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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
25 March 2004 (25.03.2004)

PCT

(10) International Publication Number
WO 2004/025068 A3

(51) International Patent Classification[7]: E21B 29/12

(21) International Application Number:
PCT/US2003/028876

(22) International Filing Date:
12 September 2003 (12.09.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/410,065 12 September 2002 (12.09.2002) US

(71) Applicant *(for all designated States except US)*: **DRIL-QUIP, INC.** [US/US]; 13550 Hempstead Highway, Houston, TX 77040 (US).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **MILBERGER, Lionel, J.** [US/US]; 8911 Rocky Lane, Houston, TX 77040 (US).

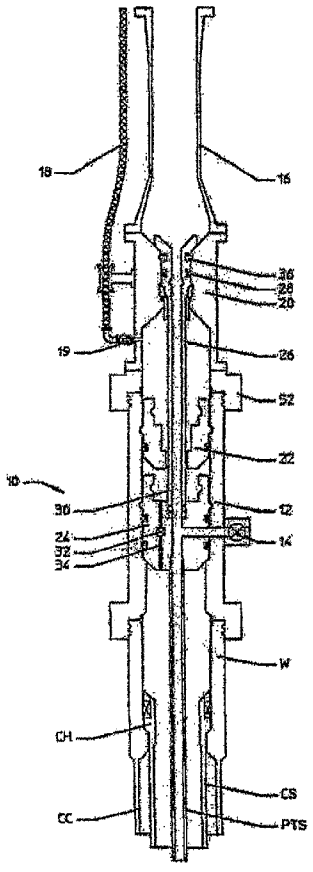
(74) Agent: **BUSHMAN, C., James**; Browning Bushman, P.C., 5718 Westheimer, Suite 1800, Houston, TX 77057 (US).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR WELL WORKOVER WITH HORIZONTAL TREE



(57) Abstract: A workover system (10) for use with a subsea horizontal tree provides an economical solution when it is not necessary to pull the production tubing out of the well and/or when a subsea drilling BOP is not required. The system utilizes a riser (16) and riser adaptor (20). An annulus flow line (18) for connection to the annulus is provided with the riser. The workover system is adaptable to multiple configurations for connecting the lower end of the annulus flow line to the subsea horizontal tree for communication with the annulus. For instance, the annulus flow line may be connected to the adapter, or may be connected between the well cap (12) and tubing hanger (24), or below the tubing hanger. An isolation sleeve (26) may or may not be utilized in various embodiments and may be constructed for sealing and/or latching with different components depending on the embodiment. One or more control valves (14) for the annulus flow may be provided in several different/alternative positions including within the tubing hanger and outside of the subsea horizontal tree.

WO 2004/025068 A3

Published:
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report:
6 January 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.