



(51) International Patent Classification:

G06F 9/455 (2006.01) G06G 7/48 (2006.01)
E21B 44/00 (2006.01)

(21) International Application Number:

PCT/US2015/020298

(22) International Filing Date:

12 March 2015 (12.03.2015)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/951,825 12 March 2014 (12.03.2014) US

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(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, CZ, DE, DK, DM,

DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, 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, 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, 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, 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).

Declarations under Rule 4.17:

— of inventorship (Rule 4.17(iv))

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))

(54) Title: SIMPLIFIED COMPOSITIONAL MODELS FOR CALCULATING PROPERTIES OF MIXED FLUIDS IN A COMMON SURFACE NETWORK

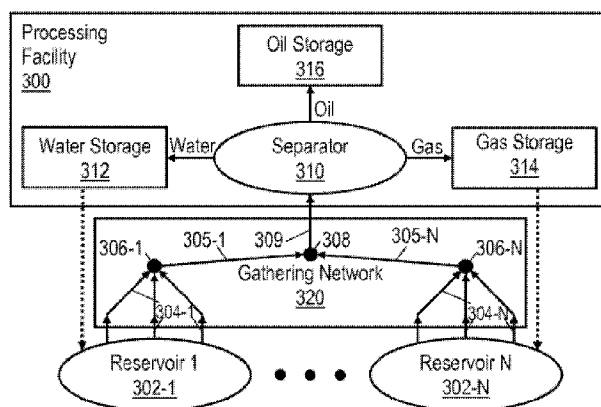


FIG. 3

(57) Abstract: System and methods of simulating fluid production in a multi-reservoir system with a common surface network are presented. An equation of state (EOS) characterization of fluids is matched with a delumped EOS model representing different components of the fluids for each reservoir within the multi-reservoir system. Fluid production in the multi-reservoir system is simulated for at least one simulation point in the common surface network, based in part on the delumped EOS model for each reservoir. If the fluids produced during the simulation at the simulation point are mixed fluids from different reservoirs, one or more interpolation tables representing the mixed fluids are generated and properties of the mixed fluids are calculated based on the generated interpolation tables. Otherwise, the properties of the fluids are calculated using the delumped EOS model corresponding to the reservoir from which the fluids are produced.