

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:
HUNZIKER, Robin

300 NE 9th Street Oklahoma City, Oklahoma 73104 USA

Date of mailing
(day/month/year) **08 April 2020 (08.04.2020)**

Applicant's or agent's file reference ESP4-65099-WO-045792		FOR FURTHER ACTION See paragraph 2 below	
International application No. PCT/US2019/060738	International filing date (day/month/year) 11 November 2019 (11.11.2019)	Priority date(day/month/year) 19 November 2018 (19.11.2018)	
International Patent Classification (IPC) or both national classification and IPC E21B 34/08(2006.01)i, E21B 43/12(2006.01)i			
Applicant BAKER HUGHES, A GE COMPANY, LLC			

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis. I(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.
For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/KR International Application Division Korean Intellectual Property Office 189 Cheongsa-ro, Seo-gu, Daejeon, 35208, Republic of Korea Facsimile No. +82-42-481-8578	Date of completion of this opinion 07 April 2020 (07.04.2020)	Authorized officer LEE, Hun Gil Telephone No. +82-42-481-8525
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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US2019/060738

Box No. 1 Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of :

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(b))

3. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:

- a. ☐ forming part of the international application as filed:
☐ in the form of an Annex C/ST.25 text file.
☐ on paper or in the form of an image file.
- b. ☐ furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
- c. ☐ furnished subsequent to the international filing date for the purposes of international search only:
☐ in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).
☐ on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

**WRITTEN OPINION OF THE
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International application No.

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-15	YES
	Claims	NONE	NO
Inventive step (IS)	Claims	1-15	YES
	Claims	NONE	NO
Industrial applicability (IA)	Claims	1-15	YES
	Claims	NONE	NO

2. Citations and explanations :

Reference is made to the following documents:

D1: US 2003-0192702 A1 (GAY et al.) 16 October 2003

D2: US 2016-0201444 A1 (HALLIBURTON ENERGY SERVICES, INC.) 14 July 2016

D3: US 4867242 A (HART, GORDON E.) 19 September 1989

D4: US 2010-0230091 A1 (PUGH et al.) 16 September 2010

D5: WO 2014-176225 A1 (SCHLUMBERGER CANADA LIMITED et al.) 30 October 2014

I. Novelty and Inventive Step (PCT Article 33(2) and (3))

1. Claims 1-11

Claim 1 differs from these prior art documents D1-D5 in that an apparatus comprises a shaft passage extending into a shaft along a longitudinal axis of a pump assembly. And it is not obvious to a person skilled in the art over the documents, taken alone or in combination.

Claims 2-11 are dependent on claim 1.

Accordingly, claims 1-11 are novel and involve an inventive step.

2. Claims 12-15

Claim 12 relates to a method. The technical features of claim 12 substantially correspond to those of claim 1.

Claims 13-15 are dependent on claim 12.

Accordingly, claims 12-15 are novel and involve an inventive step.

Continued on Supplemental Box

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of : Box No. V

II. Industrial Applicability (PCT Article 33(4))

Claims 1-15 are industrially applicable.