(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
3 November 2011 (03.11.2011)

PCT

(10) International Publication Number
WO 2011/136761 A1

(51) International Patent Classification:
E21B 21/08 (2006.01)

(21) International Application Number:
PCT/US2010/032578

(22) International Filing Date:
27 April 2010 (27.04.2010)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant *(for all designated States except US)*: **HALLIBURTON ENERGY SERVICES, INC.** [US/US]; 10200 Bellaire Boulevard, Houston, TX 77072 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **LOVORN, James, R.** [US/US]; 3000 North Sam Houston Parkway East, Houston, TX 77032 (US). **BARKI, Emad** [EG/US]; 3000 North Sam Houston Parkway East, Houston, TX 77032 (US). **TURNER, Jay, K.** [US/US]; 3000 North Sam Houston Parkway East, Houstoh, TX 77032 (US). **EZELL, Ryan, G.** [US/US]; 3000 North Sam Houston Parkway East, Houston, TX 77032 (US).

(74) Agent: **SMITH, Marlin, R.**; Smith IP Services, P.C., P.O. Box 997, Rockwall, TX 75087 (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, OM, PE, PG, PH, PL, PT, RO, RS, RU, 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, 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,

[Continued on next page]

(54) Title: WELLBORE PRESSURE CONTROL WITH SEGREGATED FLUID COLUMNS

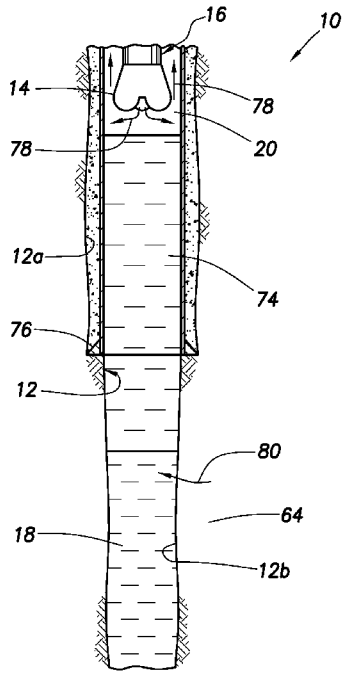


FIG.4

(57) Abstract: A method of controlling pressure in a wellbore can include placing a barrier substance in the wellbore while a fluid is present in the wellbore, and flowing another fluid into the wellbore while the first fluid and the barrier substance are in the wellbore. The first and second fluids may have different densities. Another method can include circulating a fluid through a tubular string and an annulus formed between the tubular string and the wellbore, then partially withdrawing the tubular string from the wellbore, then placing a barrier substance in the wellbore, then partially withdrawing the tubular string from the wellbore and then flowing another fluid into the wellbore. A well system can include at least two fluids in a wellbore, the fluids having different densities, and a barrier substance separating the fluids.

WO 2011/136761 A1

ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, 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))*

— *of inventorship (Rule 4.17(iv))*

Published:

— *with international search report (Art. 21(3))*