

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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PETROLEUM GEO-SERVICES INC.

Petitioner

v.

WESTERNGECO LLC

Patent Owner

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CASE IPR: Unassigned

Patent 7,080,607 B2

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**DECLARATION OF DR. JACK H. COLE, PhD.**

## TABLE OF CONTENTS

I.	INTRODUCTION.....	3
II.	QUALIFICATIONS .....	4
III.	COMPENSATION AND RELATIONSHIP TO THE PARTIES.....	10
IV.	LEGAL STANDARDS .....	11
A.	Claim Construction .....	11
B.	Person of Ordinary Skill in the Art .....	11
V.	SUMMARY OF OPINION.....	12
VI.	TECHNICAL BACKGROUND .....	13
A.	Overview of Marine Seismic Surveying.....	13
B.	Streamer Steering Overview .....	16
C.	Control Systems Overview .....	17
VII.	THE PATENT AT ISSUE.....	20
A.	The Specification of the '607 Patent.....	20
B.	The Time Frame of the '607 Patent .....	23
C.	Claims 1 and 15 of the '607 Patent .....	23
D.	Relevant Claim Terms and Their Construction .....	24
	“Control unit” .....	25
VIII.	THE ABILITY TO IMPLEMENT CONTROL SYSTEMS.....	25
A.	Control Systems for Use in Marine Seismic Surveys Were Disclosed in the 1960s.....	25
B.	Control Systems Became More Automated in the 1970s and 1980s with Advances in Computer Control Systems .....	27
C.	Control Systems Continued to Progress in the 1980s and 1990s .....	32
D.	State of Control Systems Art at the Priority Date.....	40
IX.	CONCLUSION.....	45

I, Dr. Jack Cole, hereby state the following:

## **I. INTRODUCTION**

1. Petroleum Geo-Services, Inc. (“PGS”) has retained me to provide consulting services related to the filing of a Petition for *Inter Partes Review* of U.S. Patent No. 7.080,607 B2 (“the ’607 Patent”) (Ex. 1001). All opinions presented in this report are my own.

2. PGS has asked me to provide an opinion as to whether or not a person of ordinary skill in the art (“POSA”) would have been able, by the applicable priority date, to implement certain claims of the ’607 Patent relating to control systems. This report describes my opinions and the reasons for them. In reaching my opinion, I have relied on my extensive expertise in the control systems field and the materials in the table below. I have attached the list of materials that I relied on in this report as Appendix A.

3. I have reached the opinions in this report on the basis of the materials and information currently available to me. I reserve the right to modify my opinions, including to supplement my opinions in light of information that becomes available to me. I also reserve the right to continue my investigation and analysis, including concerning materials that have not yet been produced.

channel, two-wire communication system for sending commands and data requests to and receiving data [f]rom many positioning sensors and cable-leveling devices [*i.e.*, streamer positioning devices] distributed along a seismic streamer.” *Id.* at 3:24-28. Rouquette’s system includes “a central controller comprising an intelligent modem that can scan the many streamer devices for cable-positioning data each seismic shot interval,” and the modem “polls each device in an efficient and orderly fashion.” *Id.* at 3:29-34.

71. Parallel, high-speed communications over fiber optic lines was also known by the priority date. *See* Ex. 1042 (U.S. Patent 6,011,753) (“Ambs”) at 3:10-13. Loring C. Chien filed for a patent on March 19, 1998, and the patent was issued and entitled “Control and Monitoring of Devices External to a Marine Seismic Streamer.” Ex. 1042. Chien disclosed a system that “has high speed communications optimized for large amounts of data.” *Id.* at 5:1-5. One embodiment of Chien’s system used fiber optic cables so that “a large number of external devices may be transmitted to and/or received from in parallel.” *Id.* at 6:2-5. Thus, communications systems and distributed computer control technology available on the priority date allowed seismic surveyors to easily control a substantial number of streamer positioning devices at near-instantaneous response times.

72. Automatic control systems and sophisticated control units on the streamer positioning devices that could perform positioning calculations and distribution of the overall control load between the global control system and the control units on the streamer positioning devices was known in the art and practiced in the 1980s and 1990s. Those systems could therefore have been implemented at the time of the disclosures of Rouquette, Elholm, and the '636 PCT and certainly could have been implemented by a POSA with minimal effort by October 1, 1998.

#### **D. State of Control Systems Art at the Priority Date**

73. By the time of the priority date, global control systems and control units that could perform positioning calculations were well known in the art. Automatic computer control and distributed control for use in streamer steering systems were also well known in the art. The following two references, Workman and Ambs, reflect this state of the art around the time of the priority date, October 1, 1998.

74. In August 1998, Ricky L. Workman was issued a patent entitled “Adaptive Control of Marine Seismic Streamers.” Ex. 1004 (U.S. Patent No. 5,790,472) (“Workman”). He disclosed what he characterized as an “improved system for controlling the position and shape of marine seismic streamer cables.” Ex. 1004 (Workman) at 1:6-8.

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