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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PETROLEUM GEO-SERVICES INC.,
Petitioner,

v.

WESTERNGECO LLC,
Patent Owner.

Case IPR2014-01478
Patent 7,293,520 B2

Before BRYAN F. MOORE, SCOTT A. DANIELS, and
BEVERLY M. BUNTING, *Administrative Patent Judges*.

DANIELS, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

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I. INTRODUCTION

A. Background

Petroleum Geo-Services (“Petitioner,” or “PGS”) filed a Petition to institute an *inter partes* review of claims 3, 5, 13–17, 20, 22, and 30–34 of U.S. Patent No. 7,293,520 B2 (“the ’520 patent”). Paper 1 (“Pet.”). WesternGeco LLC (“Patent Owner”) timely filed a Preliminary Response. Paper 12 (“Prelim. Resp.”). We instituted trial in *Petroleum Geo-Services, Inc., v. WesternGeco LLC*, Case IPR2014-01478, for claims 3, 5, 13–17, 20, 22, and 30–34 of the ’520 patent on certain grounds of unpatentability alleged in the Petition. Paper 18 (“Decision to Institute” or “Dec. on Inst.”). Patent Owner, in due course, filed a Response. Paper 40 (“PO Resp.”). Petitioner subsequently filed a Reply. Paper 47 (“Pet. Reply”).¹

An oral hearing was held on November 10, 2015. A transcript of the hearing is included in the record. Paper 64 (“Tr.”).

The Board has jurisdiction under 35 U.S.C. § 6(c). This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has proven, by a preponderance of the evidence, that claims 3, 5, 13–17, 20, 22, and 30–34 of the ’520 patent are unpatentable.

B. Additional Proceedings

Lawsuits involving the ’520 patent presently asserted against Petitioner include *WesternGeco LLC v. Petroleum Geo-Services, Inc.*, 4:13-cv-03037 (the “PGS lawsuit”) in the Southern District of Texas and *WesternGeco LLC v. ION Geophysical Corp.*, 4:09-cv- 01827 (the “ION

¹ We refer here to the paper numbers of the redacted versions of Patent Owner’s Response and Petitioner’s Reply.

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lawsuit”) also in the Southern District of Texas, and *WesternGeco LLC v. ION Geophysical Corp.*, 13-1527 (Fed. Cir.). Pet. 2.

The ’520 patent was also challenged in *Petroleum Geo-Services Inc., v. WesternGeco LLC* (IPR2014-00689) (PTAB Aug. 5, 2014) (the “first PGS IPR”); and *ION Geophysical Corp. v. WesternGeco LLC*, (IPR2015-00565) (PTAB Jan. 14, 2015).²

C. The ’520 Patent

The ’520 patent (Ex. 1001), titled “CONTROL SYSTEM FOR POSITIONING OF A MARINE SEISMIC STREAMERS,” generally relates to a system for improving marine seismic survey techniques by more effectively controlling the movement and positioning of marine seismic streamers towed in an array behind a boat. Ex. 1001, col. 1, ll. 24–36. As illustrated in Figure 1 of the ’520 patent, reproduced below, labeled “Prior Art,” a seismic source, for example, air gun 14, is towed by boat 10 producing acoustic signals, which are reflected off the earth below. *Id.* at col. 1, ll. 3641. The reflected signals are received by hydrophones (no reference number) attached to streamers 12, and the signals “digitized and processed to build up a representation of the subsurface geology.” *Id.*

² IPR2015-00565 was joined with IPR2014-00689 and a Final Written Decision in that proceeding was mailed by the Board on December 15, 2015.

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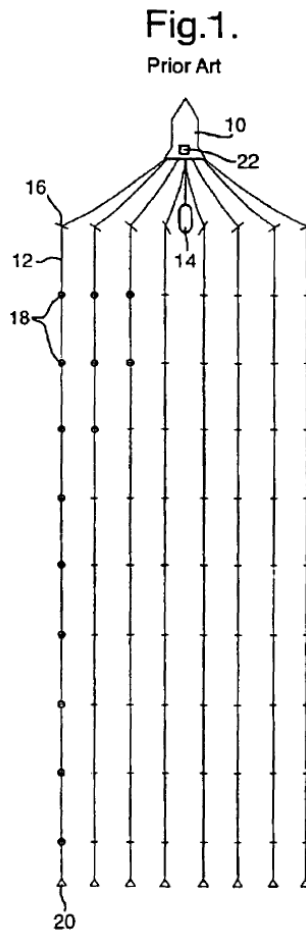


Figure 1, reproduced above, depicts an array of seismic streamers 12 towed behind boat 10. The '520 patent explains that in order to obtain accurate survey data, it is necessary to control the positioning of the streamers, both vertically in the water column, as well as horizontally against ocean currents and forces, which can cause the normally linear streamers to bend and undulate and, in some cases, become entangled with one another. *Id.* at col. 1, l. 42–col. 2, l. 25.

As depicted by Figure 1, each streamer 12 is maintained in a generally linear arrangement behind the boat by deflector 16 which horizontally positions the end of each streamer nearest the vessel. *Id.* at col. 1, ll. 43–45.

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Drag buoy 20 at the end of each streamer farthest from the vessel creates tension along the streamer to maintain the linear arrangement.

Additionally, to control the position and linear shape of the streamer, a plurality of streamer positioning devices, called “birds” 18, are attached along the length of each streamer.³ The birds are horizontally and vertically steerable and control the shape and position of the streamer in both vertical (depth) and horizontal directions. *Id.* at col. 3, ll. 53–61. The bird’s function is usually to maintain the streamers in their linear and parallel arrangement, because, when the streamers are horizontally out of position, the efficiency of the seismic data collection is compromised. *Id.* at col. 2, ll. 14–17. The most important task of the birds, however, is to keep the streamers from tangling. *Id.* at col. 4, ll. 4–5.

The invention described in the ‘520 patent relies on global control system 22 located on, or near the vessel, and local control system 36 on or near each bird, to control the birds on each streamer and maintain the streamers in their particular linear and parallel arrangement. *Id.* at col. 3, ll. 62–66, col. 10, ll. 17–20. The global control system is provided with a model (desired) position representation of each streamer in the towed streamer array, and also receives (actual) position information from each of the birds. *Id.* at col. 4, ll. 21–23. The global control system uses the desired and actual position of the birds to “regularly calculate updated desired vertical and horizontal forces the birds should impart on the seismic streamers 12 to move them from their actual positions to their desired positions.” *Id.* at col. 4, ll. 37–40. The local control system implements the information from global control system by “adjusting the wing splay angle to rotate the bird to the proper position.” *Id.* at col. 10, ll. 24–25.

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