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**Datasheet for the decision
of 12 February 2020**

Case Number: T 1982/16 - 3.4.03

Application Number: 07113028.0

Publication Number: 1847851

IPC: G01V1/38, B63B21/66

Language of the proceedings: EN

Title of invention:

Control system for the positioning of marine seismic streamers

Patent Proprietors:

WesternGeco Seismic Holdings Limited
Services Pétroliers Schlumberger

Opponent:

ION Geophysical Corporation

Headword:

Relevant legal provisions:

EPC Art. 101(3)(b)
EPC 1973 Art. 76(1), 100(c), 111(1), 113(1)
EPC 1973 R. 71(2)
RPBA 2020 Art. 15(3), 15(6)

Keyword:

Amendments - extension beyond the content of the parent application as filed (yes)

Decisions cited:

Catchword:



Beschwerdekammern

Boards of Appeal

Chambres de recours

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Case Number: T 1982/16 - 3.4.03

D E C I S I O N
of Technical Board of Appeal 3.4.03
of 12 February 2020

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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
28 June 2016 concerning maintenance of the
European Patent No. 1847851 in amended form.**

Composition of the Board:

Chairman G. Eliasson
Members: T. M. Häusser
 W. Van der Eijk

Summary of Facts and Submissions

- I. The appeal of the opponent concerns the interlocutory decision of the opposition division to maintain the European patent EP-B-1847851 as amended during the opposition proceedings (Article 101(3)(a) EPC).
- II. The opposition had been filed against the patent as a whole. Grounds of opposition were insufficiency of the disclosure, extension beyond the content of the parent application as filed, and lack of novelty and inventive step (Articles 100(a), (b), and (c), 54(1) and (2), and 56 EPC 1973).
- III. At the oral proceedings before the board the *appellant* (opponent) requested that the decision under appeal be set aside and that the European patent No.1847851 be revoked.

The *respondents* (patent proprietors) had requested in writing that the decision under appeal be set aside and the patent be maintained according to a main request, or according to one of auxiliary requests 1-8, all requests filed with the reply to the grounds of appeal on 23 March 2017.

- IV. The wording of independent claim 1 of the various requests is as follows (board's labelling "(a)", "(b)", "(c)", and "(d)"): :

Main request:

"1. A method for controlling marine seismic streamer positioning devices for use during a towed array marine seismic survey comprising:

(a) towing an array of streamers (12) with a seismic survey vessel, each of the streamers having a plurality of streamer positioning devices (18) there along, wherein each streamer positioning device comprises a wing and a wing motor for changing the orientation of the wing and a local control system (36);

(b) computing predictions of the positions of each of the streamer positioning devices (18) using a global control system (22), the global control system being on or near the seismic survey vessel;

(c) using the predicted positions to calculate changes in position of one or more of the streamer positioning devices (18) from their predicted positions to their desired positions; and

(d) implementing at least some of the calculated changes by:

 providing desired forces to each local control system (36); and

 using each local control system (36) to adjust the orientation of the wing of the associated streamer position device (18)."

Auxiliary request 1:

Claim 1 of auxiliary request 1 differs from claim 1 of the main request in that features (c) and (d) are replaced by the following features (c)' and (d)', respectively (marking of the changes here and below by the board):

(c)' "using the predicted positions to calculate changes in position of ~~one or more of~~ the streamer positioning devices (18) from their predicted positions to their desired positions; and"

(d)' "~~implementing at least some of the calculated changes by:~~

providing desired forces to each local control system (36); and

using each local control system (36) to adjust the orientation of the wing of the associated streamer position device (18)."

Auxiliary request 2:

Claim 1 of auxiliary request 2 differs from claim 1 of auxiliary request 1 in that features (a) is replaced by the following feature (a)':

(a)' "towing an array of streamers (12) with a seismic survey vessel, each of the streamers having a plurality of horizontally and vertically steerable streamer positioning devices (18) there along, wherein each streamer positioning device comprises a wing and a wing motor for changing the orientation of the wing and a local control system (36);"

Auxiliary requests 3 and 5:

Respective claim 1 of auxiliary requests 3 and 5 differs from claim 1 of auxiliary request 2 in that features (b) is replaced by the following feature (b)':

(b)' "computing predictions of the positions of each of the streamer positioning devices (18) using a global control system (22) programmed with the desired positions of or desired minimum separations between the seismic streamers (12), the global control system being on or near the seismic survey vessel;"

Auxiliary request 4:

1. Marine seismic data acquisition equipment for controlling marine seismic streamer positioning devices for use in a towed array seismic survey, the equipment comprising:

(a) an array of seismic streamers (12) towed by a seismic survey vessel;

(b) a plurality of streamer positioning devices (18) on or along each streamer (12), wherein each streamer positioning device is horizontally and vertically steerable and comprises a wing and a wing motor for changing the orientation of the wing and a local control system (36);

(c) a prediction unit of a global control system adapted to compute predictions of positions of each of the streamer positioning devices, wherein the global control system is on or near the seismic survey vessel and is programmed with the desired position of or minimum separation between the seismic streamers (12);

(d) a control unit of the global control system adapted to use the predicted positions to calculate changes in positions of the streamer positioning devices from their predicted positions to their desired positions and provide desired forces to each local control system (36); and

(e) an implementation unit adapted to the calculated changes by using the local control system (36) of each streamer positioning device (18) to adjust the orientation of the wing of that streamer positioning device (18)."

Auxiliary requests 6 and 8:

Respective claim 1 of auxiliary requests 6 and 8 differs from claim 1 of auxiliary request 3 in that the following features are appended to the claim:

", wherein the method comprises:

a feather angle mode, wherein said global control system attempts to direct the streamer positioning devices to maintain each of said streamers in a straight line offset from the towing direction of said marine seismic vessel by a certain feather angle; and

a turn control mode, wherein said global control system directs said streamer positioning devices to generate a force in the opposite direction of a turn at the beginning of the turn."

Auxiliary request 7:

Claim 1 of auxiliary request 7 differs from claim 1 of auxiliary request 4 in that the following features are appended to the claim:

", wherein:

the global control system can operate in a feather angle mode and a turn control mode;

in the feather angle mode, said global control system attempts to direct the streamer positioning devices to maintain each of said streamers in a straight line offset from the towing direction of said marine seismic vessel by a certain feather angle; and

in the turn control mode, said global control system directs said streamer positioning devices to generate a force in the opposite direction of a turn at the beginning of the turn."

V. The parties argued essentially as follows in relation to the basis of the amendments in the parent application:

The *appellant* argued that the claimed subject-matter extended beyond the parent application as filed, in particular in relation to the omission of the feature concerning the velocity of the streamer positioning device.

The *respondents* were of the opinion that the claimed subject-matter did not extend beyond the parent application as filed.

Reasons for the Decision

1. Procedural matters

With letter dated 10 July 2019 the respondents stated that they would not be attending the oral proceedings scheduled before the board, which thus took place in the respondents' absence in accordance with Rule 71(2) EPC 1973.

According to Article 15(3) and (6) RPBA 2020, the board is not "obliged to delay any step in the proceedings, including its decision, by reason only of the absence at the oral proceedings of a party duly summoned who may then be treated as relying only on its written case" and has to "ensure that each case is ready for decision at the conclusion of the oral proceedings, unless there are special reasons to the contrary".

The respondents had argued and explained in writing why they considered the claimed subject-matter not to extend beyond the parent application as filed. By not attending the oral proceedings before the board the respondents gave up the opportunity to present their

case orally in this respect and could thus be treated as relying only on their written submissions.

The board's decision, which hinges on the issue of extension beyond the parent application as filed (see below), is therefore in conformity with the requirements of Article 113(1) EPC 1973 that the decisions of the EPO may only be based on grounds or evidence on which the parties concerned have had an opportunity to present their comments.

Accordingly, the case was ready for decision at the conclusion of the oral proceedings in accordance with Article 15(6) RPBA 2020.

2. Amendments

2.1 In the decision under appeal the opposition division held that the subject-matter of the patent did not extend beyond the content of the parent application as filed (see point 5 of the Reasons).

2.2 The appellant argued that the patent extended beyond the parent application since the features concerning the velocity of the streamer positioning device were omitted.

2.3 Claim 1 of the various requests relates to a method (main request; first to third auxiliary requests; fifth, sixth, and eighth auxiliary requests) and an apparatus (fourth and seventh auxiliary requests) for controlling marine seismic streamer positioning devices for use during a towed array marine seismic survey, respectively.

Compared to original claims 1 and 15 of the parent application, respectively, the following features have been omitted in present claim 1 of the various requests ("means for" only concern the fourth and seventh auxiliary requests):

- (i) (means for) obtaining an estimated velocity of said streamer positioning device,
- (ii) (means for) calculating a desired change in the orientation of the wing of a streamer positioning device using said estimated velocity of said streamer positioning device,
- (iii) (means for) actuating the wing motor of a streamer positioning device to produce said desired change in said orientation of the wing.

This constitutes an amendment in relation to original independent claims 1 and 15 of the parent application, respectively.

It has to be examined whether this amendment is directly and unambiguously derivable for the skilled person - using common general knowledge - from the parent application as filed.

2.4 In the description of the parent application (see page 4, last paragraph) the following is indicated under the heading "SUMMARY OF THE INVENTION":

"The present invention involves a method of controlling a streamer positioning device configured to be attached to a marine seismic streamer and towed by a seismic survey vessel and having a wing and a wing motor for changing the orientation of the wing. The method includes the

steps of: obtaining an estimated velocity of the streamer positioning device, calculating a desired change in the orientation of the wing using the estimated velocity of the streamer positioning device, and actuating the wing motor to produce the desired change in the orientation of the wing. The present invention also involves an apparatus for controlling a streamer positioning device. The apparatus includes means for obtaining an estimated velocity of the streamer positioning device, means for calculating a desired change in the orientation of the wing using the estimated velocity of the streamer positioning device, and means for actuating the wing motor to effectuate the desired change in the orientation of the wing."

In the description of the parent application the three features (i) to (iii) mentioned under point 2.3 above have thus been presented as being part of the invention. Moreover, it cannot be derived from any other part of the description of the parent application that these features are not part of the invention or that they are merely optional.

2.5 In particular, the part of the parent application concerning the detailed description of the invention contains two formulas allowing the common wing angle α of the wing of the streamer positioning device ("bird") to be determined from the desired force F and the towing velocity v_{tow} .

The first formula contains all of the three relevant parameters, namely the desired force F , the common wing angle α and the velocity v_{tow} . Given the desired force F and the velocity v_{tow} the common wing angle α can therefore directly be obtained using this formula.

The second formula relates a "gain factor" GF to the towing velocity v_{tow} . In order to obtain the desired force F it is necessary to multiply the gain factor GF by $\cos^2(\alpha)$. This will then again allow the common wing angle α to be determined from the desired force F and the towing velocity v_{tow} . When this step of multiplication by $\cos^2(\alpha)$ is taken into account it becomes evident that the second formula is merely a special case of the first formula and is obtained from that formula by setting the cross-current velocity v_{current} equal to zero.

Hence, the parent application contains in fact only one specific embodiment implementing the invention, in which the desired common wing angle α is determined using the desired force F and the towing velocity v_{tow} .

This description of the embodiment of the invention is followed by the following statement (see paragraph bridging pages 17-18):

"One of the beneficial elements of the inventive control system is that the desired change in the orientation of the wing 28 is calculated using an estimate of the velocity of the bird 18 rather than simply relying on a feedback-loop type of control system that operates in the same manner regardless of the vessel speed. Because the force produced by wing 28 is proportional to the velocity of the device squared, a much more precise calculation of the desired change in the wing orientation can be made by using an estimate of the device velocity."

It emerges thus from the detailed description of the invention in the parent application that it is a

crucial element of the invention that an estimate of the velocity of the bird is used to calculate a desired change in the orientation of the wing of the bird, which in turn is subsequently used to actuate the wing. This is also deemed to be indispensable for controlling the streamer positioning device in an improved manner over what had been acknowledged in the parent application as the known state of the art (see page 3 of the parent application).

- 2.6 In view of the above, the amendment mentioned under point 2.3 above is considered to be a generalization which is not directly and unambiguously derivable from the parent application as filed.

Consequently, respective claim 1 of all requests contains subject-matter extending beyond the content of the parent application as filed (Articles 76(1) and 100(c) EPC 1973).

3. Conclusion

Since the European patent contains subject-matter extending beyond the content of the parent application as filed, the patent has to be revoked (Article 101(3) (b) EPC and Article 111(1) EPC 1973).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:



S. Sánchez Chiquero

G. Eliasson

Decision electronically authenticated