

**IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF TEXAS
DALLAS DIVISION**

NABORS DRILLING TECHNOLOGIES
USA, INC.,

Plaintiff/Counter-Defendant,

vs.

HELMERICH & PAYNE INT'L DRILLING
CO.; HELMERICH & PAYNE
TECHNOLOGIES, LLC; AND MOTIVE
DRILLING TECHNOLOGIES, INC.

Defendants/Counter-Claimants

Civil Action No. 3:20-cv-03126-M

P.R. 4-3 JOINT CLAIM CONSTRUCTION AND PREHEARING STATEMENT

Pursuant to the Court's Second Amended Patent Scheduling Order dated April 23, 2021, (Dkt. 73) and Second Amended Miscellaneous Order 62, ¶ 4-3 ("Patent Rule 4-3" or "P.R. 4-3"), Plaintiff and Counter-Defendant Nabors Drilling Technologies USA, Inc. ("Nabors") and Defendants and Counter-Plaintiffs Helmerich & Payne Int'l. Drilling Co.; Helmerich & Payne Technologies, LLC; and Motive Drilling Technologies, Inc. (collectively, "H&P") hereby provide their Joint Claim Construction and Prehearing Statement.

The claim construction hearing is set for October 4, 2021, at 1:30 p.m. Nabors asserts that H&P infringes certain claims of U.S. Patent No. 7,802,634 ("the '634 Patent"), U.S. Patent No. 7,823,655 ("the '655 Patent"), U.S. Patent No. 7,860,593 ("the '593 Patent"), U.S. Patent No. 8,360,171 ("the '171 Patent"), U.S. Patent No. 8,510,081 ("the '081 Patent"), U.S. Patent No. 8,528,663 ("the '663 Patent"), and U.S. Patent No. 10,672,154 ("the '154 Patent") (collectively

“Nabors Asserted Patents”).¹ H&P asserts that Nabors infringes certain claims of U.S. Patent No. 8,210,283 (“the ’283 Patent”), U.S. Patent No. 9,865,022 (“the ’022 Patent”), U.S. Patent No. 10,726,506 (“the ’506 Patent”), and U.S. Patent No. 10,208,580 (“the ’580 Patent”) (collectively “Motive Asserted Patents”). The claim construction hearing will address disputed claim terms from both the Nabors Asserted Patents and Motive Asserted Patents.

I. P.R. 4-3(a)(1): Agreed Constructions

Exhibit C identifies the construction of claim terms, phrases, or clauses on which the parties agree.

II. P.R. 4-3(a)(2): Disputed Constructions

Exhibit A identifies the disputed construction of claim terms, phrases, or clauses from the Nabors Asserted Patents. Exhibit B identifies the disputed construction of claim terms, phrases, or clauses from the Motive Asserted Patents.

Pursuant to P.R. 4-3(a)(2), Exhibits A and B identify each party’s proposed claim construction or indefiniteness positions for each disputed claim term, phrase, or clause, together with an identification of all references from the specification or prosecution history that support that position, and an identification of any extrinsic evidence known to the party on which the party intends to rely, either to support its position or to oppose any other party’s position, including, but not limited to, as permitted by law, dictionary definitions, citations to learned treatises and prior art, and testimony of percipient and expert witnesses.

Nabors and H&P each reserve the right to rely on intrinsic and extrinsic evidence identified by the other party. In addition, Nabors and H&P each reserve the right to amend, correct, or

¹ At the P.R. 4-1 stage, H&P identified claim terms requiring construction from U.S. Patent No. 7,938,197 (“the ’197 Patent”). Nabors then informed H&P that it no longer asserts infringement of the ’197 Patent. The parties therefore do not propose terms from the ’197 Patent for construction.

supplement their claim construction positions and supporting evidence in response to any change of position by the other party, or for other good cause.

III. P.R. 4-3(a)(3): Anticipated Length Of Time Necessary For Claim Construction Hearing.

Nabors and H&P anticipate the length of time necessary for the claim construction hearing will be about three to four hours, divided equally between the parties.

IV. P.R. 4-3(a)(4): Whether Any Party Proposes To Call One Or More Witnesses, Including Experts, At The Claim Construction Hearing And The Identity Of Each Witness.

Nabors and H&P do not propose calling any live witnesses, including expert witnesses, at the claim construction hearing. As identified in Exhibit A, H&P intends to rely on expert declarations of Vinod Sharma and Robert Schaaf to support its claim construction positions with respect to the Nabors Asserted Patents, and is simultaneously serving its disclosures of Mr. Sharma and Mr. Schaaf's expert testimony pursuant to P.R. 4-3(b).

V. P.R. 4-3(a)(5): Proposed Order of Presentation At The Claim Construction Hearing.

Nabors and H&P propose that the Court first hear argument on disputed claim terms from the Nabors Asserted Patents, followed by argument on disputed claim terms from the Motive Asserted Patents. Nabors and H&P will propose to the Court an order of presentation of terms within the respective Nabors Asserted Patents and H&P Asserted Patents categories closer to the claim construction hearing.

VI. P.R. 4-3(a)(6): A List Of Any Other Issues That Might Appropriately Be Taken Up At The Prehearing Conference Prior To The Claim Construction Hearing, And, If Not Previously Set, Proposed Dates For Any Such Prehearing Conference.

Nabors and H&P are not aware of any other issues at this time that might be appropriately addressed at a prehearing conference prior to the claim construction hearing.

Dated: May 13, 2021

Respectfully submitted,

/s/ Robert Bowick – with permission

John Wesley Raley
Robert M. Bowick
RALEY & BOWICK, LLP
1800 Augusta Drive, Suite 300
Houston, TX 77057
713-429-8050 (telephone)
713-429-8045 (facsimile)
Email: jrale@raleighbowick.com
rbowick@raleighbowick.com

**ATTORNEYS FOR PLAINTIFF
NABORS DRILLING TECHNOLOGIES
USA, INC.**

/s/ Doug Kubehl

Douglas M. Kubehl (TX SBN 00796909)
E-mail: doug.kubehl@bakerbotts.com
David M. Genender (TX SBN 00790757)
E-mail: david.genender@bakerbotts.com
Susan Cannon Kennedy (TX SBN 24051663)
Email: susan.kennedy@bakerbotts.com
Megan LaDriere (TX SBN 24083348)
E-mail: megan.ladriere@bakerbotts.com
BAKER BOTTS LLP
2001 Ross Avenue, Suite 900
Dallas, TX 75201
Telephone: 214-953-6500
Facsimile: 214-953-6503

Elizabeth D. Flannery (TX SBN 24045815)
BAKER BOTTS L.L.P
One Shell Plaza
910 Louisiana St. Suite 3200
Houston, TX 77002
Tele: (713) 229-2104
Fax: (713) 229-7704
E-mail: liz.flannery@bakerbotts.com

**ATTORNEYS FOR DEFENDANTS
HELMERICH & PAYNE INT'L
DRILLING CO.; HELMERICH &
PAYNE TECHNOLOGIES, LLC; AND
MOTIVE DRILLING TECHNOLOGIES,
INC.**

CERTIFICATE OF SERVICE

The undersigned attorney certifies that a copy of this was served on all counsel of record via ECF/PACER.

/s/ Doug Kubehl

Douglas M. Kubehl

EXHIBIT A – NABORS ASSERTED PATENTS

Claim Term	Nabors' Proposed Construction	Nabors' Intrinsic and Extrinsic Evidence	H&P's Proposed Construction	H&P's Intrinsic and Extrinsic Evidence
“the electronic data” (’634 Patent: Claim 1-3, 5, 7)	Plain and ordinary meaning, e.g.,	<u>Intrinsic Evidence:</u> ’634 Patent; ’634 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> Nabors reserves its right to rely upon expert testimony; A Dictionary for the Oil and Gas Industry (PETEX 2nd Ed., 2011)(Exhibit A at pp. 71 & 77); McGraw-Hill Dictionary of Scientific and Technical Terms (McGraw-Hill 6th Ed., 2003)(Exhibit B at pp. 548 & 702); Dictionary.com (Exhibit F).	“data including quill position data, magnetic-based toolface orientation data and gravity-based toolface orientation data”	<u>Intrinsic Evidence:</u> ’634 Patent: Claims 1-12; 2:50-56, 2:57-61, 3:29-32, 4:60-63, 6:54-56, 9:22-26, 9:29-41, 10:1-4; Figure 1 and accompanying disclosure; ’634 Patent File History: - June 1, 2010 Notice of Allowance, pp. 2-3.

“at least one of gravity-based toolface orientation data and magnetic-based toolface orientation data” (’634 Patent: Claim 1)	Plain and Ordinary Meaning, e.g., the electronic data includes data received from a toolface orientation sensor (magnetic or gravity), e.g., MWD sensor(s).	<u>Intrinsic Evidence:</u> ‘634 Patent; ‘634 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> Nabors reserves its right to rely upon expert testimony. A Dictionary for the Oil and Gas Industry (PETEX 2nd Ed., 2011)(Exhibit A at pp. 10, 16, 77, 119, 136); A Dictionary for the Oil and Gas Industry (PETEX 2nd Ed., 2011)(Exhibit A at p. 10); Dictionary of Petroleum Exploration, Drilling & Production (PennWell 2006)(Exhibit C at pp. 27, 227-228, 257, 303-304, 312, 334); Schlumberger Oilfield Glossary (Exhibit D “azimuth,” “inclination,” “wellbore orientation”); Dictionary.com (Exhibit	“at least one gravity-based toolface orientation data and at least one magnetic-based toolface orientation data”	<u>Intrinsic Evidence:</u> ‘634 Patent: Claims 1, 10, 19, 26; 2:50-56, 3:29-32, 4:60-63, 6:54-56, 9:22-26, 10:1-4; Figure 1 and accompanying disclosure. <u>Extrinsic Evidence:</u> Strunk & White, The Elements of Style (4th ed. 2000), Section 19.
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Claim Term	Nabors' Proposed Construction	Nabors' Intrinsic and Extrinsic Evidence	H&P's Proposed Construction	H&P's Intrinsic and Extrinsic Evidence
“user-viewable display” (’634 Patent: Claim 1)	Plain and Ordinary Meaning, e.g., a computer monitor display of the data/information	F). <u>Intrinsic Evidence:</u> ‘634 Patent; ‘634 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> Nabors reserves its right to rely upon expert testimony; McGraw-Hill Dictionary of Scientific and Technical Terms (McGraw-Hill 6th Ed., 2003)(Exhibit B at pp. 628, 702); Dictionary.com (Exhibit F).	“display viewable to the directional driller”	<u>Intrinsic Evidence:</u> ‘634 Patent: Claim 1; 2:46-56, 3:23-35, 9:18-41, 9:66-10:7 <u>Extrinsic Evidence:</u> <i>User and Use</i>, Merriam-Webster’s Collegiate Dictionary (11th ed. 2007).

“a plurality of drilling operation parameters” (’655 Patent: Claims 1, 19)	Plain and Ordinary Meaning, e.g., monitoring the actual toolface orientation by monitoring a drilling operation parameter, operation parameter, e.g., WOB, torque, RPM, pressure, ΔP, data received from a toolface orientation sensor, depth, ROP.	<u>Intrinsic Evidence:</u> ’655 Patent; ’655 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> Nabors reserves its right to rely upon expert testimony. A Dictionary for the Oil and Gas Industry (PETEX 2nd Ed., 2011)(Exhibit A at pp. 71, 77, 78, 80, 136-137, 176, 179, 198, 283); McGraw-Hill Dictionary of Scientific and Technical Terms (McGraw-Hill 6th Ed., 2003)(Exhibit B at pp. 598, 652, 1025, 1059-60, 1064, 1261, 1367, 1493); Dictionary of Petroleum Exploration, Drilling & Production (Penn Well 2006)(Exhibit C at pp. 151-152, 326, 328, 330, 357, 529); Schlumberger Oilfield Glossary (Exhibit D “toolface,” “mud motor,”	“two or more parameters of a drilling operation other than actual toolface orientation”	<u>Intrinsic Evidence:</u> ’655 Patent: Claims 1, 19; 11:48-56, 12:4-17, 17:49-61, 20:4-10, 20:11-55, 20:56-21:3; Figures 2-3, 5A-5B and accompanying disclosure; ’655 Patent File History: - September 2, 2009 Non-Final Rejection, pp. 3-4; - March 2, 2010 Office Action Response, pp. 8-10.
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Claim Term	Nabors' Proposed Construction	Nabors' Intrinsic and Extrinsic Evidence	H&P's Proposed Construction	H&P's Intrinsic and Extrinsic Evidence
		“positive displacement motor,” “steerable motor,” wellbore orientation”); Dictionary.com (Exhibit F).		

“detect a plurality of drilling operation parameters” (’655 Patent: Claim 19)	Plain and Ordinary Meaning, e.g., drilling operation parameters (e.g., operation parameter, e.g., WOB, torque, RPM, pressure, ΔP, data received from a toolface orientation sensor, depth, ROP) indicative of a difference between the measured/sensed toolface orientation and the desired toolface orientation	<u>Intrinsic Evidence:</u> ‘655 Patent; ‘655 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> Nabors reserves its right to rely upon expert testimony. A Dictionary for the Oil and Gas Industry (PETEX 2nd Ed., 2011)(Exhibit A at pp. 71, 77, 78, 80, 136-137, 176, 179, 198, 283); McGraw-Hill Dictionary of Scientific and Technical Terms (McGraw-Hill 6th Ed., 2003)(Exhibit B at pp. 598, 652, 1025, 1059-60, 1064, 1261, 1367, 1493); Dictionary of Petroleum Exploration, Drilling & Production (Penn Well 2006)(Exhibit C at pp. 151-152, 326, 328, 330, 357, 529); Schlumberger Oilfield Glossary (Exhibit D “toolface,” “mud motor,”	The “plurality of drilling operation parameters” “detected” in the first claim element is the antecedent basis for “the plurality of monitored drilling operation parameters” recited in the second claim element.	<u>Intrinsic Evidence:</u> ’655 Patent: Claim 19; 11:48-56, 12:4-17, 17:49-61, 20:4-10, 20:11-55, 20:56-21:3; Figures 2-3, 5A-5B and accompanying disclosure. ’655 Patent File History: - September 2, 2009 Non-Final Rejection, pp. 3-4; - March 2, 2010 Office Action Response, pp. 8-10.
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Claim Term	Nabors' Proposed Construction	Nabors' Intrinsic and Extrinsic Evidence	H&P's Proposed Construction	H&P's Intrinsic and Extrinsic Evidence
		“positive displacement motor,” “steerable motor,” wellbore orientation”); Dictionary.com (Exhibit F).		

“a drilling operation parameter” (’655 Patent: Claim 17)	Plain and Ordinary Meaning, e.g., monitoring the actual toolface orientation by monitoring a drilling operation parameter, e.g., WOB, torque, RPM, pressure, ΔP, data received from a toolface orientation sensor, depth, ROP.	<u>Intrinsic Evidence:</u> ‘655 Patent; ‘655 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> Nabors reserves its right to rely upon expert testimony. A Dictionary for the Oil and Gas Industry (PETEX 2nd Ed., 2011)(Exhibit A at pp. 71, 77, 78, 80, 136-137, 176, 179, 198, 283); McGraw-Hill Dictionary of Scientific and Technical Terms (McGraw-Hill 6th Ed., 2003)(Exhibit B at pp. 598, 652, 1025, 1059-60, 1064, 1261, 1367, 1493); Dictionary of Petroleum Exploration, Drilling & Production (Penn Well 2006)(Exhibit C at pp. 151-152, 326, 328, 330, 357, 529); Schlumberger Oilfield Glossary (Exhibit D “toolface,” “mud motor,”	“a parameter of a drilling operation other than actual toolface orientation”	<u>Intrinsic Evidence:</u> ’655 Patent: Claim 17; 11:48-56, 12:4-17, 17:49-61, 20:4-10, 20:11-55, 20:56-21:3; Figures 2-3, 5A-5B and accompanying disclosure. ’655 Patent File History: - September 2, 2009 Non-Final Rejection, pp. 3-4; - March 2, 2010 Office Action Response, pp. 8-10
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Claim Term	Nabors' Proposed Construction	Nabors' Intrinsic and Extrinsic Evidence	H&P's Proposed Construction	H&P's Intrinsic and Extrinsic Evidence
		“positive displacement motor,” “steerable motor,” wellbore orientation”); Dictionary.com (Exhibit F).		
“receiving a well prog” (’593 Patent: Claim 19)	Plain and Ordinary Meaning, e.g., the system receives a well program/prognosis information (a.k.a. the well plan) (Same as claim 19 of Nabors’ ’593 Patent)	<u>Intrinsic Evidence:</u> ’593 Patent; ’593 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> Nabors reserves its right to rely upon expert testimony; Dictionary of Petroleum Exploration, Drilling & Production (Penn Well 2006)(Exhibit C at p. 570); Dictionary.com (Exhibit F).	“receiving a document in a non-computer readable format that contains specifications, goals, and plans for drilling and completing a well”	<u>Intrinsic Evidence:</u> ’593 Patent: Claims 19-21; 1:6-15, 4:9-18, 4:34-48, 7:3-19; Figure 4 and accompanying disclosure.

Claim Term	Nabors' Proposed Construction	Nabors' Intrinsic and Extrinsic Evidence	H&P's Proposed Construction	H&P's Intrinsic and Extrinsic Evidence
order of claim steps (‘593 Patent: Claim 19)	Neither the claims nor the prosecution history limits the order of performance of the recited claimed steps.	<u>Intrinsic Evidence:</u> ‘593 Patent; ‘593 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> Nabors reserves its right to rely upon expert testimony. Dictionary.com (Exhibit F).	The method steps must occur in the order that they are written.	<u>Intrinsic Evidence:</u> ‘593 Patent: Claim 19; 1:10-15, 1:45-62, 7:20-33, 7:46-8:6; Figure 3 and accompanying disclosure.

Claim Term	Nabors' Proposed Construction	Nabors' Intrinsic and Extrinsic Evidence	H&P's Proposed Construction	H&P's Intrinsic and Extrinsic Evidence
“comparable operating parameter” (‘171 Patent: Claims 13-20, 22-26)	Plain and Ordinary Meaning, e.g., The operating parameter(s), e.g., e.g., WOB, torque, RPM, pressure, ΔP, data received from a toolface orientation sensor, depth, ROP, that was compared to the current toolface orientation in the previous step	<u>Intrinsic Evidence:</u> ‘171 Patent; ‘171 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> Nabors reserves its right to rely upon expert testimony; A Dictionary for the Oil and Gas Industry (PETEX 2nd Ed., 2011)(Exhibit A at pp. 80, 198); McGraw-Hill Dictionary of Scientific and Technical Terms (McGraw-Hill 6th Ed., 2003)(Exhibit B at pp. 442, 1531); Dictionary.com (Exhibit F).	Indefinite.	<u>Intrinsic Evidence:</u> ‘171 Patent: 1:14-31, 2:63-67, 5:48-63, 21:20-38. <u>Extrinsic Evidence:</u> <i>Comparable and Compare</i>, Merriam-Webster’s Collegiate Dictionary (11th ed. 2007). Expert Testimony of Vinod Sharma, who will testify pursuant to the concurrently served declaration that this claim term is an indefinite subjective term of degree, and that the specification and file history do not provide objective boundaries for determining the scope of “comparable operating parameter.”

Claim Term	Nabors' Proposed Construction	Nabors' Intrinsic and Extrinsic Evidence	H&P's Proposed Construction	H&P's Intrinsic and Extrinsic Evidence
“a method of directing a drilling operation in a wellbore” (’663 Patent: Claim 12)	The Preamble is not limiting.	<u>Intrinsic Evidence:</u> ‘663 Patent; ‘663 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> Dictionary.com (Exhibit F).	Preamble is limiting.	<u>Intrinsic Evidence:</u> ’663 Patent: Claims 12-20; 1:38-2:14, 2:29-42, 2:43-57, 2:61-62, 3:22-23, 3:43-4:3, 8:15-65, 12:59-13-29, 14:4-20, 14:21-25.

“the recommended toolface orientation” (’663 Patent: Claims 12, 14, 15, 17, 20)	Plain and Ordinary Meaning, e.g., the recommended or desired toolface orientation, a.k.a. toolface advisory. (See ’081 Patent, Claim 1)	<u>Intrinsic Evidence:</u> ‘663 Patent; ‘663 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> Nabors reserves its right to rely upon expert testimony; A Dictionary for the Oil and Gas Industry (PETEX 2nd Ed., 2011)(Exhibit A at p. 193, 283); McGraw-Hill Dictionary of Scientific and Technical Terms (McGraw-Hill 6th Ed., 2003)(Exhibit B at p. 1493); Dictionary of Petroleum Exploration, Drilling & Production (PennWell 2006)(Exhibit C at p. 529); Schlumberger Oilfield Glossary (Exhibit D “toolface”); Dictionary.com (Exhibit F).	“displayed recommended toolface orientation that depended on the recommended toolface orientation data”	<u>Intrinsic Evidence:</u> ’663 Patent: Claim 12; 1:38-2:14, 2:43-57, 2:66-3:4, 3:22-42, 3:43-4:3, 8:15-65, 12:59-13:29, 14:4-20; Figure 1 and accompanying disclosure.
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Claim Term	Nabors' Proposed Construction	Nabors' Intrinsic and Extrinsic Evidence	H&P's Proposed Construction	H&P's Intrinsic and Extrinsic Evidence
“configured to” (‘154 Patent: Claims 1-4, 6)	Plain and Ordinary Meaning, e.g., Set up for a particular system or task.	<u>Intrinsic Evidence:</u> ‘154 Patent; ‘154 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> Nabors reserves its right to rely upon expert testimony; McGraw-Hill Dictionary of Scientific and Technical Terms (McGraw-Hill 6th Ed., 2003)(Exhibit B at p. 461); Dictionary.com (Exhibit F).	“actually configured to and not merely capable to”	<u>Intrinsic Evidence:</u> ‘154 Patent: Claims 1-4, 6; 3:51-67, 4:38-6:23, 7:4-41, 8:64-13:4, 13:39-14:9, 14:29-15:62; Figures 3-8 and accompanying disclosure.

“optimized path” (’154 Patent: Claims 20-22, 24-25)	Plain and Ordinary Meaning, e.g., The best, e.g., efficient, fastest, shortest, path.	<u>Intrinsic Evidence:</u> ‘154 Patent; ‘154 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> Nabors reserves its right to rely upon expert testimony; A Dictionary for the Oil and Gas Industry (PETEX 2nd Ed., 2011)(Exhibit A at p. 10); McGraw-Hill Dictionary of Scientific and Technical Terms (McGraw-Hill 6th Ed., 2003)(Exhibit B at pp. 502, 581, 1486, 1543); Dictionary.com (Exhibit F).	Indefinite.	<u>Intrinsic Evidence:</u> ’154 Patent: Claims 1, 20-22, 24-25, 28; 1:14-20, 1:63-2:17, 3:12-29, 10:21-50. ’154 Patent File History: - App. No. 15/051,753, Paragraph 19; - January 4, 2019 Office Action; - April 1, 2019 Response to Office Action Mailed January 4, 2019; - September 26, 2019 Office Action; - December 23, 2019 Response to Office Action Mailed September 26, 2019; - December 23, 2019 Examiner Interview Summary. <u>Extrinsic Evidence:</u> <u>Expert Testimony of Robert Schaaf, who will testify pursuant to his concurrently served declaration that this claim term is an</u>
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Claim Term	Nabors' Proposed Construction	Nabors' Intrinsic and Extrinsic Evidence	H&P's Proposed Construction	H&P's Intrinsic and Extrinsic Evidence
				indefinite subjective term of degree, and that the specification and file history do not provide objective boundaries for determining the scope of "optimized path."

EXHIBIT B – MOTIVE ASSERTED PATENTS

Claim Term	Nabors' Proposed Construction	Nabors' Intrinsic & Extrinsic Evidence	H&P's Proposed Construction	H&P's Intrinsic & Extrinsic Evidence
“calculating . . . a plurality of solutions” (’283 Patent: Claims 15-24)	calculating/identifying at least two or more solutions, i.e., paths, from a first position to a second position	<u>Intrinsic Evidence:</u> ‘283 Patent; ‘283 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> Dictionary.com (Exhibit F).	Ordinary Meaning	<u>Intrinsic Evidence:</u> ’283 Patent: Claim 15; Abstract, 18:56-19:29, 20:27-56; Figures 7B, 7C, 8A and accompanying disclosure.
“wherein each of the plurality of solutions defines a path from the estimated position to the planned path” (’283 Patent: Claims 15-24)	Wherein each of the at least two or more solutions, i.e., paths, from a first position to a second position	<u>Intrinsic Evidence:</u> ‘283 Patent; ‘283 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> Dictionary.com (Exhibit F).	Ordinary Meaning	<u>Intrinsic Evidence:</u> ’283 Patent: Claim 15; Abstract, 18:56-19:29, 20:27-56; Figures 7B, 7C, 8A and accompanying disclosure.
“calculating . . . a cost of each of the plurality of solutions” (’283 Patent: Claims 15-24)	Indefinite (35 U.S.C. § 112, ¶2); alternatively, calculating the financial costs in dollars (\$) and cents (¢) for each of the plurality of solutions (defined above (No.1))	<u>Intrinsic Evidence:</u> ‘283 Patent; ‘283 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> Dictionary.com (Exhibit F).	Ordinary Meaning	<u>Intrinsic Evidence:</u> ’283 Patent: Claim 18; 18:48-50, 20:33-36, 20:61-65, 21:6-12, 21:15-20. ²

² To the extent Nabors serves an expert declaration to support its position that this term is indefinite, H&P objects that Nabors did not timely disclose the identity of the expert and brief description of the substance of the expert’s testimony in its P.R. 4-2 disclosures, as required by P.R. 4-2(b).

Claim Term	Nabors' Proposed Construction	Nabors' Intrinsic & Extrinsic Evidence	H&P's Proposed Construction	H&P's Intrinsic & Extrinsic Evidence
“drilling, by the drilling rig, at least a portion of the borehole based on the control information.” (’283 Patent: Claims 15-24)	Indefinite (35 U.S.C. § 112, ¶2); alternatively, the driller controls the drilling rig to drill a portion of the borehole based upon the costs of the plurality of solutions.	F). <u>Intrinsic Evidence:</u> ‘283 Patent; ‘283 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> A Dictionary for the Oil and Gas Industry (PETEX 2 nd Ed., 2011)(Exhibit A at p. 27); McGraw-Hill Dictionary of Scientific and Technical Terms (McGraw-Hill 6th Ed., 2003)(Exhibit B at p. 269);	Ordinary Meaning	<u>Intrinsic Evidence:</u> ’283 Patent: Claim 18; 18:48-50, 20:33-36, 20:61-65, 21:6-12, 21:15-20, 22:33-35, 31:55-32:26; Figures 6, 7A-7B, 8D and accompanying disclosure. ³
“one of the plurality of cost elements is time and another of the plurality of cost elements is a financial cost.” (’283 Patent: Claim 18)	Indefinite (35 U.S.C. § 112, ¶2)	<u>Intrinsic Evidence:</u> ‘283 Patent; ‘283 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> Dictionary.com (Exhibit	Ordinary Meaning	<u>Intrinsic Evidence:</u> ’283 Patent: Claim 18; Abstract, 18:48-50, 20:33-36, 20:61-65, 21:6-12, 21:15-20; Figure 7C and accompanying

³ To the extent Nabors serves an expert declaration to support its position that this term is indefinite, H&P objects that Nabors did not timely disclose the identity of the expert and brief description of the substance of the expert’s testimony in its P.R. 4-2 disclosures, as required by P.R. 4-2(b).

Claim Term	Nabors' Proposed Construction	Nabors' Intrinsic & Extrinsic Evidence	H&P's Proposed Construction	H&P's Intrinsic & Extrinsic Evidence
“calculating a drift of the drill bit based on information about the formation” (’283 Patent: Claim 19)	Indefinite (35 U.S.C. § 112, ¶2); alternatively, Utilizing data about the Earth’s formation to calculate the drift, i.e., the movement out of alignment, off center, or off course.	F). <u>Intrinsic Evidence:</u> ‘283 Patent; ‘283 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> A Dictionary for the Oil and Gas Industry (PETEX 2nd Ed., 2011)(Exhibit A at p. 78); McGraw-Hill Dictionary of Scientific and Technical Terms (McGraw-Hill 6th Ed., 2003)(Exhibit B at p. 651); Dictionary of Petroleum Exploration, Drilling & Production (Penn Well	Ordinary Meaning	<u>Intrinsic Evidence:</u> ’283 Patent: Claim 19; 27:1-15, 28:59-63.⁵

⁴ To the extent Nabors serves an expert declaration to support its position that this term is indefinite, H&P objects that Nabors did not timely disclose the identity of the expert and brief description of the substance of the expert’s testimony in its P.R. 4-2 disclosures, as required by P.R. 4-2(b).

⁵ To the extent Nabors serves an expert declaration to support its position that this term is indefinite, H&P objects that Nabors did not timely disclose the identity of the expert and brief description of the substance of the expert’s testimony in its P.R. 4-2 disclosures, as required by P.R. 4-2(b).

Claim Term	Nabors' Proposed Construction	Nabors' Intrinsic & Extrinsic Evidence	H&P's Proposed Construction	H&P's Intrinsic & Extrinsic Evidence
		2006)(Exhibit C at p. 149); Dictionary.com (Exhibit F).		
“calculating the second plurality of solutions includes” (’283 Patent: Claim 24)	Indefinite (35 U.S.C. § 112, ¶2), Lack of antecedent basis for “the second plurality of solutions”	<u>Intrinsic Evidence:</u> ‘283 Patent; ‘283 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> Dictionary.com (Exhibit F).	Ordinary Meaning	<u>Intrinsic Evidence:</u> ’283 Patent: Claims 22, 23; 29:66-30:13; Figures 7A, 11, 12 and accompanying disclosure. ⁶
“identifying ... a plurality of geometric convergence paths” / “plurality of convergence paths” (’022 Patent: Claims 1-24)	calculating/identifying at least two or more paths from a first position to a second position	<u>Intrinsic Evidence:</u> ‘022 Patent; ‘022 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> Dictionary.com (Exhibit F).	Ordinary Meaning	<u>Intrinsic Evidence:</u> ’022 Patent: 5:62-6:7, 6:19-21, 6:34-37, 6:39-42, 6:55-65, 6:66-7:5, 7:40-47; Figures 1, 3 and accompanying disclosure.
“geometric drift associated with the plurality of convergence paths” / “drift information”	Indefinite (35 U.S.C. § 112, ¶2); alternatively, Utilizing data about the Earth’s formation to	<u>Intrinsic Evidence:</u> ‘022 Patent; ‘022 File History; and Cited Prior Art References.	Ordinary Meaning	<u>Intrinsic Evidence:</u>

⁶ H&P objects to Nabors’ indefiniteness position for this term as untimely because Nabors did not identify this term as indefinite under to 35 U.S.C. § 112, ¶ 2 in its invalidity contentions as required by P.R. 3-3(a)(4). Additionally, to the extent Nabors serves an expert declaration to support its position that this term is indefinite, H&P objects that Nabors did not timely disclose the identity of the expert and brief description of the substance of the expert’s testimony in its P.R. 4-2 disclosures, as required by P.R. 4-2(b).

Claim Term	Nabors' Proposed Construction	Nabors' Intrinsic & Extrinsic Evidence	H&P's Proposed Construction	H&P's Intrinsic & Extrinsic Evidence
('022 Patent: Claims 3, 7, 15, 19)	calculate the drift, i.e., the movement out of alignment, off center, or off course.	<u>Extrinsic Evidence:</u> A Dictionary for the Oil and Gas Industry (PETEX 2nd Ed., 2011)(Exhibit A at p. 78); McGraw-Hill Dictionary of Scientific and Technical Terms (McGraw-Hill 6th Ed., 2003)(Exhibit B at p. 651); Dictionary of Petroleum Exploration, Drilling & Production (Penn Well 2006)(Exhibit C at p. 149); Dictionary.com (Exhibit F).		'022 Patent: 5:59-61, 8:3-22. ⁷
“identifying a plurality of convergence paths” ('506 Patent: Claims 1-12)	calculating/identifying at least two or more paths from a first position to a second position	<u>Intrinsic Evidence:</u> '506 Patent; '506 File History; and Cited Prior Art References.	Ordinary Meaning	<u>Intrinsic Evidence:</u> '506 Patent: 5:57-6:2, 6:14-25, 6:30-32, 6:34-37, 6:50-60, 6:61-67, 7:35-42; Figures 1, 3

⁷ To the extent Nabors serves an expert declaration to support its position that this term is indefinite, H&P objects that Nabors did not timely disclose the identity of the expert and brief description of the substance of the expert's testimony in its P.R. 4-2 disclosures, as required by P.R. 4-2(b).

Claim Term	Nabors' Proposed Construction	Nabors' Intrinsic & Extrinsic Evidence	H&P's Proposed Construction	H&P's Intrinsic & Extrinsic Evidence
		Extrinsic Evidence: Dictionary.com (Exhibit F).		and accompanying disclosure. '022 Patent (parent): 5:62-6:7, 6:19-21, 6:34-37, 6:39-42, 6:55-65, 6:66-7:5, 7:40-47; Figures 1, 3 and accompanying disclosure.
“controlling the drilling system to drill in accordance with the selected convergence path.” (’506 Patent: Claims 1-12)	Indefinite (35 U.S.C. § 112, ¶2); alternatively, the driller controls the drilling rig to drill a portion of the borehole based upon the selected convergence path.	Intrinsic Evidence: ‘506 Patent; ‘506 File History; and Cited Prior Art References. Extrinsic Evidence: Dictionary.com (Exhibit F).	Ordinary Meaning	Intrinsic Evidence: ‘506 Patent: 4:19-30 (incorporating by reference disclosure of ‘283 Patent, including Claim 18; 18:48-50; 20:33-36; 20:61-65; 21:6-12; 21:15-20; 22:33-35; 31:55-32:26; Figures 6, 7A-7B, 8D and accompanying disclosure), 6:50-60 (incorporating by reference disclosure of ‘283 Patent, including Claim 18; 18:48-50; 20:33-36; 20:61-65; 21:6-12; 21:15-20; 22:33-35; 31:55-32:26; Figures 6, 7A-7B, 8D

Claim Term	Nabors' Proposed Construction	Nabors' Intrinsic & Extrinsic Evidence	H&P's Proposed Construction	H&P's Intrinsic & Extrinsic Evidence
				and accompanying disclosure). '022 Patent (parent): (4:24-36 (incorporating by reference disclosure of '283 Patent, including Claim 18; 18:48-50; 20:33-36; 20:61-65; 21:6-12; 21:15-20; 22:33-35; 31:55-32:26; Figures 6, 7A-7B, 8D and accompanying disclosure), 6:55-65 (incorporating by reference disclosure of '283 Patent, including Claim 18; 18:48-50; 20:33-36; 20:61-65; 21:6-12; 21:15-20; 22:33-35; 31:55-32:26; Figures 6, 7A-7B, 8D and accompanying disclosure)). ⁸
"identifies the plurality of convergence paths	Indefinite (35 U.S.C. § 112, ¶2).	<u>Intrinsic Evidence:</u> '506 Patent; '506 File	Ordinary Meaning	<u>Intrinsic Evidence:</u>

⁸ To the extent Nabors serves an expert declaration to support its position that this term is indefinite, H&P objects that Nabors did not timely disclose the identity of the expert and brief description of the substance of the expert's testimony in its P.R. 4-2 disclosures, as required by P.R. 4-2(b).

Claim Term	Nabors' Proposed Construction	Nabors' Intrinsic & Extrinsic Evidence	H&P's Proposed Construction	H&P's Intrinsic & Extrinsic Evidence
responsive to the drill plan information" ('506 Patent: Claim 2)		History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> Dictionary.com (Exhibit F).		'506 Patent: Abstract; 2:50-53, 3:26-31, 5:23-33, 5:46-54; Figure 3 and accompanying disclosure. '022 Patent (parent): 2:54-57, 3:30-35, 5:28-38, 5:51-55; Figure 3 and accompanying disclosure. ⁹
"drift information" / "drift associated with each of the plurality of convergence paths" ('506 Patent: Claims 3 & 7)	Indefinite (35 U.S.C. § 112, ¶2); alternatively, Utilizing data about the Earth's formation to calculate the drift, i.e., the movement out of alignment, off center, or off course.	<u>Intrinsic Evidence:</u> '506 Patent; '506 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> A Dictionary for the Oil and Gas Industry (PETEX 2 nd Ed., 2011)(Exhibit A at p. 78);	Ordinary Meaning	<u>Intrinsic Evidence:</u> '506 Patent: 5:54-56, 7:65-8:16. ¹⁰

⁹ H&P objects to Nabors' indefiniteness position for this term as untimely because Nabors did not identify this term as indefinite under 35 U.S.C. § 112, ¶ 2 in its invalidity contentions as required by P.R. 3-3(a)(4). Additionally, to the extent Nabors serves an expert declaration to support its position that this term is indefinite, H&P objects that Nabors did not timely disclose the identity of the expert and brief description of the substance of the expert's testimony in its P.R. 4-2 disclosures, as required by P.R. 4-2(b).

¹⁰ To the extent Nabors serves an expert declaration to support its position that this term is indefinite, H&P objects that Nabors did not timely disclose the identity of the expert and brief description of the substance of the expert's testimony in its P.R. 4-2 disclosures, as required by P.R. 4-2(b).

Claim Term	Nabors' Proposed Construction	Nabors' Intrinsic & Extrinsic Evidence	H&P's Proposed Construction	H&P's Intrinsic & Extrinsic Evidence
		McGraw-Hill Dictionary of Scientific and Technical Terms (McGraw-Hill 6th Ed., 2003)(Exhibit B at p. 651); Dictionary of Petroleum Exploration, Drilling & Production (PennWell 2006)(Exhibit C at p. 149); Dictionary.com (Exhibit F).		
“the slide estimator detects a slide mode responsive to detection of a flow rate of drilling mud, a stationary BHA, and an on bottom condition of the BHA” / “the step of detecting further comprises detecting a flow rate of a drilling mud, a stationary BHA and an on bottom condition of the BHA” / “detecting a flow rate of drilling mud, a	The system detects whether the drilling mode is in (A) slide mode or (B) rotary mode of operation based upon (1) flow rate of the drilling mud; (2) a stationary BHA (bottom hole assembly); and (3) an on bottom condition of the BHA.	<u>Intrinsic Evidence:</u> ‘580 Patent; ‘580 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> A Dictionary for the Oil and Gas Industry (PETEX 2 nd Ed., 2011)(Exhibit A at pp. 28, 80, 103, 191, 252); McGraw-Hill Dictionary of Scientific and Technical Terms (McGraw-Hill 6th Ed.,	Ordinary Meaning	<u>Intrinsic Evidence:</u> ‘580 Patent: Claims 1, 11, 21; 31:33-34:46, 39:65-40:16.

Claim Term	Nabors' Proposed Construction	Nabors' Intrinsic & Extrinsic Evidence	H&P's Proposed Construction	H&P's Intrinsic & Extrinsic Evidence
stationary BHA and an on bottom condition of the BHA to determine whether the BHA is in the slide mode or the rotary mode of operation" ('580 Patent: Claims 1-22)		2003)(Exhibit B at pp. 272, 652, 825, 1949); Dictionary of Petroleum Exploration, Drilling & Production (PennWell 2006)(Exhibit C at pp. 49, 152); Schlumberger Oilfield Glossary (Exhibit D "drilling mud"); The Illustrated Petroleum Reference Dictionary (2 nd Ed. PennWell 1982)(Exhibit E at p. 23-24, 63); Dictionary.com (Exhibit F).		
"wherein the detection of the flow rate of drilling mud is determined by detection of a standpipe pressure exceeding a standpipe pressure circulation threshold" / "wherein the step of detecting the flow rate further comprises	Indefinite (35 U.S.C. § 112, ¶2); alternately, the flow rate of drilling mud is calculated by the standpipe pressure measurement exceeding a standpipe pressure threshold value.	<u>Intrinsic Evidence:</u> '580 Patent; '580 File History; and Cited Prior Art References. <u>Extrinsic Evidence:</u> A Dictionary for the Oil and Gas Industry (PETEX 2 nd Ed., 2011)(Exhibit A at pp. 80, 103, 261);	Ordinary Meaning	<u>Intrinsic Evidence:</u> '580 Patent: 31:61-32:28, 34:9-46, 37:4-46; Figures 15, 20 and accompanying disclosure. '580 Patent File History: - May 1, 2018 Non-Final Rejection

Claim Term	Nabors' Proposed Construction	Nabors' Intrinsic & Extrinsic Evidence	H&P's Proposed Construction	H&P's Intrinsic & Extrinsic Evidence
determining whether a standpipe pressure exceeds a standpipe pressure circulation threshold"/ "wherein the step of detecting the flow rate of drilling mud further comprises determining if the flow rate of the drilling mud exceeds a predetermined flow circulation threshold" ('580 Patent: Claims 1-22)		McGraw-Hill Dictionary of Scientific and Technical Terms (McGraw-Hill 6th Ed., 2003)(Exhibit B at pp. 652, 825, 2017, 2145); Dictionary of Petroleum Exploration, Drilling & Production (PennWell 2006)(Exhibit C at pp. 152, 488, 524); Schlumberger Oilfield Glossary (Exhibit D "drilling mud"); The Illustrated Petroleum Reference Dictionary (2nd Ed. PennWell 1982)(Exhibit E at p. 63, 206-207); Dictionary.com (Exhibit F).		- July 31, 2018 Response - October 2, 2018 Notice of Allowance.¹¹

¹¹ To the extent Nabors serves an expert declaration to support its position that this term is indefinite, H&P objects that Nabors did not timely disclose the identity of the expert and brief description of the substance of the expert's testimony in its P.R. 4-2 disclosures, as required by P.R. 4-2(b).

Claim Term	Nabors' Proposed Construction	Nabors' Intrinsic & Extrinsic Evidence	H&P's Proposed Construction	H&P's Intrinsic & Extrinsic Evidence
“controlling the operation of the drilling rig responsive to the detected slide mode or rotary mode of operation” (’580 Patent: Claims 11-22)	Indefinite (35 U.S.C. § 112, ¶2); alternatively, the driller controls the drilling rig to drill based upon the detected slide mode or rotary mode of operation of drilling.	<u>Intrinsic Evidence</u>: ‘580 Patent; ‘580 File History; and Cited Prior Art References. <u>Extrinsic Evidence</u>: A Dictionary for the Oil and Gas Industry (PETEX 2nd Ed., 2011)(Exhibit A at p. 235, 252); McGraw-Hill Dictionary of Scientific and Technical Terms (McGraw-Hill 6th Ed., 2003)(Exhibit B at pp. 1831, 1949); Dictionary of Petroleum Exploration, Drilling & Production (PennWell 2006)(Exhibit C at p. 433); Dictionary.com (Exhibit F).	Ordinary Meaning	<u>Intrinsic Evidence</u>: ’580 Patent: Claims 11, 21; 6:39-7:42, 10:15-45, 30:42-31:8, 43:35-46; Figures 2A, 3-5, 12-15 and accompanying disclosure.¹²

¹² H&P objects to Nabors’ indefiniteness position for this term as untimely because Nabors did not identify this term as indefinite under to 35 U.S.C. § 112, ¶ 2 in its invalidity contentions as required by P.R. 3-3(a)(4). Additionally, to the extent Nabors serves an expert declaration to support its position that this term is indefinite, H&P objects that Nabors did not timely disclose the identity of the expert and brief description of the substance of the expert’s testimony in its P.R. 4-2 disclosures, as required by P.R. 4-2(b).

EXHIBIT C – AGREED CONSTRUCTIONS

Claim Term	Agreed Construction
“a toolface advisory” ('081 Patent: Claim 1)	“recommended toolface orientation”