

(51) International Patent Classification:
E21B 49/00 (2006.01)(21) International Application Number:
PCT/US2009/042025(22) International Filing Date:
29 April 2009 (29.04.2009)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
12/112,644 30 April 2008 (30.04.2008) US(71) Applicant (for all designated States except US):
CHEVRON U.S.A. INC. [US/US]; 6001 Bollinger Canyon Road, San Ramon, CA 94583 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **VOELKER, Joe** [US/TH]; River House, Condominium Unit 6d, Layda Road, Klongsan, Bangkok, 10600 (TH).(74) Agents: **NORTHCUTT, Christopher, D.** et al.; Chevron Corporation, Law Department, Post Office Box 6006, San Ramon, CA 94583-0806 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ,

CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (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, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

Published:

- with international search report (Art. 21(3))

[Continued on next page]

(54) Title: METHOD OF MISCIBLE INJECTION TESTING OF OIL WELLS AND SYSTEM THEREOF

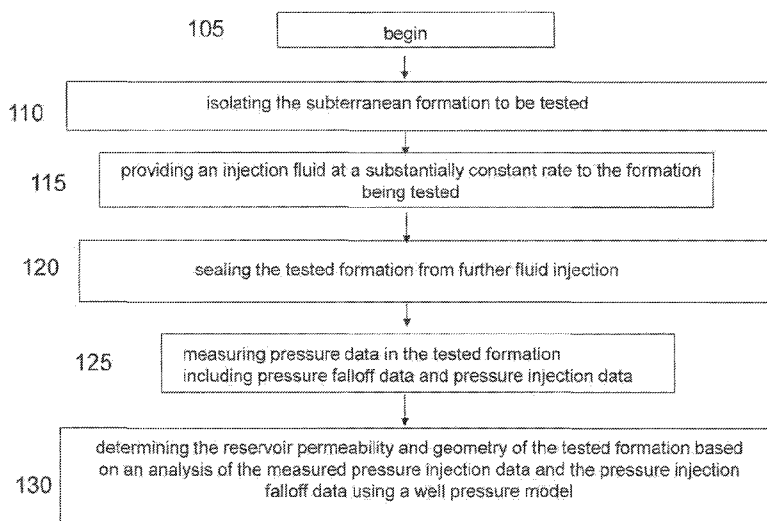


FIGURE 1

(57) Abstract: A method of determining reservoir permeability and geometry of a subterranean formation having a reservoir fluid including oil that has not been previously water-flooded includes isolating the subterranean formation to be tested; providing an injection fluid at a substantially constant rate from a wellhead to the formation being tested, wherein the injection fluid is miscible with the oil at the tested formation; sealing, at the top, the tested formation from further fluid injection; measuring pressure data in the tested formation including pressure injection data and pressure falloff data; and determining the reservoir permeability and geometry of the tested formation based on an analysis of the measured pressure injection data and the measured pressure falloff data using a well pressure model.



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:
21 October 2010

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2009/042025

A. CLASSIFICATION OF SUBJECT MATTER

INV. E21B49/00

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)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2007/134747 A1 (ENI SPA [IT]; BERETTA ENZO [IT]; TIANI ALESSANDRO [IT]; LO PRESTI GAET) 29 November 2007 (2007-11-29) page 5, line 16 - page 6, line 7 page 6, line 23 - page 8, line 3; claims 1,4	1,2,4,5, 7-11,13, 14,16-19
X	EP 0 286 152 A1 (PUMPTech NV [BE]) 12 October 1988 (1988-10-12) column 1, line 26 - column 2, line 42	1,2,4,5, 9,11,13, 14,18
A	US 5 477 922 A (ROCHON JEAN [FR]) 26 December 1995 (1995-12-26) claim 1	3,12
	----- -/-- -----	

☒ 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

31 August 2010

Date of mailing of the international search report

07/09/2010

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Dantinne, Patrick

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2009/042025

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2007/079652 A1 (CRAIG DAVID P [US]) 12 April 2007 (2007-04-12) figure 1 -----	1-19
A	WO 2005/095757 A1 (HALLIBURTON ENERGY SERV INC [US]; CRAIG DAVID P [US]; WAIN CHRISTOPHER) 13 October 2005 (2005-10-13) page 11, line 19 - line 29; claim 10 -----	1-19

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2009/042025

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2007134747 A1	29-11-2007	AT 472043 T AU 2007251994 A1 CA 2652468 A1 CN 101479442 A EA 200802226 A1 EP 2018464 A1 US 2009114010 A1	15-07-2010 29-11-2007 29-11-2007 08-07-2009 30-06-2009 28-01-2009 07-05-2009
EP 0286152 A1	12-10-1988	CA 1293923 C DE 3864876 D1 FR 2613418 A1 NO 881436 A US 4862962 A	07-01-1992 24-10-1991 07-10-1988 03-10-1988 05-09-1989
US 5477922 A	26-12-1995	AT 156565 T CA 2133297 A1 DE 69404796 D1 EP 0646698 A1 FR 2710687 A1 NO 943614 A OA 9994 A	15-08-1997 31-03-1995 11-09-1997 05-04-1995 07-04-1995 31-03-1995 29-03-1996
US 2007079652 A1	12-04-2007	AR 055670 A1 AU 2006301007 A1 CA 2624305 A1 EP 1948904 A1 WO 2007042760 A1	29-08-2007 19-04-2007 19-04-2007 30-07-2008 19-04-2007
WO 2005095757 A1	13-10-2005	AR 050062 A1 AU 2005229230 A1 BR PI0508891 A CA 2561257 A1 GB 2426595 A RU 2359123 C2 US 2005216198 A1	27-09-2006 13-10-2005 11-09-2007 13-10-2005 29-11-2006 20-06-2009 29-09-2005