

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
U.S. Patent No. 7,293,520

PATENT OWNER RESPONSE

Pursuant to 37 C.F.R. § 42.120, Patent Owner, WesternGeco L.L.C (“WesternGeco” or “Patent Owner”), submits this Response to the Petition for *Inter Partes* Review (“Petition”) of U.S. Patent No. 7,293,520 (the “’520 patent”) filed by Petitioner, Petroleum Geo-Services, Inc. (“PGS” or “Petitioner”).

TABLE OF CONTENTS

I.	THE '520 PATENT CLAIMS PRECISION CONTROL OF STEERABLE SEISMIC ARRAYS	1
II.	CLAIM CONSTRUCTION	6
	A. Control Mode	6
	B. Feather Angle Mode.....	8
	C. Streamer Separation Mode.....	9
III.	PRIOR ART.....	12
	A. Workman	12
	B. Dolengowski.....	17
IV.	THE '520 PATENT IS NOT ANTICIPATED OR OBVIOUS.....	18
	A. Workman Does Not Anticipate the Streamer Separation Mode Limitations of Claims 1 and 18, or Claims 13, 14, 30, and 31	18
	B. Workman Does Not Render Obvious the Streamer Separation Mode Limitations of Claims 1 and 18, or Claims 13, 14, 30, and 31	22
	i. Claims 13 and 30 and Claims 1 and 18	22
	ii. Claims 14 and 31.....	24
	C. The Streamer Separation Mode Limitations of Claims 15-17 and 32-34 are Not Rendered Obvious by Workman in view of Dolengowski.....	27
	D. Workman Does Not Render Obvious the Feather Angle Mode Limitations of Claims 1 and 18, or Claims 3, 5, 20, and 22	30
V.	PGS'S EXPERTS ARE NOT CREDIBLE	38
	A. Dr. Evans	38
	i. Dr. Evans Made Fundamental Errors in His Analysis.....	38

VI. OBJECTIVE INDICIA OF NONOBVIOUSNESS40

VII. THE PETITION IS TIME-BARRED UNDER 35 U.S.C. § 315(B)46

A. Privity is Flexibly Applied and Broader Than Real Party-In-Interest47

B. PGS’s Relationship to the ION Litigation Establishes Privity50

C. PGS’s Substantive Legal Relationship With ION Establishes Privity53

D. ION is a RPI Under the Guidelines55

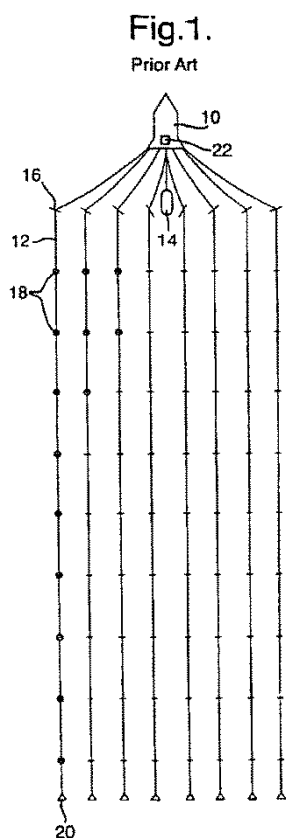
E. Additional Discovery was Prejudicially Denied57

F. Multi Klient Invest AS is an RPI58

VIII. CONCLUSION.....59

I. THE '520 PATENT CLAIMS PRECISION CONTROL OF STEERABLE SEISMIC ARRAYS

The '520 patent claims methods and apparatus for laterally steering a



plurality of streamer positioning devices along an array of streamers using a control system configurable to operate in various control modes. Although the need for such steering was known for years, and although devices that could exert point forces on a streamer had been contemplated, no one in the industry had succeeded in coordinating the control of multiple positioning devices on every streamer to effect array-level steering. This was due in part to the scale of the challenge—steering the many square-miles of a streamer array in open-water conditions far from the towing vessel and subject to currents, winds, vessel wake, vibrations, and

a host of other operational and environmental factors (including even the occasional shark attack). (Ex. 2075, ¶ 57.)

Early streamer manipulations involved rudimentary devices such as deflectors and tail buoys. (Ex. 1001, 3:43-45; Fig. 1 elements (16) and (20), respectively)¹ Deflectors were associated with the front end of the equipment and

¹ Although Figure 1 is captioned “prior art,” one of ordinary skill would recognize

used to horizontally spread the cables or other tethers at the point nearest the seismic survey vessel. (Ex. 1001, 3:45-47.) The tail buoy, as the name implies, created drag on the end of the streamer farthest from the seismic survey vessel. (Ex. 1001, 3:47-49.) The tension created on the seismic streamer because of the deflector and tail buoy resulted in a roughly linear shape of the streamer, but only in ideal conditions. (Ex. 1001, 3:49-52.) No steering was provided for the miles of length along the streamer, leaving the middle of the streamer susceptible to the environmental factors discussed above.

Streamer positioning devices are generally spaced every 200 to 400 meters along the length of a streamer. (Ex. 1001, 3:56-58.) For a modest streamer array consisting of 8-12 individual streamers, this means hundreds of separate streamer positioning devices are deployed on a given array. Simultaneously controlling this

that much of that figure was in fact not prior art, but instead inventive contributions to the state of the art, such as the global control system, its functionality (e.g., predictive analysis, control modes, streamer positioning device control, etc.), and the distributed processing control architecture. (Ex. 2075, ¶ 60.) Indeed, the specification refers to Figure 1 in its “Detailed Description of the Invention,” and Figure 1 is never referenced as prior art within the actual text of the specification.

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