positioning devices on or along each streamer"

Amended independent claim 14 specifies an array of seismic streamers towed by a towing vessel comprises a plurality of streamer positioning devices on or along each streamers (feature 14d).

The Patent previously defined the devices as being on or in-line with each streamer.

The Opposition Division was right to find the wording "in-line with" unallowable with respect to Article 76(1) EPC because there is no basis for it in the Parent and it erroneously suggests the device could be arranged in front of or behind the streamer.

#### 5.7 Dependent claims 6 and 19

Dependent claims 6 and 19 specify the adjusting of the wing using the local control system is regulated to prevent the positioning device from stalling.

However, according to lines 1 to 4, page 13 of the Parent, the stalling of the wings is only achieved by the regulation of the common wing angle  $\alpha$  and splay angle by the local control system. Moreover, there is no mention of a regulator.

Dependents claims 6 and 19 thereby violate Article 76(1) EPC and are unallowable in their present form.

To summarise, for the multiple reasons set out above, at least the amended independent claims offend Article 76(1) EPC and are not allowable.

## **6. SUFFICIENCY OF DISCLOSURE - ARTICLE 83 EPC**

The amended Patent allowed by the Opposition Division does not disclose the invention in a manner that is sufficiently clear and complete for it to be carried out by a person skilled in the art.

#### 6. 1 "a wing to control the lateral position"

Amended independent claims 1 and 14 specify the streamer positioning device has a wing to control the lateral position of the device (features 1d and 14d).

As explained above, this device feature should be interpreted broadly to encompass a device with only one wing to control only the lateral position and also a device with multiple wings to control multiple positions.

However, there is no teaching in the amended Patent in relation to a device that is able to control *only* its lateral position using only a *single* wing. Nor is there sufficient information in the amended Patent that will allow a skilled person, using his common general knowledge, to perform only lateral control using only a single wing without undue burden and without needing inventive skill. Indeed, a skilled person will understand from his common general knowledge of hydrodynamics that a single wing must include ailerons for it to provide position control.

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