

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT3584671

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT
CONVEYING PARTY DATA	
Name	Execution Date
WILLIAM G. SULIGA	10/14/2015
THOMAS G. PEPIN	10/14/2015
JOHN T. ISHIBASHI	10/20/2015
MICHAEL A. TORENO	10/14/2015
JAMES A. NALASCO	10/14/2015
RECEIVING PARTY DATA	
Name:	RAYTHEON COMPANY
Street Address:	870 WINTER ST
City:	WALTHAM
State/Country:	MASSACHUSETTS
Postal Code:	02451-1449
PROPERTY NUMBERS Total: 1	
Property Type	Number
Application Number:	14921556
CORRESPONDENCE DATA	
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Email:	mailroom@rennerotto.com
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Address Line 1:	1621 EUCLID AVENUE
Address Line 2:	19TH FLOOR
Address Line 4:	CLEVELAND, OHIO 44115
ATTORNEY DOCKET NUMBER:	RAYTP0713USA
NAME OF SUBMITTER:	JONATHAN A. PLATT
SIGNATURE:	/JonathanAPlatt/
DATE SIGNED:	10/23/2015
This document serves as an Oath/Declaration (37 CFR 1.63).	

Total Attachments: 8

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ASSIGNMENT and DECLARATION

I/we, the undersigned, Benjamin P. Dolgin, William G. Suliga, Thomas G. Pepin, John T. Ishibashi, Michael A. Toreno and James A. Nalasco ("**Assignor(s)**"), have made certain inventions or discoveries (or both) set forth in a patent application entitled, *SYSTEM AND METHOD FOR DETERMINING SOIL CHARACTERISTICS AND DRILLSTRING INSTABILITY DURING HORIZONTAL DIRECTIONAL DRILLING*, identified as *Attorney Docket No. RAYTP0713USA (09-0337-US-DIV)*, which application was filed on October 23, 2015 and assigned Application No. 14/921,556. In the event that the execution date, filing date and/or Application No. are not entered or are incorrect at the time Assignor(s) executed this document, Assignor(s) hereby authorize and request an attorney of Assignee to insert the information or make the correction.

RAYTHEON COMPANY is a Delaware Corporation having a place of business at 870 Winter Street, Waltham, MA 02451-1449, and which, together with its successors and assigns ("**Assignee**"), is desirous of acquiring the title, rights, benefits and privileges hereinafter recited.

For valuable consideration furnished by Assignee to Assignor(s), receipt and sufficiency of which Assignor(s) hereby acknowledge, Assignor(s) hereby, without reservation:

1. Assign, transfer and convey to Assignee the entire right, title and interest in and to said inventions and discoveries, said application, any and all other patent applications (including without limitation utility models, provisionals, designs, plants and any other such intellectual property) on said inventions and discoveries in whatsoever countries, including all divisional, renewal, substitute, continuation, reissue, re-examination and convention applications based in whole or in part upon said inventions or discoveries, or upon said applications, and any and all Letters Patent, reissues, reexaminations, and extensions of Letters Patent granted for said inventions and discoveries or upon said applications, and every priority right that is or may be predicated upon or arise from said inventions, said discoveries, said applications and said Letters Patent and any provisional applications from which priority is claimed in said patent applications and said Letters Patent and all rights to claim or sue for prior damages;

2. Authorize Assignee to file said patent applications in any or all countries on any or all of said inventions and discoveries in the name of Assignor(s) or in the name of Assignee or otherwise as Assignee may deem advisable, under any international conventions, international treaties, or otherwise;

3. Authorize and request the Commissioner of Patents and Trademarks of the United States of America and the empowered officials of all other governments to issue or transfer all said Letters Patent to Assignee, as assignee of the entire right, title and interest therein or otherwise as Assignee may direct;

PATENT ASSIGNMENT and DECLARATION
Attorney Docket No. RAYTP0713USA (09-0337-US-DIV)

4. Confirm that Assignor(s) have not knowingly conveyed to others any right in said inventions, discoveries, applications or patents or any license to use the same or to make, use or sell anything embodying or utilizing any of said inventions or discoveries; and

5. Bind heirs, legal representatives and assigns of Assignor(s), as well as Assignor(s), to do, upon Assignee's request, all acts reasonable to assure that said inventions and discoveries, said patent applications and said Letters Patent shall be held and enjoyed by Assignee as fully and entirely as the same could have been held and enjoyed by Assignor(s) or heirs, legal representatives and assigns of Assignor(s) if this assignment had not been made; and particularly to execute and deliver to Assignee all lawful application documents including petitions, specifications, and oaths, and all assignments, disclaimers, and lawful affidavits in form and substance as may be requested by Assignee; to communicate to Assignee all facts known to Assignor(s) relating to said inventions and discoveries or the history thereof; and to furnish Assignee, upon request, with any and all relevant documents, photographs, models, samples and other physical exhibits in control of Assignor(s) or in the control of heirs, legal representatives or assigns of Assignor(s).

Assignor(s) accept the terms of this Assignment as indicated by their signature below.

Further, each Assignor individually, as a named inventor, hereby declares:

- a) The above-identified application was made or authorized to be made by me;
- b) I believe I am the original inventor or an original joint inventor of a claimed invention in the above-identified application; and
- c) I hereby acknowledge that any willful false statement made in this declaration is punishable under § 1001 of Title 18 of the United States Code by fine or imprisonment of not more than five (5) years, or both.

Each Assignor individually, as a named inventor, also states:

I have reviewed and understand the contents of the above-identified application.

I acknowledge the duty to disclose to the United States Patent Office all information known to me to be material to the patentability of the above-identified application.

[Signatures on following pages]

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Attorney Docket No. RAYTP0713USA (09-0337-US-DIV)

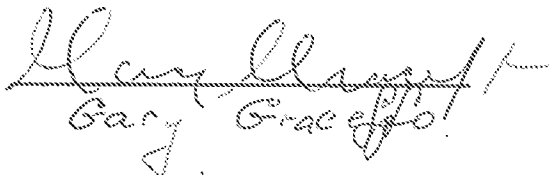
Accepted by:

Dated: 10/13/2015

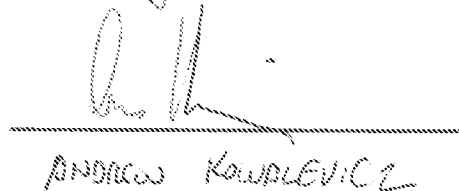

Benjamin P. Dolgin

Witnessed by:

Dated: 10/13/2015


Gary Graceffo

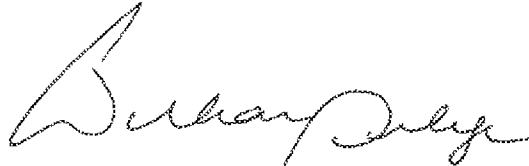
Dated: 10/13/2015


ANDREW KOWALEVICH

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Attorney Docket No. RAYTP0713USA (09-0337-US-DIV)

Accepted by:

Dated: 10/14/15



William G. Suliga

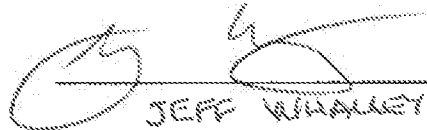
Witnessed by:

Dated: 10/14/15



TOM STARSHAK

Dated: 10/14/15

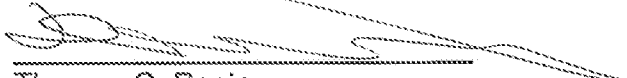


JEFF WHALLEY

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Attorney Docket No. RAYTP0713USA (09-0337-US-DIV)

Accepted by:

Dated: 10/14/2015

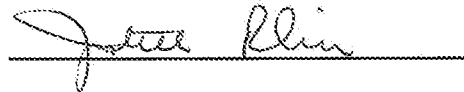

Thomas G. Pepin

Witnessed by:

Dated: 10/14/15



Dated: 10/14/15



PATENT ASSIGNMENT and DECLARATION
Attorney Docket No. RAYTP0713USA (09-0337-US-DIV)

Accepted by:

Dated: 10/20/2015

John T. Ishibashi
John T. Ishibashi

Witnessed by:

Dated: 10-20-15

John T. Ishibashi

Dated: 10-20-15

Lillian Ishibashi

PATENT ASSIGNMENT and DECLARATION
Attorney Docket No. RAYTP0713USA (09-0337-US-DIV)

Accepted by:

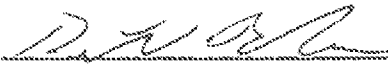
Dated: 10/14/15



Michael A. Toreno

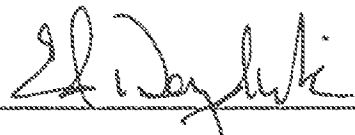
Witnessed by:

Dated: 10/14/15



DUSTIN BLOSSER

Dated: 10/14/15



ED DEBEVICK

PATENT ASSIGNMENT and DECLARATION
Attorney Docket No. RAYTP0713USA (09-0337-US-DIV)

Accepted by:

Dated: 10/14/15

James A. Malasco
James A. Malasco

Witnessed by:

Dated: 10/14/15

Brian Malasco

Dated: 10/14/15

Nancy Malasco