

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 75231904WO01	<b>FOR FURTHER ACTION</b>	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. <b>PCT/US2017/050125</b>	International filing date ( <i>day/month/year</i> ) <b>05 September 2017 (05.09.2017)</b>	(Earliest) Priority Date ( <i>day/month/year</i> )
Applicant <b>HALLIBURTON ENERGY SERVICES, INC.</b>		

This International search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language**, the international search was carried out 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))

b.  This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6bis(a)).

c.  With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2.  **Certain claims were found unsearchable** (See Box No. II)

3.  **Unity of invention is lacking** (See Box No. III)

4. With regard to the **title**,

the text is approved as submitted by the applicant.

the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

the text is approved as submitted by the applicant.

the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the drawings,

a. the figure of the **drawings** to be published with the abstract is Figure No. 10

as suggested by the applicant.

as selected by this Authority, because the applicant failed to suggest a figure.

as selected by this Authority, because this figure better characterizes the invention.

b.  none of the figures is to be published with the abstract.

**A. CLASSIFICATION OF SUBJECT MATTER****G01T 7/00(2006.01)i, G01T 1/167(2006.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

G01T 7/00; G01V 5/04; G01N 23/203; G01V 5/12; G01N 29/30; G01V 5/10; E21B 43/10; G01V 13/00; G01V 1/50; G01T 1/167

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) &amp; Keywords: calibrator, counting rate, tally multiplier, MCNP and gamma ray tool

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2017-069865 A1 (HALLIBURTON ENERGY SERVICES, INC.) 27 April 2017 See column 1, line 1-column 16, line 22.	1-20
Y	US 2015-0177198 A1 (SCHLUMBERGER TECHNOLOGY CORPORATION) 25 June 2015 See paragraphs [0008], [0035] and figures 1-2, 4.	1-20
A	US 2007-0284518 A1 (RANDALL, RUSSEL) 13 December 2007 See paragraphs [0094]-[0197] and figures 1-4.	1-20
A	US 2017-0089846 A1 (HALLIBURTON ENERGY SERVICES, INC.) 30 March 2017 See paragraphs [0032]-[0044] and figures 3A-5.	1-20
A	US 2012-0075953 A1 (CHACE, DAVID M. et al.) 29 March 2012 See paragraphs [0029], [0050] and figure 4.	1-20

 Further documents are listed in the continuation of Box C. See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&amp;" document member of the same patent family

Date of the actual completion of the international search

26 February 2018 (26.02.2018)

Date of mailing of the international search report

**27 February 2018 (27.02.2018)**

Name and mailing address of the ISA/KR

International Application Division

Korean Intellectual Property Office

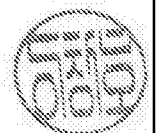
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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2017/050125**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2017-069865 A1	27/04/2017	None	
US 2015-0177198 A1	25/06/2015	EP 2886794 A1	24/06/2015
US 2007-0284518 A1	13/12/2007	CA 2654888 A1	21/12/2007
		US 7482578 B2	27/01/2009
		WO 2007-143836 A1	21/12/2007
US 2017-0089846 A1	30/03/2017	US 9726623 B2	08/08/2017
		WO 2016-148696 A1	22/09/2016
US 2012-0075953 A1	29/03/2012	BR 112012025644 A2	28/06/2016
		GB 2492693 A	09/01/2013
		GB 2492693 B	20/05/2015
		NO 20121217 A1	19/10/2012
		US 8964504 B2	24/02/2015
		WO 2011-127156 A2	13/10/2011
		WO 2011-127156 A3	05/04/2012