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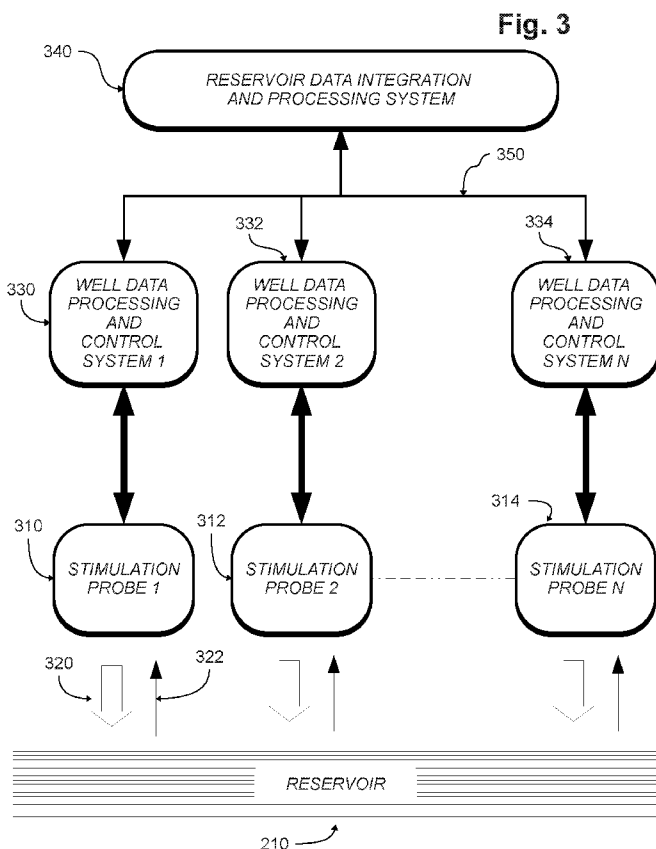
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[Continued on next page]

(54) Title: SYSTEM, APPARATUS AND METHOD FOR STIMULATING WELLS AND MANAGING A NATURAL RESOURCE RESERVOIR



(57) Abstract: The invention provides a system, method and downhole tool for stimulating a borehole of wells in reservoir. The invention allows a user to determine the type of stimulation adequate to promote production in a reservoir, and apply one or more treatments to each individual well by activating one or more modules comprised in the downhole tools. Furthermore, the tool comprises sensors that collect information in real-time of the state of the reservoir. The data collected is processed and newly acquired data is compared with previously acquired data to assess the development of production and further plan treatment strategies to optimize production.



GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

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- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2010/069358

A. CLASSIFICATION OF SUBJECT MATTER
INV. E21B28/00 E21B43/00
ADD.

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)
E21B

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

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

EP0-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2009/153354 A1 (DAUSSIN RORY [US] ET AL) 18 June 2009 (2009-06-18)	1,7
Y	paragraphs [0007], [0027], [0030] - [0033], [0035]	2-6,8,9
X	US 2009/234584 A1 (CASEY ANNA MARIE [US] ET AL) 17 September 2009 (2009-09-17)	1,7
	paragraphs [0006], [0007], [0010], [0018], [0025]	
Y	US 6 186 228 B1 (WEGENER DENNIS C [US] ET AL) 13 February 2001 (2001-02-13)	2,3,5
	column 2, lines 20-36 column 4, line 62 - column 5, line 14	
Y	US 2007/256828 A1 (BIRCHAK JAMES R [US] ET AL) 8 November 2007 (2007-11-08)	3,4
	paragraphs [0005], [0006], [0030]	
	-/--	

☒ 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 document 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

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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2010/069358

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6 499 536 B1 (ELLINGSEN OLAV [NO]) 31 December 2002 (2002-12-31) column 12, lines 36-57; claim 1 -----	6
Y	US 2009/182541 A1 (CRICK MARTIN [GB] ET AL) 16 July 2009 (2009-07-16) paragraphs [0002], [0090], [0121], [0128], [0150], [0153] -----	8,9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2010/069358

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☒ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
1-9
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-7

Means for stimulating a well and for collecting,
transmitting and processing related data

1.1. claims: 2-6

Sytems for generating acoustic waves to be used in
stimulation of downhole formations

1.2. claim: 7

Details of the means for collecting data

2. claims: 8, 9

Details of the means for processing data

3. claims: 10-24, 31-41

Method for extracting natural resources comprising step for
selecting, deploying, and configuring a downhole tool and
treating a dowhole formation

4. claims: 25-30

Means for stimulating a well comprising means for generating
low-frequency

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2010/069358

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