

**POWER OF ATTORNEY  
CONCERNING INTERNATIONAL PATENT APPLICATIONS  
PATENT COOPERATION TREATY**

**Appointment of Agent**

The undersigned applicant(s) hereby appoints:

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John R. Flynt	Reg. No. 72,817	Benjamin Fite	Reg. No. 66,885
John Love	Reg. No. 64,820	Tenley Krueger	Reg. No. 51,253
		Craig Roddy	Reg. No. 36,256
		John W. Wustenberg	Reg. No. 35,415
		Scott Richardson	Reg. No. 64,118

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As agents to act on its behalf before the competent International Authorities in connection with the following International Applications:

Application No.	Filing Date	Title	Halliburton Docket No.	Tumey Docket No.
PCT/US2015/020995	03/17/2015	Cementing Methods and Systems Employing a Smart Plug	2008-IP-018193	1560-033000
PCT/US2015/014433	02/04/2015	Fluid Monitoring Using Radio Frequency Identification	2012-IP-063457	1560-035500
PCT/US2015/014178	02/03/2015	Improved Radio Frequency Identification Tag	2012-IP-063460	1560-035600
PCT/US2015/013377	01/28/2015	Methods and Systems for Downhole Temperature Logging	2013-IP-075317	1560-036600

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PCT/US2014/048721	07/29/2014	Downhole Tool Anchoring Device	2013-IP-075958	1560-036700
PCT/US2014/049381	08/01/2014	Downhole Tool with Multi-Stage Anchoring	2013-IP-076302	1560-037000
PCT/US2014/073052	12/31/2014	Formation Logging Using Multicomponent Signal-Based Measurement of Anisotropic Permittivity and Resistivity	2013-IP-084650	1560-037900
PCT/US2014/056363	09/18/2014	Model-Based Pump-Down of Wireline Tools	2014-IP-085907	1560-038100
PCT/US2015/060688	11/13/2015	Downhole Logging Tool Using Resonant Cavity Antennas with Real-Time Impedance Matching	2014-IP-087634	1560-038700
PCT/US2015/063755	12/03/2015	Crosswell Tomography Using An Array of Optical Fiber Transducers	2014-IP-087635	1560-038800
PCT/US2015/066063	12/16/2015	Electrical Impedance Tomography Using a Switchable Array	2014-IP-087647	1560-038900
PCT/US2015/042812	07/30/2015	Imaging Subterranean Anomalies Using Cross-well Doppler Arrays	2014-IP-088323	1560-039100
PCT/US2015/060673	11/13/2015	Microstrip Antenna-Based Logging Tool and Method	2014-IP-088491	1560-039200
PCT/US2015/042811	07/30/2015	Imaging Subterranean Anomalies Using Acoustic Doppler	2014-IP-088847	1560-039400

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		Arrays and Distributed Acoustic Sensing Fibers		
PCT/US2015/039116	07/02/2015	Downhole Service Tool Employing a Tool Body with a Latching Profile and a Shifting Key with Multiple Profiles	2014-IP-088906	1560-039501
PCT/US2015/015760	02/13/2015	Downhole Fluid Characterization Methods and Systems Employing a Casing with a Multi-Electrode Configuration	2014-IP-090947	1560-039700
PCT/US2014/073024	12/31/2014	Modifying Magnetic Tilt Angle Using A Magnetically Anisotropic Material	2014-IP-091812	1560-039800
PCT/US2015/050764	09/17/2015	Using an Adjusted Drive Pulse in Formation Evaluation	2014-IP-092436	1560-039900
PCT/US2015/054671	10/08/2015	Determining Tubing Wall Thickness	2014-IP-093693	1560-047100
PCT/US2015/011905	01/19/2015	Downhole Acoustic Telemetry Module with Multiple Communication Modes	2014-IP-094464	1560-047200
PCT/US2015/050763	09/17/2015	Determining Permeability Based on Collar Responses	2014-IP-095695	1560-047300
PCT/US2015/016426	02/18/2015	Salt Tolerant	2014-IPM-	1560-047600

		Settling Retardant Proppants	097330	
PCT/US2015/010170	01/05/2015	Additive for Improving Homogeneity of Epoxy Resin and Cement Composites	2014-IPM-097471	1560-041000
PCT/US2015/011979	01/20/2015	Methods and Compositions for Stabilizing Fracture Faces during Hydraulic Fracturing Treatments	2014-IPM-097516	1560-041100
PCT/US2015/057818	10/28/2015	Transceivers with Annular Ring of High Magnetic Permeability Material for Enhanced Short Hop Communications	2014-IPM-097546	1560-041200
PCT/US2015/059607	11/06/2015	Methods and Systems Employing Windowed Frequency Spectra Analysis to Derive a Slowness Log	2014-IPM-097567	1560-041300
PCT/US2015/042420	07/28/2015	Method for Real-Time Assessment of Formation True Dip and Azimuth and Data Quality with Integration of MCI and Directional Logging Data	2014-IPM-097614	1560-041700
PCT/US2015/047738	08/31/2015	Use of Crosslinked Polymer System for Mitigation of Annular Pressure Buildup	2014-IPM-097664	1560-041800

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PCT/US2015/047224	08/27/2015	Superhydrophobic Additive	2014-IPM-097997	1560-042000
PCT/US2015/064249	12/07/2015	Modular Tool Having Combined EM Logging and Telemetry	2014-IPM-098115	1560-042100
PCT/US2015/022536	03/25/2015	Surface Excitation Ranging Methods and Methods Employing a Customized Grounding Arrangement	2015-IPM-098166	1560-042200
PCT/US2016/022144	03/11/2016	Bit-Scrambling in Differential Pulse Position Modulation	2015-IPM-098175	1560-042300
PCT/US2015/047725	08/31/2015	Method for Stimulation Treatment using Polymer-Surfactant Combination	2015-IPM-098204	1560-042700
PCT/US2015/046366	08/21/2015	Novel Thiol-Ene Based Resin System for Sand Consolidation and Methods Using Thereof	2015-IPM-098287	1560-042800
PCT/US2015/032666	05/27/2015	Corrosion Inhibition of HCl Treatment Fluids with Environmentally Compatible Solvent	2015-IPM-098325	1560-042900
PCT/US2016/021811	03/10/2016	Induction Logging Borehole Correction for Water-Based Mud	2015-IPM-098349	1560-043000
PCT/US2015/020485	03/13/2015	Overcoming the Retardation of Cement Hydration from Dispersing	2015-IPM-098368	1560-043100

		Agents used in Suspension of Additives		
PCT/US2015/022518	03/25/2015	Surface Excitation Ranging Methods and Systems Employing a Ground Well and a Supplemental Grounding Arrangement	2015-IPM-098424	1560-043200
PCT/US2015/046905	08/26/2015	Sugar Based Epoxy Resins with Enhanced Properties for Sand Consolidation in Subterranean Formations	2015-IPM-098478	1560-043300
PCT/US2015/038628	06/30/2015	Improved Vertical Proppant Suspension in Hydraulic Fractures	2015-IPM-098544	1560-043400
PCT/US2015/059606	11/06/2015	Downhole Logging Systems and Methods Employing Adjustably-Spaced Modules	2015-IPM-098575	1560-043500
PCT/US2016/014615	01/22/2016	Methods and Systems Employing a Gradient Sensor Arrangement for Ranging	2015-IPM-098579	1560-043600
PCT/US2016/015690	01/29/2016	Real Time on Location Crush and Conductivity Testing	2015-IPM-098640	1560-043700
PCT/US2015/052381	09/25/2015	Swellable Technology for Downhole Fluids Detection	2015-IPM-098710	1560-043800
PCT/US2015/067954	12/29/2015	Coiled Tubing	2015-IPM-	1560-043900

		Application Having Vibration-Based Feedback	098773	
PCT/US2016/032498	05/13/2016	Electromagnetic (EM) Defect Detection Methods and Systems Employing Deconvolved Raw Measurements	2015-IPM-099071	1560-044000
PCT/US2016/046857	08/12/2016	Method for In-Situ Calibration of Electromagnetic Corrosion Detection Tools	2015-IPM-099072	1560-044100
PCT/US2016/032212	05/12/2016	Electromagnetic (EM) Defect Detection Methods and Systems with Enhanced Inversion Options	2015-IPM-099095	1560-044200
PCT/US2016/055178	10/03/2016	Modeled Transmitter and Receiver Coils with Variable Tilt Angles for Formation Scanning	2015-IPM-099129	1560-044300
PCT/US2015/067807	12/29/2015	Self-Consolidating Micro-Proppant for Hydraulic Fracturing Applications	2015-IPM-099146	1560-044400
PCT/US2015/059075	11/04/2015	Conductivity-Depth Transforms of Electromagnetic Telemetry Signals	2015-IPM-099227	1560-044500
PCT/US2016/017970	02/15/2016	Methods of Selecting an Earth Model from a	2015-IPM-099268	1560-044600

		Plurality of Earth Models		
PCT/US2015/067803	12/29/2015	Wellbore Material Continuous Hardness Testing Methods and Tools	2015-IPM-099323	1560-044700
PCT/US2015/062101	11/23/2015	Switchable Multi-Antenna Fluid Sensing	2015-IPM-099387	1560-044800
PCT/US2017/017051	02/08/2017	Deploying Micro-Coiled Tubing	2015-IPM-099627	1560-044900
PCT/US2016/020465	03/02/2016	Controlling Proppant Flowback using Resin Chemistry for Acid Fracturing	2015-IPM-099643	1560-045000
PCT/US2016/036765	06/09/2016	Self-Suspending Material for Diversion Applications	2015-IPM-099703	1560-045100
PCT/US2016/035034	05/31/2016	Emulsified Fluid System for Fracturing Application	2016-IPM-099908	1560-045200
PCT/US2016/041376	07/08/2016	Treatment Fluids Comprising Recycled Drilling Cuttings and Methods of Use	2016-IPM-099947	1560-045300
PCT/US2016/038100	06/17/2016	Nano Materials Stabilized Emulsions as Fracturing Fluid System	2016-IPM-100009	1560-045400
PCT/US2016/038109	06/17/2016	Proppant Stabilized Water In Oil Emulsions For Subterranean Applications	2016-IPM-100010	1560-045500
PCT/US2016/040539	06/30/2016	Acid Diversion in Naturally Fractured Formations	2016-IPM-100075	1560-045600
PCT/US2016/046858	08/12/2016	Tool and Method	2016-IPM-	1560-045700



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		to Make High Resolution and High Penetration Measurement of Corrosion	100164	
PCT/US2016/053108	09/22/2016	Methods of Breaking Clay-Gel Nanoparticle	2016-IPM-100193	1560-045800
PCT/US2016/046864	08/12/2016	Multi-point In Situ Calibration of Electromagnetic Pipe Inspection Tools	2016-IPM-100250	1560-045900
PCT/US2016/051391	09/12/2016	Well Cementing with Water-Based Liquid Anti-Shrinkage Additives	2016-IPM-100356	1560-046000
PCT/US2017/040489	06/30/2017	Real-Time Self-Consistency Quality Indicators for Multi-Component Induction Tools	2016-IPM-100365	1560-046101
PCT/US2016/064038	11/29/2016	Emulsion-Based Breaker for Nanoparticle Clay Fluid	2016-IPM-100435	1560-046200
PCT/US2016/064027	11/29/2016	High Temperature Gravel Packing Fluid System	2016-IPM-100448	1560-046300
PCT/US2016/069653	12/31/2016	Breaker System for Emulsified Fluid System	2016-IPM-100550	1560-046400
PCT/US2016/060862	11/07/2016	Real Time Model for Diverter Drop Decision Using DAS and Step Down Analysis	2016-IPM-100584	1560-046500
PCT/US2016/060836	11/07/2016	Real Time Well Bashing Decision	2016-IPM-100586	1560-046600
PCT/US2017/039547	06/27/2017	Remote-Field Eddy Current Based Total Thickness	2016-IPM-100949	1560-046700

	Logging		
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Houston, Texas, United States of America  
(Place: City, State, & Country)

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(Date)

HALLIBURTON ENERGY SERVICES, INC.

By 

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Title: Senior Vice President and Chief Patent Counsel  
Intellectual Property, Halliburton Energy Services, Inc.

REVIEWED
Legal <u>BT</u>
Date <u>7-27-17</u>

PCT/US2015/020995, PCT/US2015/014433, PCT/US2015/014178, PCT/US2015/013377, PCT/US2014/048721, PCT/US2014/049381, PCT/US2014/073052, PCT/US2014/056363, PCT/US2015/060688, PCT/US2015/063755, PCT/US2015/066063, PCT/US2015/042812, PCT/US2015/060673, PCT/US2015/042811, PCT/US2015/039116, PCT/US2015/015760, PCT/US2014/073024, PCT/US2015/050764, PCT/US2015/054671, PCT/US2015/011905, PCT/US2015/050763, PCT/US2015/016426, PCT/US2015/010170, PCT/US2015/011979, PCT/US2015/057818, PCT/US2015/059607, PCT/US2015/042420, PCT/US2015/047738, PCT/US2015/047224, PCT/US2015/064249, PCT/US2015/022536, PCT/US2016/022144, PCT/US2015/047725, PCT/US2015/046366, PCT/US2015/032666, PCT/US2016/021811, PCT/US2015/020485, PCT/US2015/022518, PCT/US2015/046905, PCT/US2015/038628, PCT/US2015/059606, PCT/US2016/014615, PCT/US2016/015690, PCT/US2015/052381, PCT/US2015/067954, PCT/US2016/032498, PCT/US2016/046857, PCT/US2016/032212, PCT/US2016/055178, PCT/US2015/067807, PCT/US2015/059075, PCT/US2016/017970, PCT/US2015/067803, PCT/US2015/062101, PCT/US2017/017051, PCT/US2016/020465, PCT/US2016/036765, PCT/US2016/035034, PCT/US2016/041376, PCT/US2016/038100, PCT/US2016/038109, PCT/US2016/040539, PCT/US2016/046858, PCT/US2016/053108, PCT/US2016/046864, PCT/US2016/051391, PCT/US2017/040489, PCT/US2016/064038, PCT/US2016/064027, PCT/US2016/069653, PCT/US2016/060862, PCT/US2016/060836, PCT/US2017/039547