

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
18 April 2024 (18.04.2024)



(10) International Publication Number
WO 2024/081003 A1

(51) International Patent Classification:

G01V 3/30 (2006.01) G01V 3/38 (2006.01)
G01V 3/12 (2006.01) E21B 41/00 (2006.01)
E21B 43/12 (2006.01) E21B 23/06 (2006.01)

(21) International Application Number:

PCT/US2022/048724

(22) International Filing Date:

02 November 2022 (02.11.2022)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

17/964,820 12 October 2022 (12.10.2022) US

(71) Applicant: **HALLIBURTON ENERGY SERVICES, INC.** [US/US]; 3000 N. Sam Houston Parkway E., Houston, Texas 77032-3219 (US).

(72) Inventors: **GUNASEKARAN, Mohan**; 11 Tuas South Ave 12, Singapore 637131 (SG). **MAHENDRAN, Mathu-**
san; 11 Tuas South Ave 12, Singapore 637131 (SG).

(74) Agent: **COREY TUMEY**; P.O. Box 890226, Houston, Texas 77062-9998 (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, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every

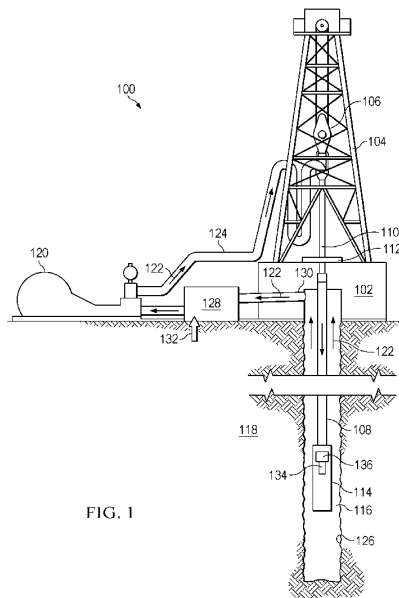
kind of regional protection available): ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, ME, MK, MT, NL, NO, PL,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

Published:

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

(54) Title: USING RADIO ISOTOPES AS A TRIGGERING ELEMENT IN DOWNHOLE APPLICATIONS

(57) Abstract: Systems and methods of the present disclosure relate to control of a downhole tool via at least one radio isotope. The radio isotope(s) is pumped from the surface to contact an isotopic analyzer of the tool. The isotopic analyzer reads the isotope and directs the tool to perform a specific action(s) in the wellbore based on the type of isotope read by the analyzer.



WO 2024/081003 A1