

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference IS160578WPCT	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US2017/049796	International filing date (<i>day/month/year</i>) 01 September 2017 (01.09.2017)	(Earliest) Priority Date (<i>day/month/year</i>) 01 September 2016 (01.09.2016)
Applicant SCHLUMBERGER TECHNOLOGY CORPORATION et al.		

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. 1B

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**G01N 21/25(2006.01)i, G01N 33/00(2006.01)i, G01N 21/01(2006.01)i, G01N 21/59(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)

G01N 21/25; C10G 49/22; G01N 33/00; G01N 33/18; G01N 21/31; G01N 21/88; C07C 29/88; B04B 7/12; G01N 21/01; G01N 21/59

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) & Keywords: mercury, heavy metal, hydrargyrum, concentration, detect, measure, determine, dilute, hydro carbon, colloid, amalgam, reservoir, mix, wellbore and downhole

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2011-0174688 A1 (MILAM et al.) 21 July 2011 See paragraphs [0008]-[0192] and figures 1-3.	1-35
Y	US 2014-0078499 A1 (TUNHEIM et al.) 20 March 2014 See paragraphs [0020]-[0098] and figures 1-4.	1-35
Y	US 2014-0371105 A1 (THOMAS et al.) 18 December 2014 See paragraph [0023] and figure 1.	7, 10-11, 25-27
A	US 2015-0112102 A1 (FJORDS PROCESSING AS.) 23 April 2015 See paragraphs [0044]-[0046] and figure 1.	1-35
A	US 2010-0253933 A1 (GUIEZE et al.) 07 October 2010 See paragraphs [0006]-[0010] and figure 2.	1-35

 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

"&" document member of the same patent family

Date of the actual completion of the international search

08 December 2017 (08.12.2017)

Date of mailing of the international search report

08 December 2017 (08.12.2017)

Name and mailing address of the ISA/KR

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2017/049796

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2011-0174688 A1	21/07/2011	CA 2785766 A1	28/07/2011
		EP 2526173 A2	28/11/2012
		SG 181824A1	30/07/2012
		US 8597498 B2	03/12/2013
		WO 2011-091211 A2	28/07/2011
		WO 2011-091211 A3	05/04/2012
US 2014-0078499 A1	20/03/2014	AU 2013-315742 A1	19/02/2015
		AU 2013-315742 B2	25/02/2016
		CA 2881053 A1	20/03/2014
		CA 2881053 C	11/10/2016
		EP 2872879 A1	20/05/2015
		MX 2015001596 A	10/06/2015
		NZ 704137 A	24/12/2015
		SG 11201500875 A	30/03/2015
		US 9176052 B2	03/11/2015
		WO 2014-043095 A1	20/03/2014
		US 2014-0371105 A1	18/12/2014
US 2015-0112102 A1	23/04/2015	AU 2013-269181 A1	18/12/2014
		AU 2013-269181 B2	24/03/2016
		CN 104471018 A	25/03/2015
		EP 2859061 A1	15/04/2015
		KR 10-2015-0037770 A	08/04/2015
		US 9376358 B2	28/06/2016
		WO 2013-179236 A1	05/12/2013
US 2010-0253933 A1	07/10/2010	EP 2223088 A1	01/09/2010
		SA 2864 B1	22/02/2012
		WO 2009-077183 A1	25/06/2009