



(51) International Patent Classification:

E21B 34/04 (2006.01) *E21B 43/013* (2006.01)
E21B 33/13 (2006.01)

(21) International Application Number:

PCT/US2012/034958

(22) International Filing Date:

25 April 2012 (25.04.2012)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/479,888 28 April 2011 (28.04.2011)

US

(71) Applicants (for all designated States except US): **BP CORPORATION NORTH AMERICA, INC.** [US/US]; 501 Westlake Park Boulevard, Houston, Texas 77079 (US). **WILD WELL CONTROL, INC.** [US/US]; Drilling Technology Center, 2202 Oil Center Court, Houston, Texas 77073 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **BEYNET, Pierre Albert** [US/US]; 150 W. Warrenville Road, MC 200-1W, Naperville, Illinois 60563 (US). **CARGOL, Patrick Michael** [US/US]; 150 W. Warrenville Road, MC 200-1W, Naperville, Illinois 60563 (US). **DRIEU, Michael Duggan** [US/US]; 150 W. Warrenville Road, MC 200-1W, Naperville, Illinois 60563 (US). **ROGERS, Jonathan Eryl** [US/US]; 150 W. Warrenville Road, MC 200-1W, Naperville, Illinois 60563 (US). **SILVA, Stanley** [US/US]; 150 W. Warrenville Road, MC 200-1W, Naperville, Illinois 60563 (US).

(74) Agent: **FALESKI, Thaddeus J.**; Conley Rose, P.C., 1001 McKinney, Suite 1800, Houston, Texas 77002 (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, CL, 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,

[Continued on next page]

(54) Title: SUBSEA DISPERSANT INJECTION SYSTEMS AND METHODS

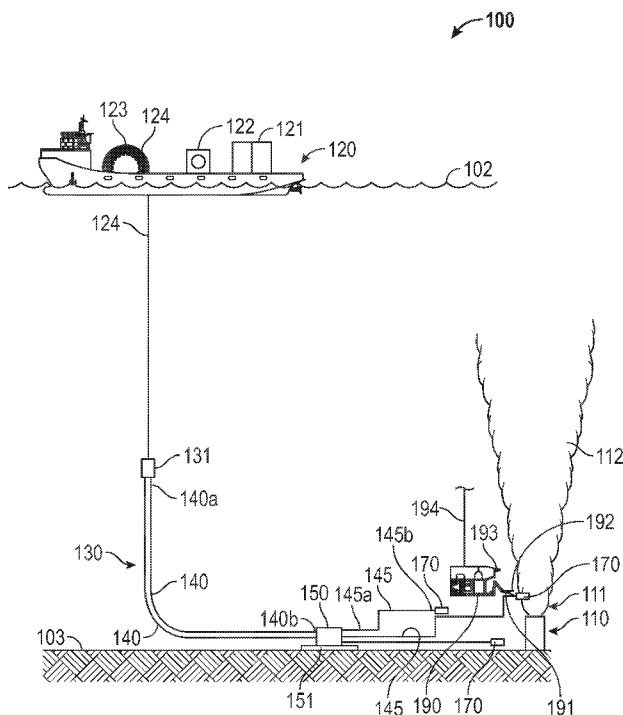


FIG. 1

(57) Abstract: A system for supplying a chemical dispersant to a subsea hydrocarbon discharge site comprises a dispersant source and a dispersant pump configured to pump dispersant from the dispersant source. In addition, the system comprises a first flow line coupled to the pump. Further, the system comprises a subsea dispersant distribution system coupled to the first flow line. Still further, the system comprises a dispersant injection device coupled to the distribution system and configured to inject dispersant from the dispersant source into a subsea hydrocarbon stream.



OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, 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, LR, LS, MW, MZ, NA, RW, 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:

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

24 January 2013

A. CLASSIFICATION OF SUBJECT MATTER***E21B 34/04(2006.01)i, E21B 33/13(2006.01)i, E21B 43/013(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)

E21B 34/04; E21B 43/01; E21B; B05B 3/10

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: "subsea", "dispersant", "hydrocarbon", "stream", "surfactant", "inject", "valve", "release", "BOP", "ROV", "blowout", "oil slick" and "oil spill"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3643741 A (MIRANDA, SALVATORE W.) 22 February 1972 See claim 4, column 2, lines 1-64 and figures 1-3.	1, 2, 7, 13-16, 26-30 , 34
Y		8-10, 17, 19, 33 , 35-37
A		3-6, 11, 12, 18, 20-25 , 31, 32, 38-41
Y	US 2002-0005439 A1 (KENDALL, DAVID C.) 17 January 2002 See paragraphs [0042]-[0055] and figures 1, 2.	8-10, 19, 35-37 1-7, 11-18, 20-34 , 38-41
A		
Y	WO 2004-044367 A2 (ABB VETCO GRAY INC. et al.) 27 May 2004 See page 24, lines 5-22 and figures 22-27.	17, 33 1-16, 18-32, 34-41
A		
A	US 2010-0300696 A1 (MCCALVIN, DAVID E. et al.) 02 December 2010 See paragraphs [0016], [0022] and figure 1.	1-41



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 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

16 NOVEMBER 2012 (16.11.2012)

Date of mailing of the international search report

20 NOVEMBER 2012 (20.11.2012)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
189 Cheongsa-ro, Seo-gu, Daejeon Metropolitan
City, 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

Jeong A Ram

Telephone No. 82-42-481-3388



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2012/034958

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2002-0005439 A1	17.01.2002	AU 2000-74702 A1 WO 01-23097 A1	30.04.2001 05.04.2001
WO 2004-044367 A2	27.05.2004	AU 2003-215080 A1 AU 2003-215080 A8 AU 2003-291475 A1 AU 2003-291475 A8 AU 2003-294256 A1 AU 2003-294256 A8 BR 0316177 A BR 0316189 A GB 0511731 D0 GB 0511737 D0 GB 0603414 D0 GB 2385009 A GB 2403751 A GB 2412679 A GB 2412679 B GB 2412937 A GB 2412937 B GB 2417438 A GB 2420809 A GB 2420809 B NO 20052721 A NO 20052721 D0 NO 20052722 A NO 20052722 D0 US 2003-0145997 A1 US 2003-0145998 A1 US 2003-0150731 A1 US 2007-0144908 A1 US 6742594 B2 US 7044228 B2 US 7175748 B2 US 7906003 B2 WO 03-067020 A2 WO 03-067020 A3 WO 2004-044367 A3 WO 2004-044367 A3 WO 2004-044368 A2 WO 2004-044368 A3 WO 2004-044368 A3	02.09.2003 02.09.2003 03.06.2004 03.06.2004 03.06.2004 03.06.2004 27.09.2005 27.09.2005 20.07.2005 20.07.2005 29.03.2006 13.08.2003 12.01.2005 05.10.2005 21.12.2005 12.10.2005 08.11.2006 01.03.2006 07.06.2006 13.12.2006 11.07.2005 07.06.2005 04.08.2005 07.06.2005 07.08.2003 07.08.2003 14.08.2003 28.06.2007 01.06.2004 16.05.2006 13.02.2007 15.03.2011 14.08.2003 14.08.2003 03.03.2005 27.05.2004 27.05.2004 13.01.2005 27.05.2004
US 2010-0300696 A1	02.12.2010	WO 2010-138318 A1	02.12.2010