

Search history

Search 1: hydrogen and (carbonac* or coal or coke or petcoke) and reform* and steam and sulfur and (dolomite or limestone) and methanol and gas (Results 370)

Search 2: 1 and fuel and acid (Results 308)

Search 3: 2 and "natural gas" (Results 272)

Search 4: 2 and (burn* or combust*) (Results 305)

Search 5: 3 and (burn* or combust*) (Results 271)

Search 6: 5 and (syngas or synthesis) (Results 256)

Search 7: 6 and "carbon dioxide" (Results 251)

Search 8: 7 and gasifier and burner (Results 133)

Search 9: 8 and tac=("natural gas" or hydrogen or sulfur or "carbon dioxide" or burner or gasifier or fuel or combust*) (Results 127)

Search 10: 9 and tac=(gas and sulfur and (reform* or shift) and steam) (Results 85)

Search 11: 10 and tac=(dolomite or limestone or methanol) (Results 81)

Search 12: 11 and (H2S or sulfide or sulfhydic) (Results 81)

Search 13: 12 and (amon* or urea) (Results 81)

Search 14: 12 and (Ammoni* or urea) (Results 79)

Search 15: (14) AND IPC=(C10) (Results 22)

Search 16: 14 and tac=(hydrogen or "synthesis gas" or "syngas") (Results 79)

Search 17: 14 and tac=("synthesis gas" or "syngas") (Results 79)

Search 18: 17 and tac=(combust* or fuel or burner or gasifier) (Results 79)

Search 19: 18 and tac=("carbon dioxide") (Results 79)

Search 20: 19 and (purif* or reform* or shift) (Results 79)

Search 21: 19 and purif* (Results 22)

Title: IN SITU THERMAL PROCESSING AND INHIBITING MIGRATION OF FLUIDS INTO OR OUT OF AN IN SITU OIL SHALE FORMATION

Abstract: An oil shale formation may be treated using an in situ thermal process. Fluid migration into and/or out of a treatments area in the formation may be inhibited. In some embodiments, a barrier may be used to inhibit migration of fluids into and/or out of the treatment area. Heat may be provided to the treatment area and subsequently, hydrocarbons, H₂, and/or other formation fluids may be produced from the formation.

Classifications:

International (IPC 8-9): C10G1/00 C10G49/00 E21B36/00 E21B42/243 E21B43/00 E21B43/24 E21B43/243 E21B43/247 E21B43/28 E21B43/30 E21B43/40 E21B47/00 E21B49/00

E21C41/24 (Advanced/Invention);
E21B47/00 (Core/Invention)

International (IPC 1-7): C01B3/24 C10G1/00 C10G47/22 C10G49/00 E21B1/00 E21B17/10 E21B19/22 E21B36/04 E21B43/00 E21B43/24 E21B43/243 E21B43/26 E21B43/295 E21B43/30 E21B43/34 E21B47/00 E21B47/06 E21C37/16 E21C37/20 E21C41/16 H05B3/80

CPC: E21B43/24 E21B43/2401 E21B43/243 E21B43/247 E21B43/30
European: E21B43/243 E21B43/247 E21B43/30

US: 166/242.1 166/242.100P 166/245 166/250.01 166/250.010P 166/250.07 166/250.070P 166/250.12 166/250.15 166/251.1 166/254.1 166/256 166/256S 166/257 166/261 166/264 166/266 166/267 166/271 166/272.1 166/272.100P 166/272.100S 166/272.2 166/272.3 166/272.7 166/300 166/302 166/302S 166/303 166/308 166/384 166/52 166/57 166/59 166/59S 166/6 166/60 166/60P 166/60S 299/14 299/14P 299/4 299/5 299/5P 299/6 299/7 392/301 392/301P 392/305 392/306 405/130 405/270 405/52 423/131 423/208 423/658.5 507/200 507/200P 585/1 585/2

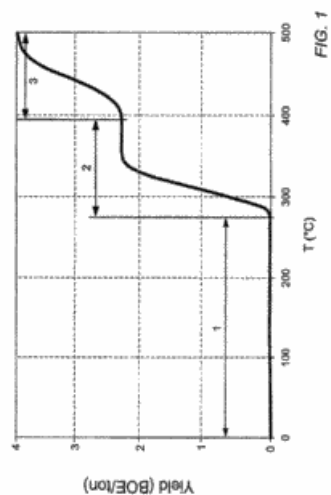
PatBase - US2003080604_AA

U.S. Patent

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Sheet 1 of 241

US 7,032,660 B2



Family:

Publication number	Publication date	Application number	Application date
CA2445415 AA	20031023	CA20022445415	20020424
CA2445415 C	20110830	CA20022445415	20020424
US2003080604 AA	20030501	US20020131352	20020424
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US7051811 BB	20060530	US20020131351	20020424

WO02086018 A2	20021031	WO2002US13311	20020424
WO02086018 A3	20040115	WO2002US13311	20020424

Priority:

US20010286062P	20010424	US20010337249P	20011024	US20020128698	20020424
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Probable Assignee: SHELL OIL CO

Assignee(s): (std): SHELL OIL CO ; SHELL INT RESEARCH ; SHELL CANADA LTD

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Inventor(s): RYAN ROBERT C

Agent(s): SMART AND BIGGAR

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ OM PH PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG UZ VN YU ZA ZM ZW

Title: IN SITU THERMAL RECOVERY FROM A RELATIVELY PERMEABLE FORMATION USING **GAS** TO INCREASE MOBILITY

Abstract: A method for treating a relatively permeable formation containing heavy hydrocarbons in situ may include providing heat from one or more heat sources to a portion of the formation. The heat may be allowed to transfer from the heat sources to a selected section of the formation. The transferred heat may reduce the viscosity of at least some hydrocarbons within the selected section. A **gas** may be produced to the selected section of the formation. The **gas** may produce a flow of hydrocarbons within the selected section. A mixture of hydrocarbons may be produced from the selected section.

Classifications:

International (IPC 8-9): C01B3/24 C10G1/00 C10G47/22 C10G49/00 E21B1/00 E21B17/10 E21B36/00 E21B36/02 E21B36/04 E21B43/14 E21B43/16 E21B43/24 E21B43/243 E21B43/247 E21B43/28 E21B43/295 E21B43/30 E21B43/34 E21B43/40 E21B47/00 E21B47/06 E21B49/00 E21B7/04 (Advanced/Invention); E21B1/00 E21B36/00 E21B43/00 E21B43/16 (Core/Invention)

International (IPC 1-7): C07C C09K7/00 C10B3/24 C10G1/00 E21B E21B1/00 E21B36/00 E21B36/02 E21B36/04 E21B43/16 E21B43/24 E21B43/243 E21B43/30 E21B43/40 E21B49/00 E21C37/16 E21C37/20

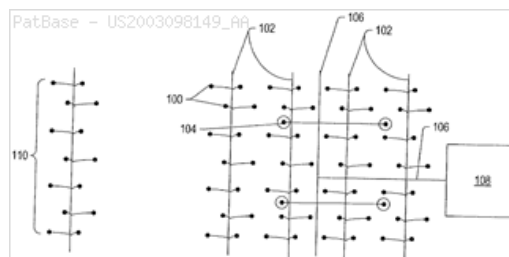
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European: E21B17/10 E21B36/00 E21B36/02 E21B36/02B E21B36/04 E21B43/14 E21B43/16G E21B43/24 E21B43/243 E21B43/247 E21B43/24S E21B43/24S2 E21B43/28B E21B43/30 E21B43/30B E21B47/06B E21B7/04 Y02C10/14

US: 137/13 166/245 166/250.01 166/250.15 166/256 166/256S 166/257 166/258 166/261 166/263 166/264 166/266 166/267 166/268 166/272.1 166/272.100P 166/272.3 166/272.7 166/302 166/303 166/303S 166/310 166/313 166/369 166/52 166/52P 166/59 166/6 166/60 166/60S 166/75.12 208/370 299/14 507/100 507/100P 585/1 585/2 703/10 705/1



Family:

Publication number	Publication date	Application number	Application date
AT384852 E	20080215	AT20020732664T	20020424
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WO02085821 A2	20021031	WO2002US12941	20020424
WO02085821 A3	20131107	WO2002US12941	20020424

WO02086276 A2	20021031	WO2002EP04549	20020424
WO02086276 A3	20030424	WO2002EP04549	20020424

Priority:

US20010286156P 20010424	US20010337072P 20011024	US20010337059P 20011024
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Probable Assignee: SHELL OIL CO

Assignee(s): (std): SHELL CANADA LIMITED ; SHELL OIL COMPANY ; SHELL INT RESEARCH MIJ B ; SHELL OIL CO ; SHELL INT RESEARCH ; SHELL CANADA LTD

Assignee(s): SHELL INT RESEARCH MIJ BV ; SHELL INTERNATIONALE RESEARCHMAATSCHAPPIJ B V ; SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B V ; SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B ; WELLINGTON SCOTT LEE ; VINEGAR HAROLD J ; SUMNU DINDORUK MELIHA DENIZ ; SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ BV ; ZHANG ETUAN ; STEGEMEIER GEORGE LEO ; BERCHENKO ILYA EMIL ; CRANE STEVEN DEXTER ; DE ROUFFIGNAC ERIC ; DE ROUFFIGNAC ERIC PIERRE ; DINDORUK MELIHA DENIZ SUMNU ; ROUFFIGNAC ERIC PIERRE DE ; MAHER KEVIN ALBERT ; ROBERTS BRUCE EDMUNDS ; KARANIKAS JOHN MICHAEL ; MESSIER MARGARET ANN ; RYAN ROBERT CHARLES ; SHAHIN GORDON THOMAS ; FOWLER THOMAS DAVID ; MESSIER ANN MARGARET

Inventor(s): (std): BASS RONALD ; BAXLEY PHILIP T ; BERCHENKO ILYA E ; BERCHENKO ILYA EMIL ; BIELAMOWICZ LAWRENCE J ; CARL FRED G ; COLES JOHN M ; CRANE STEVE ; CRANE STEVEN ; CRANE STEVEN D ; DE ROUFFIGNAC ERIC ; DE ROUFFIGNAC ERIC PIERRE ; DEXTER CRANE STEVEN ; DINDORUK MELIHA ; DINDORUK MELIHA DENIZ ; DINDORUK MELIHA DENIZ SUMMU ; DINDORUK MELIHA DENIZ SUMNU ; FOWLER THOMAS D ; FOWLER THOMAS DAVID ; GLANDT CARLOS ; MENOTTI JAMES L ; MESSIER ANN ; MESSIER ANN MARGARET ; MESSIER ANNMARGARET ; MESSIER MARGARET ; MESSIER MARGARET ANN ; MICHAEL KARANIKAS JOHN ; MIKUS TOM ; PRATT KIP ; ROBERTS BRUCE ; ROBERTS BRUCE EDMUNDS ; ROUFFIGNAC ERIC DE ; ROUFFIGNAC ERIC PIERRE DE ; RYAN ROBERT C ; RYAN ROBERT CHARLES ; SCHOELING LANNY ; KARANIKAS JOHN MICHAEL ; KARANIKAS JOHN M ; KARANIKAS JOHN MICHAEL ; KEEDY CHARLIE R ; LEPPER BRUCE ; MADGAVKAR AJAY M ; MAHER KEVIN ; MAHER KEVIN A ; MAHER KEVIN ALBERT ; SUMNU DINDORUK MELIHA D ; SUMNU DINDORUK MELIHA DENIZ ; VAN HARDEVELD MARTIJN ; VEENSTRA PETER ; VINEGAR HAROLD ; VINEGAR HAROLD J ; WARD JOHN M ; WATKINS WADE ; WELLINGTON SCOTT ; WELLINGTON SCOTT L ; WELLINGTON SCOTT LEE ; ZHANG ETUAN ; SHAHIN JR GORDON THOMAS ; SHAHIN GORDON T ; SHAHIN GORDON THOMAS ; STEGEMEIER GEORGE L ; STEGEMEIER GEORGE LEO ; CRANE STEVEN DEXTER ; MARGARET MESSIER ANN ; LEE WELLINGTON SCOTT ; ETUAN ZHANG ; ERIC DE ROUFFIGNAC ; ALBERT MAHER KEVIN ; HUNSUCKER BRUCE G

Inventor(s): JOHN MICHAEL KARANIKAS ; ANN MARGARET MESSIER ; STEVEN DEXTER CRANE ; SHAHIN ; JR GORDON THOMAS ; MELIHA DENIZ SUMNU DINDORUK ; KEVIN ALBERT MAHER ; SCOTT LEE WELLINGTON ; HAROLD J VINEGAR

Agent(s): SPRUSON AND FERGUSON; SMART AND BIGGAR

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ OM PH PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG UZ VN YU ZA ZM ZW

Title: IN SITU THERMAL PROCESSING OF A HYDROCARBON CONTAINING FORMATION

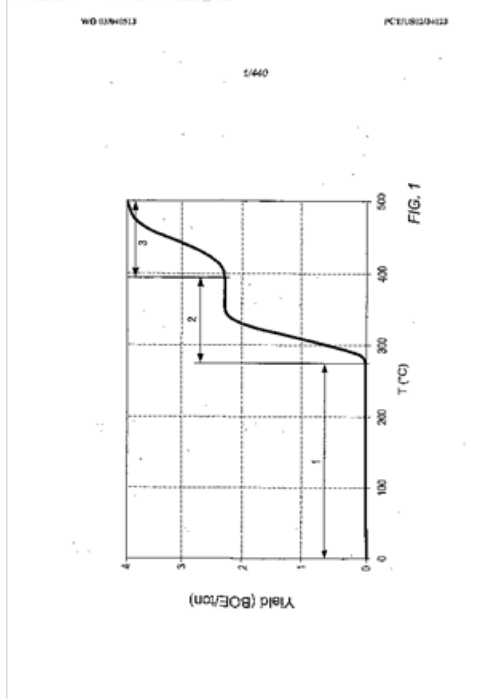
Abstract: An in situ process for treating a hydrocarbon containing formation is provided. The process may include providing heat from one or more heaters to at least a portion of the formation. The heat may be allowed to transfer from the one or more heaters to a part of the formation such that heat from the one or more heat sources pyrolyzes at least some hydrocarbons within the part. Hydrocarbons may be produced from the formation.

Classifications:

International (IPC 8-9): B09C1/02 B09C1/06 C01B3/24 C10G45/00 C10G47/22 C10G49/00 C10G9/24 E21B17/02 E21B36/00 E21B43/16 E21B43/24 E21B43/243 E21B43/295 E21B43/30 E21B43/34 E21B44/00 E21B47/022 G01V3/26 (Advanced/Invention)

CPC: E21B43/2401 B09C1/02 B09C1/06 B09C2101/00 C10G9/24 C10G45/00 E21B17/028 E21B43/168 E21B43/24 E21B43/243 E21B43/305 E21B47/02208 G01V3/26 Y02P30/30 Y02P30/44 Y10S210/901 Y10T137/0391

PatBase - WO03040513_A2



Family:

Publication number	Publication date	Application number	Application date
AU2002349904 AA	20030519	AU20020349904	20021024
AU2002349904 AH	20090730	AU20020349904	20021024
WO03040513 A2	20030515	WO2002US34023	20021024
WO03040513 A3	20090611	WO2002US34023	20021024

Priority:

US20010334568P 20011024 US20010337136P 20011024 US20020374970P 20020424
US20020374995P 20020424 WO2002US34023 20021024

Probable Assignee: SHELL OIL CO

Assignee(s): (std): SHELL CANADA LTD ; SHELL OIL CO

Inventor(s): (std): AYMOND DANNIE ANTOINE JR ; BAI TAI XU ; BASS RONALD MARSHALL ; BAXLEY PHILLIP TEMMONS ; BERCHENKO ILYA EMIL ; BIELAMOWICZ LAWRENCE JAMES ; CARL JR FREDRICK GORDON ; COLE ANTHONY THOMAS ; COLES JOHN MATTHEW ; CRANE STEVEN DEXTER ; DE ROUFFIGNAC ERIC PIERRE ; DEMARTINI DAVID CHARLES ; FOWLER THOMAS DAVID ; HARRIS CHRISTOPHER KELVIN ; HUNSUCKER BRUCE GERARD ; GINESTRA JEAN CHARLES ; GLANDT CARLOS ALBERTO ; HANSEN KIRK SAMUEL ; HARDEVELD ROBERT MARTIJN VAN ; KARANIKAS JOHN MICHAEL ; KEEDY CHARLES ROBERT ; LEPPER GORDON BRUCE ; MADGAVKAR AJAY MADHAV ; MAHER KEVIN ALBERT ; MENOTTI JAMES LOUIS ; MESSIER MARGARET ANN ; MIKUS THOMAS ; PALFREYMAN BRUCE DONALD ; PRATT CHRISTOPHER ARNOLD ; MCKINZIE BILLY JOHN II ; ROBERTS BRUCE EDMUNDS ; ROUFFIGNAC ERIC PIERRE DE ; RYAN ROBERT CHARLES ; SANDBERG CHESTER L ; SCHOELING LANNY GENE ; SHAHIN JR GORDON THOMAS ; SON JAIME S ; STEGEMEIER GEORGE LEO ; VAN HARDEVELD ROBERT MARTIJN ; VEENSTRA PETER ; VINEGAR HAROLD J ; WAGNER RANDOLPH R ; WARD JOHN MICHAEL ; WATKINS RONNIE WADE ; WELLINGTON SCOTT LEE ; ZHANG ETUAN ; STONE FRANCIS M JR ; SUMNU DINDORUK MELIHA DENIZ

Inventor(s): TAI XU BAI ; THOMAS DAVID FOWLER ; THOMAS MIKUS ; STEVEN DEXTER CRANE ; STONE FRANCIS M ; SCOTT LEE WELLINGTON ; RONALD MARSHALL BASS ; RONNIE WADE WATKINS ; MELIHA DENIZ SUMNU DINDORUK ; RANDOLPH R WAGNER ; ROBERT CHARLES RYAN ; ROBERT MARTIJN VAN HARDEVELD ; PETER VEENSTRA ; PHILLIP TEMMONS BAXLEY ; MARGARET ANN MESSIER ; KEVIN ALBERT MAHER ; KIRK SAMUEL HANSEN ; LANNY GENE SCHOELING ; LAWRENCE JAMES BIELAMOWICZ ; HAROLD J VINEGAR ; GORDON BRUCE LEPPER ; ILYA EMIL BERCHENKO ; JAIME S SON ; JAMES LOUIS MENOTTI ; JEAN CHARLES GINESTRA ; JOHN MATTHEW COLES ; JOHN MICHAEL KARANIKAS ; JOHN MICHAEL WARD ; JR FREDRICK GORDON CARL ; JR GORDON THOMAS SHAHIN ; FRANCIS M JR STONE ; GEORGE LEO STEGEMEIER ; AJAY MADHAV MADGAVKAR ; ANTHONY THOMAS COLE ; ERIC PIERRE DE ROUFFIGNAC ; ETUAN ZHANG ; DANNIE ANTOINE JR AYMOND ; DAVID CHARLES DEMARTINI ; CARLOS ALBERTO GLANDT ; CHARLES ROBERT KEEDY ; CHESTER L SANDBERG ; CHRISTOPHER ARNOLD PRATT ; CHRISTOPHER KELVIN HARRIS ; BILLY JOHN II MCKINZIE ; BRUCE DONALD PALFREYMAN ; BRUCE EDMUNDS ROBERTS ; BRUCE GERARD HUNSUCKER

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ OM PH PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG UZ VN YU ZA ZM ZW

Title: IN SITU THERMAL PROCESSING OF AN OIL SHALE FORMATION USING A PATTERN OF HEAT SOURCES

Abstract: A oil shale formation may be treated using an in situ thermal process. A mixture of hydrocarbons, H₂, and/or other formation fluids may be produced from the formation. Heat may be applied to the formation to raise a temperature of a portion of the formation to a pyrolysis temperature. Heat sources may be used to heat the formation. The heat sources may be positioned within the formation in a selected pattern.

Classifications:

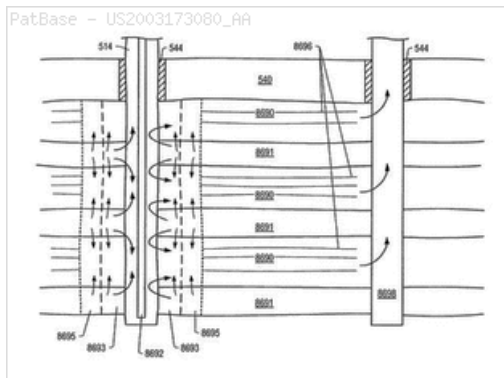
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International (IPC 1-7): E21B43/24

CPC: E21B43/24 E21B43/2401 E21B43/243 E21B43/247 E21B43/30

European: E21B43/243 E21B43/247 E21B43/30

US: 166/245 166/250.01 166/250.010S 166/250.1 166/256 166/257 166/257S 166/267 166/267S 166/272.1 166/272.100S 166/302 166/302S 166/57 166/60



Family:

Publication number	Publication date	Application number	Application date
US2003173080 AA	20030918	US20020131286	20020424
US2006213657 AA	20060928	US20060343913	20060131
US6991032 BB	20060131	US20020131286	20020424
US7225866 BB	20070605	US20060343913	20060131

Priority:

US20010286062P 20010424 US20010337249P 20011024 US20020131286 20020424
US20060343913 20060131

Probable Assignee: SHELL OIL CO

Assignee(s): (std): SHELL OIL CO

Assignee(s): SHELL OIL COMPANY ; ZHANG ETUAN ; VINEGAR HAROLD J ; WELLINGTON SCOTT LEE ; STEGEMEIER GEORGE LEO ; BERCHENKO ILYA EMIL ; DE ROUFFIGNAC ERIC PIERRE ; FOWLER THOMAS DAVID ; KARANIKAS JOHN MICHAEL ; RYAN ROBERT CHARLES ; SHAHIN GORDON THOMAS

Inventor(s): (std): ZHANG ETUAN ; WELLINGTON SCOTT LEE ; WELLINGTON SCOTT L ; VINEGAR HAROLD J ; STEGEMEIER GEORGE LEO ; STEGEMEIER GEORGE L ; SHAHIN JR GORDON THOMAS ; ROUFFIGNAC ERIC P D ; KARANIKAS JOHN MICHAEL ; KARANIKAS JOHN M ; FOWLER THOMAS DAVID ; FOWLER THOMAS D ; DE ROUFFIGNAC ERIC PIERRE ; BERCHENKO ILYA EMIL ; BERCHENKO ILYA E ; SHAHIN GORDON THOMAS ; SHAHIN GORDON T JR ; RYAN ROBERT CHARLES ; RYAN ROBERT C

Inventor(s): ROUFFIGNAC ERIC PD ; SHAHIN GORDON TJR ; BERCHENKO ILYA ; FOWLER THOMAS ; KARANIKAS JOHN ; ROUFFIGNAC ERIC ; RYAN ROBERT ; SHAHIN GORDON ; STEGEMEIER GEORGE ; VINEGAR HAROLD ; WELLINGTON SCOTT

Agent(s): SHELL OIL COMPANY; SHELL OIL CO

Title: FORMING OPENINGS IN A HYDROCARBON CONTAINING FORMATION USING MAGNETIC TRACKING

Abstract: A method for forming one or more openings in a hydrocarbon containing formation is described. The method may include forming or providing a first opening in the formation. A plurality of magnets may be provided into the first opening. The plurality of magnets may be positioned along a portion of the first opening. The plurality of magnets may produce a series of magnetic fields along the portion of the first opening. A second opening in the formation may be formed using magnetic tracking of the series of magnetic fields. The second opening may be spaced a desired distance from the first opening. Alternate embodiments include use of an energized conduit to create a magnetic field. Such energized conduit can be used alone or with the plurality of magnets.

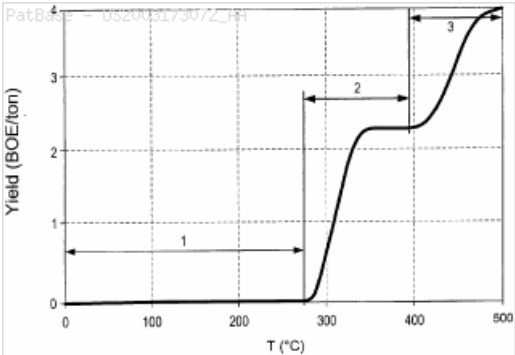
Classifications:

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E21B43/30 E21B44/00 E21B47/022 E21B7/04
G01V3/26 (Advanced/Invention)

International (IPC 1-7): E21B43/24

CPC: E21B43/2401 B09C1/02 B09C1/06 B09C2101/00 C10G9/24
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E21B43/305 E21B47/02208 G01V3/26 Y02P30/30 Y02P30/44
Y10S210/901 Y10T137/0391

US: 166/66.5 175/45 175/61 175/62 324/346



Family:

Publication number	Publication date	Application number	Application date
US2003173072 AA	20030918	US20020279289	20021024
US6991045 BB	20060131	US20020279289	20021024

Priority:

US20010334568P 20011024 US20010337136P 20011024 US20020374970P 20020424
US20020374995P 20020424 US20020279289 20021024

Probable Assignee: SHELL OIL CO

Assignee(s): (std): SHELL OIL CO

Assignee(s): HARRIS CHRISTOPHER KELVIN ; HARTMANN ROBIN ADRIANUS ; LEPPER GORDON BRUCE ; PRATT CHRISTOPHER ARNOLD ; VINEGAR HAROLD J ; WAGNER RANDOLPH ROGERS

Inventor(s): (std): HARRIS CHRISTOPHER KELVIN ; HARTMANN ROBIN ADRIANUS ; LEPPER GORDON BRUCE ; PRATT CHRISTOPHER ARNOLD ; VINEGAR HAROLD J ; WAGNER RANDOLPH ROGERS

Title: IN SITU THERMAL PROCESSING OF AN OIL RESERVOIR FORMATION

Abstract: An in situ process for treating an oil containing formation is provided. The process may include providing heat from one or more heaters to at least a portion of the formation. The heat may be allowed to transfer from the one or more heaters to a part of the formation such that heat from the one or more heat sources pyrolyzes at least some hydrocarbons within the part. Hydrocarbons may be produced from the formation.

Classifications:

International (IPC 8-9): E21B43/24 E21B43/243 E21B43/40

E21B47/00 (Advanced/Invention);

E21B43/16 E21B43/34 E21B47/00 (Core/Invention)

International (IPC 1-7): E21B43/24

CPC: E21B43/243

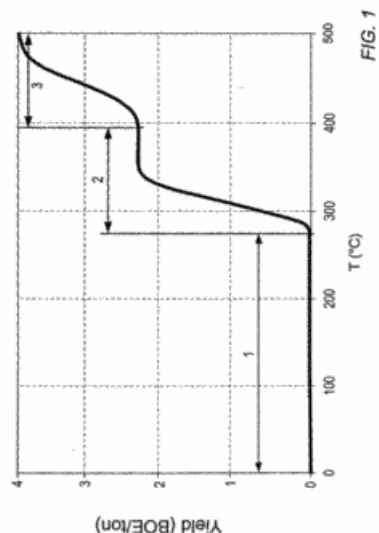
European: E21B43/243

US: 166/245 166/250.01 166/263 166/266 166/267 166/272.1

166/272.3 166/272.6 166/272.7 166/302 166/303 166/50

PatBase - US2003173081_AA

Patent Application Publication Sep. 18, 2003 Sheet 1 of 278 US 2003/0173081 A1



Family:

Publication number	Publication date	Application number	Application date
US2003173081 AA	20030918	US20020279230	20021024
US7077199 BB	20060718	US20020279230	20021024

Priority:

US20010338625P 20011024 US20010338695P 20011024 US20020374939P 20020424
US20020374998P 20020424 US20020279230 20021024

Probable Assignee: SHELL OIL CO

Assignee(s): (std): BERCHENKO ILYA EMIL ; DE ROUFFIGNAC ERIC P ; FOWLER THOMAS DAVID ; RYAN ROBERT CHARLES ; SHELL OIL CO ; VINEGAR HAROLD J ; WELLINGTON SCOTT LEE ; ZHANG ETUAN

Assignee(s): SHELL OIL COMPANY

Inventor(s): (std): BERCHENKO ILYA EMIL ; DE ROUFFIGNAC ERIC P ; FOWLER THOMAS DAVID ; RYAN ROBERT CHARLES ; VINEGAR HAROLD J ; WELLINGTON SCOTT LEE ; ZHANG ETUAN

Title: IN SITU THERMAL PROCESSING OF A HEAVY OIL DIATOMITE FORMATION

Abstract: An in situ process for treating a diatomite formation is provided. The process may include providing heat from one or more heaters to at least a portion of the formation. The heat may be allowed to transfer from the one or more heaters to a part of the formation such that heat from the one or more heat sources pyrolyzes at least some hydrocarbons within the part. Hydrocarbons may be produced from the formation.

Classifications:

International (IPC 8-9): E21B43/24 E21B43/243 E21B43/30

E21B47/00 (Advanced/Invention);

E21B43/00 E21B43/16 E21B47/00 (Core/Invention)

International (IPC 1-7): E21B43/24

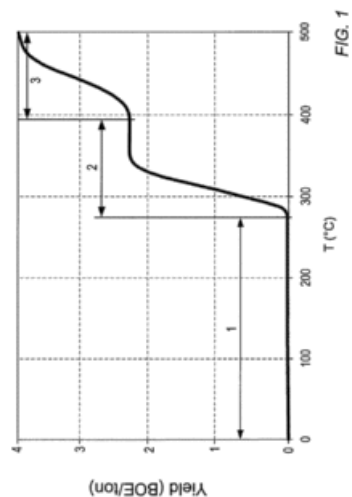
CPC: E21B43/243

European: E21B43/243

US: 166/245 166/250.01 166/272.1 166/272.2 166/302 166/308.1

PatBase - US2003173082_AA

Patent Application Publication Sep. 18, 2003 Sheet 1 of 276 US 2003/0173082 A1



Family:

Publication number	Publication date	Application number	Application date
US2003173082 AA	20030918	US20020279293	20021024
US7104319 BB	20060912	US20020279293	20021024

Priority:

US20010337476P 20011024 US20010338788P 20011024 US20020375011P 20020424
US20020374997P 20020424 US20020279293 20021024

Probable Assignee: SHELL OIL CO

Assignee(s): (std): BERCHENKO ILYA EMIL ; KARANIKAS JOHN MICHAEL ; MAHER KEVIN ALBERT ; ROUFFIGNAC ERIC PIERRE DE ; SHAHIN GORDON THOMAS ; SHELL OIL CO ; VINEGAR HAROLD J ; STEGEMEIER GEORGE LEO ; WELLINGTON SCOTT LEE

Assignee(s): SHELL OIL COMPANY

Inventor(s): (std): KARANIKAS JOHN MICHAEL ; MAHER KEVIN ALBERT ; ROUFFIGNAC ERIC PIERRE DE ; SHAHIN GORDON THOMAS ; SHAHIN JR GORDON THOMAS ; STEGEMEIER GEORGE LEO ; VINEGAR HAROLD J ; WELLINGTON SCOTT LEE ; BERCHENKO ILYA EMIL ; DE ROUFFIGNAC ERIC PIERRE

Inventor(s): JR GORDON THOMAS ; SHAHIN

Title: METHODS AND SYSTEMS FOR HEATING A HYDROCARBON CONTAINING FORMATION IN SITU WITH AN OPENING CONTACTING THE EARTH'S SURFACE AT TWO LOCATIONS

Abstract: In an embodiment, a method for heating a hydrocarbon containing formation may include providing heat from one or more heaters to an opening in the formation. A first end of the opening may contact the earth's surface at a first location and a second end of the opening may contact the earth's surface at a second location. The heat may be allowed to transfer from the opening to at least a part of the formation. The transferred heat may pyrolyze at least some hydrocarbons in the formation. In certain embodiments, providing the heat to the opening may include providing heat, heated materials, and/or oxidation products from at least one heater to the opening.

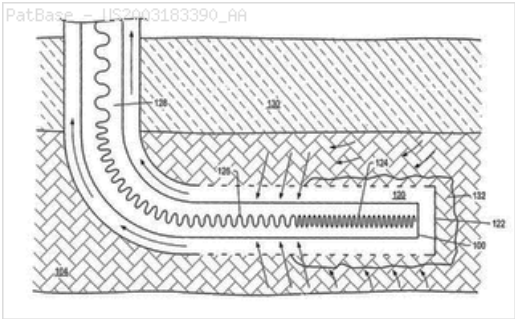
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International (IPC 1-7): E21B36/00

CPC: E21B43/2401 B09C1/02 B09C1/06 B09C2101/00 C10G9/24 C10G45/00 E21B17/028 E21B43/168 E21B43/24 E21B43/243 E21B43/305 E21B47/02208 G01V3/26 Y02P30/30 Y02P30/44 Y10S210/901 Y10T137/0391

US: 166/250.01 166/272.7 166/302 166/313 166/384 166/50 166/59 175/45 175/53 175/61 175/62 405/154.1 405/184 405/184.1



Family:

Publication number	Publication date	Application number	Application date
US2003183390 AA	20031002	US20020279292	20021024
US7063145 BB	20060620	US20020279292	20021024

Priority:

US20010334568P 20011024 US20010337136P 20011024 US20020374970P 20020424
US20020374995P 20020424 US20020279292 20021024

Probable Assignee: SHELL OIL CO

Assignee(s): (std): SHELL OIL CO

Assignee(s): VEENSTRA PETER ; VINEGAR HAROLD J ; WELLINGTON SCOTT LEE ; DE ROUFFIGNAC ERIC PIERREUS ; KARANIKAS JOHN MICHAEL

Inventor(s): (std): DE ROUFFIGNAC ERIC PIERRE ; DE ROUFFIGNAC ERIC PIERREUS ; KARANIKAS JOHN MICHAEL ; VEENSTRA PETER ; VINEGAR HAROLD J ; WELLINGTON SCOTT LEE

Title: IN SITU THERMAL PROCESSING OF A HYDROCARBON CONTAINING FORMATION TO PRODUCE HEATED FLUIDS

Abstract: A process for utilizing the heat from fluids produced from a hydrocarbon containing formation, which has been treated in situ. The in situ treatment process may include providing heat from one or more heaters to at least a portion of the formation. The heat may be allowed to transfer from one or more heaters to a part of the formation such that heat from the one or more heaters pyrolyzes at least some hydrocarbons within the part of the formation. Hydrocarbons may be produced from the formation. In an embodiment, heat from the produced fluids may be used for other processes. Examples of other processes may include, but are not limited to, hydrotreating, separations, **steam** cracking, olefin production, etc.

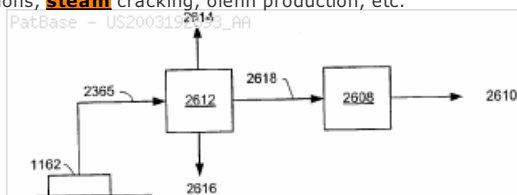
Classifications:

International (IPC 8-9): E21B43/24 E21B43/34 (Advanced/Invention); E21B43/34 (Core/Invention)

International (IPC 1-7): E21B43/34

CPC: E21B41/0064 Y02C10/14

US: 166/267 166/302 208/213 585/648 585/652



Family:

Publication number	Publication date	Application number	Application date
US2003192693 AA	20031016	US20020279290	20021024
US7090013 BB	20060815	US20020279290	20021024

Priority:

US20010334568P 20011024 US20010337136P 20011024 US20020374970P 20020424
US20020374995P 20020424 US20020279290 20021024

Probable Assignee: SHELL OIL CO

Assignee(s): (std): SHELL OIL CO

Assignee(s): SHELL OIL COMPANY ; WELLINGTON SCOTT LEE

Inventor(s): (std): WELLINGTON SCOTT LEE

Title: IN SITU RECOVERY FROM A HYDROCARBON CONTAINING FORMATION USING BARRIERS

Abstract: A method is described for inhibiting migration of fluids into and/or out of a treatment area undergoing an in situ conversion process. Barriers in the formation proximate a treatment area may be used to inhibit migration of fluids. Inhibition of migration of fluids may occur before, during, and/or after an in situ treatment process. For example, migration of fluids may be inhibited while heat is provided from heaters to at least a portion of the treatment area. Barriers may include naturally occurring portions (e.g., overburden, and/or underburden) and/or installed portions.

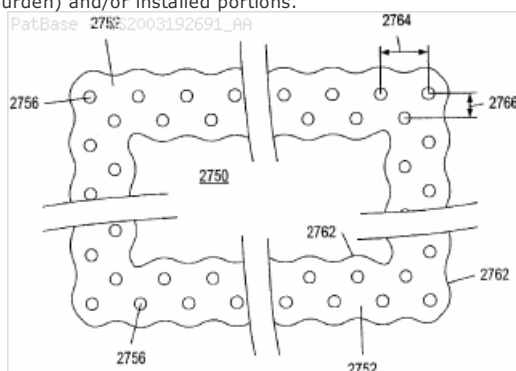
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International (IPC 1-7): E21B47/10

CPC: E21B43/2401 B09C1/02 B09C1/06 B09C2101/00 C10G9/24 C10G45/00 E21B17/028 E21B43/168 E21B43/24 E21B43/243 E21B43/305 E21B47/02208 G01V3/26 Y02P30/30 Y02P30/44 Y10S210/901 Y10T137/0391

US: 166/245 166/250.01 166/250.12 166/254.1 166/272.1 166/302 166/52 299/6 405/130 405/131 405/270 405/52



Family:

Publication number	Publication date	Application number	Application date
US2003192691 AA	20031016	US20020279291	20021024
US7077198 BB	20060718	US20020279291	20021024

Priority:

US20010334568P 20011024 US20010337136P 20011024 US20020374970P 20020424
US20020374995P 20020424 US20020279291 20021024

Probable Assignee: SHELL OIL CO

Assignee(s): (std): SHELL OIL CO

Assignee(s): WELLINGTON SCOTT LEE ; AYMOND DANNIE ANTOINE ; MAHER KEVIN ALBERT ; MCKINZIE BILLY J ; VINEGAR HAROLD J ; PALFREYMAN BRUCE DONALD ; WATKINS RONNIE WADE ; STEGEMEIER GEORGE LEO ; WARD JOHN MICHAEL

Inventor(s): (std): WELLINGTON SCOTT LEE ; WATKINS RONNIE WADE ; WARD JOHN MICHAEL ; VINEGAR HAROLD J ; STEGEMEIER GEORGE LEO ; PALFREYMAN BRUCE DONALD ; MCKINZIE II BILLY JOHN ; MCKINZIE BILLY J ; MAHER KEVIN ALBERT ; AYMOND JR DANNIE ANTOINE ; AYMOND DANNIE ANTOINE

Title: IN SITU THERMAL PROCESSING OF A HYDROCARBON CONTAINING FORMATION VIA BACKPRODUCING THROUGH A HEATER WELL

Abstract: A process for producing hydrocarbons through a heater wellbore positioned in a hydrocarbon containing formation. The in situ treatment process may include providing heat from one or more heaters to at least a portion of the formation. The heat may be allowed, in some embodiments, to transfer from one or more heaters to a selected section of the formation. Heat that is allowed to transfer to the selected section may pyrolyze at least some of the hydrocarbons within the selected section. The process may include, in some embodiments, selectively limiting a temperature proximate a selected portion of a heater wellbore to inhibit **coke** formation at or near the selected portion. In some embodiments fluids may be produced at certain locations of a heater wellbore such that **coke** formation is inhibited.

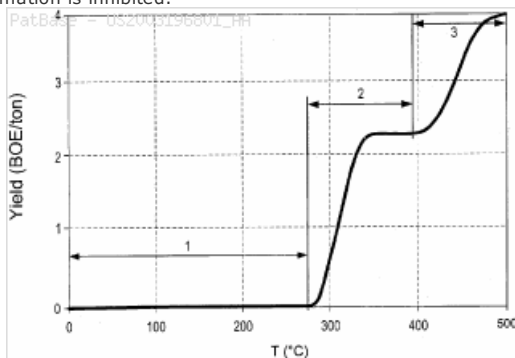
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International (IPC 1-7): E21B43/24 E21B43/30

CPC: E21B43/2401 B09C1/02 B09C1/06 B09C2101/00 C10G9/24 C10G45/00 E21B17/028 E21B43/168 E21B43/24 E21B43/243 E21B43/305 E21B47/02208 G01V3/26 Y02P30/30 Y02P30/44 Y10S210/901 Y10T137/0391

US: 166/245 166/263 166/272.1 166/272.7 166/302 166/303



Family:

Publication number	Publication date	Application number	Application date
US2003196801 AA	20031023	US20020279221	20021024
US6932155 BB	20050823	US20020279221	20021024

Priority:

US20010334568P 20011024 US20010337136P 20011024 US20020374970P 20020424
US20020374995P 20020424 US20020279221 20021024

Probable Assignee: SHELL OIL CO

Assignee(s): (std): SHELL OIL CO

Assignee(s): KARANIKAS JOHN MICHAEL ; ROUFFIGNAC ERIC PIERRE DE ; WELLINGTON SCOTT LEE ; VINEGAR HAROLD J

Inventor(s): (std): DE ROUFFIGNAC ERIC PIERRE ; KARANIKAS JOHN MICHAEL ; WELLINGTON SCOTT LEE ; VINEGAR HAROLD J ; ROUFFIGNAC ERIC PIERRE DE

Title: TREATMENT OF A HYDROCARBON CONTAINING FORMATION AFTER HEATING

Abstract: A method for treating a hydrocarbon containing formation is provided. In one embodiment, heat from one or more heaters may be provided to at least a portion of the formation. Heat may be allowed to transfer from the one or more heaters to at least a part of the formation. In certain embodiments, the heat from the one or more heaters may pyrolyze at least some hydrocarbons in the formation. In an embodiment, a first fluid may be introduced into at least a portion of the formation. The portion may have previously undergone an in situ conversion process. A mixture of the first fluid and a second fluid may be produced from the formation. Such mixture may, in some embodiments, be treated or **burned**.

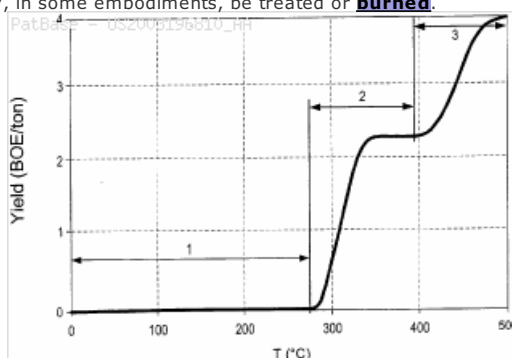
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International (IPC 1-7): E21B43/24

CPC: E21B43/2401 B09C1/02 B09C1/06 B09C2101/00 C10G9/24 C10G45/00 E21B17/028 E21B43/168 E21B43/24 E21B43/243 E21B43/305 E21B47/02208 G01V3/26 Y02P30/30 Y02P30/44 Y10S210/901 Y10T137/0391

US: 166/245 166/285 166/300 166/302 166/305.1 210/901 405/128.48 405/128.5

**Family:**

Publication number	Publication date	Application number	Application date
US2003196810 AA	20031023	US20020279294	20021024
US7128153 BB	20061031	US20020279294	20021024

Priority:

US20010334568P 20011024 US20010337136P 20011024 US20020374970P 20020424
 US20020374995P 20020424 US20020279294 20021024

Probable Assignee: SHELL OIL CO

Assignee(s): (std): SHELL OIL CO

Assignee(s): MADGAVKAR AJAY MADHAV ; MAHER KEVIN ALBERT ; MCKINZIE BILLY JOHN ; PALFREYMAN BRUCE DONALD ; ROUFFIGNAC ERIC PIERRE DE ; VINEGAR HAROLD J ; WELLINGTON SCOTT LEE ; STEGEMEIER GEORGE LEO ; RYAN ROBERT CHARLES ; WARD JOHN MICHAEL

Inventor(s): (std): DE ROUFFIGNAC ERIC PIERRE ; MADGAVKAR AJAY MADHAV ; MAHER KEVIN ALBERT ; MCKINZIE BILLY JOHN ; MCKINZIE II BILLY JOHN ; PALFREYMAN BRUCE DONALD ; ROUFFIGNAC ERIC PIERRE DE ; RYAN ROBERT CHARLES ; STEGEMEIER GEORGE LEO ; VINEGAR HAROLD J ; WARD JOHN MICHAEL ; WELLINGTON SCOTT LEE

Title: PRODUCING HYDROCARBONS AND NON-HYDROCARBON CONTAINING MATERIALS WHEN TREATING A HYDROCARBON CONTAINING FORMATION

Abstract: A method for treating a hydrocarbon containing formation is provided. In one embodiment, heat from one or more heaters may be provided to at least a portion of the formation. Heat may be allowed to transfer from the one or more heaters to at least a part of the formation. In certain embodiments, the heat from the one or more heaters may pyrolyze at least some hydrocarbons within the formation. In an embodiment, a first fluid may be introduced into at least a portion of the formation. The portion may have previously undergone an in situ conversion process. A mixture of the first fluid and a second fluid (or a second compound) may be produced from the formation. In some embodiments, a first fluid may be provided to the formation prior to pyrolyzing hydrocarbons in the formation, and a second fluid (or a second compound) may be produced prior to pyrolyzing hydrocarbons in the formation. In some embodiments the second fluid or second compound include minerals, metals, salts, or other compounds that may be recovered.

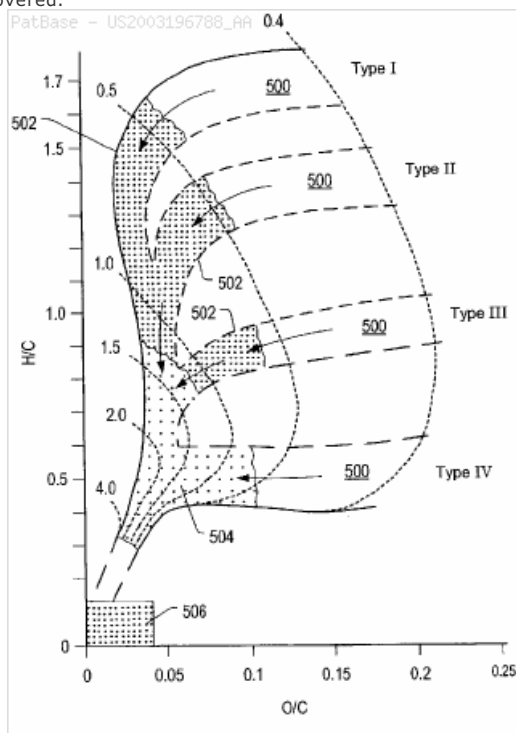
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International (IPC 1-7): E21B36/00

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US: 166/245 166/267 166/272.1 166/272.3 166/302 166/303 166/308 166/57 299/14 299/3 299/5 299/7 423/131 423/208 423/658.5



Family:

Publication number	Publication date	Application number	Application date
US2003196788 AA	20031023	US20020279229	20021024
US7100994 BB	20060905	US20020279229	20021024

Priority:

US20010334568P 20011024 US20010337136P 20011024 US20020374970P 20020424
US20020374995P 20020424 US20020279229 20021024

Probable Assignee: SHELL OIL CO

Assignee(s): (std): SHELL OIL CO

Assignee(s): WELLINGTON SCOTT LEE ; VINEGAR HAROLD J ; MAHER KEVIN ALBERT ; ROUFFIGNAC ERIC PIERRE DE ; SCHOELING LANNY GENE

Inventor(s): (std): DE ROUFFIGNAC ERIC PIERRE ; MAHER KEVIN ALBERT ; ROUFFIGNAC ERIC PIERRE DE ; SCHOELING LANNY GENE ; VINEGAR HAROLD J ; WELLINGTON SCOTT LEE

Title: IN SITU THERMAL PROCESSING OF A HYDROCARBON CONTAINING FORMATION AND UPGRADING OF PRODUCED FLUIDS PRIOR TO FURTHER TREATMENT

Abstract: An in situ treatment process may include providing heat from one or more heaters to at least a portion of the formation. The heat may be allowed to transfer from the one or more heaters to a part of the formation. A fluid may be produced from at least part of the formation. Heat and/or other products in or from fluids produced from the formation may be used for hydrotreating.

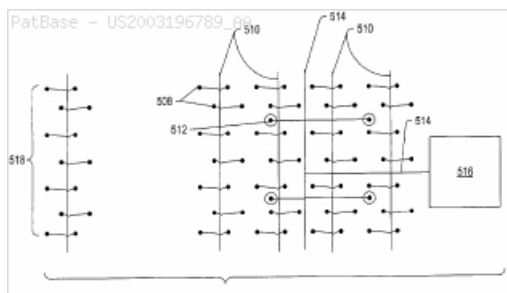
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International (IPC 1-7): E21B43/24

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US: 166/64



Family:

Publication number	Publication date	Application number	Application date
US2003196789 AA	20031023	US20020279226	20021024

Priority:

US20010334568P 20011024	US20010337136P 20011024	US20020374970P 20020424
US20020374995P 20020424	US20020279226 20021024	

Probable Assignee: SHELL OIL CO

Assignee(s): MADGAVKAR AJAY MADHAV ; RYAN ROBERT CHARLES ; SHELL OIL CO ; WELLINGTON SCOTT LEE

Inventor(s): (std): MADGAVKAR AJAY MADHAV ; RYAN ROBERT CHARLES ; WELLINGTON SCOTT LEE

Title: IN SITU RECOVERY FROM A HYDROCARBON CONTAINING FORMATION USING ONE OR MORE SIMULATIONS

Abstract: Systems and methods of using a computer system to simulate a process for in situ treatment of a hydrocarbon containing formation are provided. The in situ process may include providing heat from one or more heat sources to at least one portion of the formation. The in situ process may, in some embodiments, include allowing the heat to transfer from the one or more heat sources to a selected section of the formation. In some embodiments, the method may include operating the in situ process using one or more operating parameters. At least one operating parameter of the in situ process may be provided to the computer system. In certain embodiments, at least one parameter may be used with a simulation method and the computer system to provide assessed information about the in situ process.

Classifications:

International (IPC 8-9): B09C1/02 B09C1/06 C10G45/00 C10G9/24

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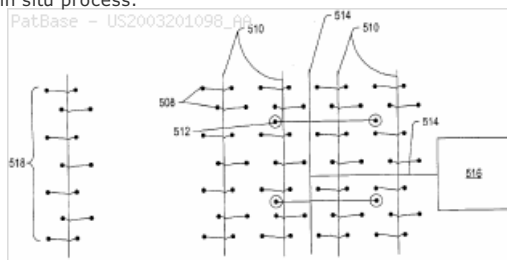
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Y10S210/901 Y10T137/0391

US: 166/53 702/12



Family:

Publication number	Publication date	Application number	Application date
US2003201098 AA	20031030	US20020279224	20021024

Priority:

US20010334568P 20011024 US20010337136P 20011024 US20020374970P 20020424
US20020374995P 20020424 US20020279224 20021024

Probable Assignee: SHELL OIL CO

Assignee(s): BERCHENKO ILYA EMIL ; GINESTRA JEAN CHARLES ; HANSEN KIRK SAMUEL ; KARANIKAS JOHN MICHAEL ; ROUFFIGNAC ERIC PIERRE DE ; VINEGAR HAROLD J ; SHAHIN GORDON THOMAS ; SCHOELING LANNY GENE ; SUMNU DINDORUK MELIHA DENIZ ; SHELL OIL CO

Inventor(s): (std): BERCHENKO ILYA EMIL ; GINESTRA JEAN CHARLES ; HANSEN KIRK SAMUEL ; KARANIKAS JOHN MICHAEL ; ROUFFIGNAC ERIC PIERRE DE ; SCHOELING LANNY GENE ; SHAHIN GORDON THOMAS ; SUMNU DINDORUK MELIHA DENIZ ; VINEGAR HAROLD J

Title: IN SITU RECOVERY FROM LEAN AND RICH ZONES IN A HYDROCARBON CONTAINING FORMATION

Abstract: A method for treating lean and rich zones of a hydrocarbon containing formation is provided. In one embodiment, heat from one or more heaters may be provided to at least a portion of the formation. Heat may be allowed to transfer from the one or more heaters to a first part of the formation. In certain embodiments, the heat from the one or more heaters may pyrolyze at least some hydrocarbons within the first part of the formation. The method may include producing a mixture through a second part of the formation. In some embodiments, the produced mixture may include at least some pyrolyzed hydrocarbons from the first part of the formation. In an embodiment, the second part of the formation may have a higher permeability than the first part of the formation.

Classifications:

International (IPC 8-9): B09C1/02 B09C1/06 C10G45/00 C10G9/24

E21B17/02 E21B36/00 E21B43/16 E21B43/24 E21B43/243

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G01V3/26 (Advanced/Invention)

International (IPC 1-7): E21B43/24

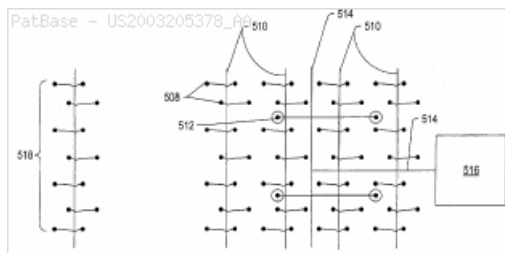
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C10G45/00 E21B17/028 E21B43/168 E21B43/24 E21B43/243

E21B43/305 E21B47/02208 G01V3/26 Y02P30/30 Y02P30/44

Y10S210/901 Y10T137/0391

US: 166/271 166/272.1 166/272.2 166/302 166/308 166/60



Family:

Publication number	Publication date	Application number	Application date
US2003205378 AA	20031106	US20020279222	20021024
US7066257 BB	20060627	US20020279222	20021024

Priority:

US20010334568P 20011024 US20010337136P 20011024 US20020374970P 20020424
US20020374995P 20020424 US20020279222 20021024

Probable Assignee: SHELL OIL CO

Assignee(s): (std): SHELL OIL CO

Assignee(s): VINEGAR HAROLD J ; WELLINGTON SCOTT LEE ; ROUFFIGNAC ERIC PIERRE DE

Inventor(s): (std): DE ROUFFIGNAC ERIC PIERRE ; ROUFFIGNAC ERIC PIERRE DE ; VINEGAR HAROLD J ; WELLINGTON SCOTT LEE

Title: IN SITU RECOVERY FROM A HYDROCARBON CONTAINING FORMATION USING CONDUCTOR-IN-CONDUIT HEAT SOURCES WITH AN ELECTRICALLY CONDUCTIVE MATERIAL IN THE OVERBURDEN

Abstract: In an embodiment, a system may be used to heat a hydrocarbon containing formation. The system may include a conduit placed within an opening in the formation. A conductor may be placed within the conduit. The conductor may provide heat to a portion of the formation. In some embodiments, an electrically conductive material may be coupled to a portion of the conductor in the overburden. The electrically conductive material may lower the electrical resistance of the portion of the conductor in the overburden. Lowering the electrical resistance of the portion of the conductor in the overburden may reduce the heat output of the portion in the overburden. The system may allow heat to transfer from the conductor to a section of the formation.

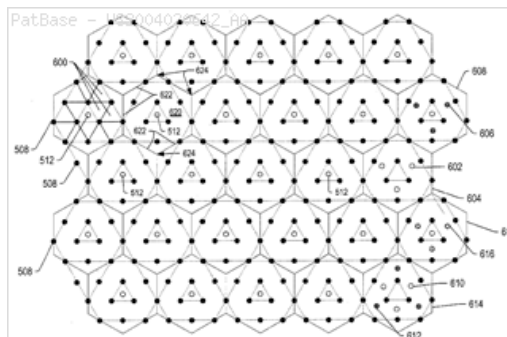
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International (IPC 1-7): E21B43/30

CPC: B09C1/02 B09C1/06 B09C2101/00 E21B17/028 E21B47/02208 G01V3/26

US: 166/245 166/302 392/301



Family:

Publication number	Publication date	Application number	Application date
US2004020642 AA	20040205	US20020279288	20021024
US7165615 BB	20070123	US20020279288	20021024

Priority:

US20010334568P 20011024	US20010337136P 20011024	US20020374970P 20020424
US20020374995P 20020424	US20020279288 20021024	US20020279228 20021024

Probable Assignee: SHELL OIL CO

Assignee(s): (std): SHELL OIL CO

Assignee(s): VINEGAR HAROLD J ; SHELL OIL COMPANY ; BASS RONALD MARSHALL

Inventor(s): (std): BASS RONALD MARSHALL ; VINEGAR HAROLD J

Title: IN SITU PRODUCTION OF A BLENDING AGENT FROM A HYDROCARBON CONTAINING FORMATION

Abstract: An in situ process for treating a hydrocarbon containing formation is provided. The process may include providing heat from one or more heaters to at least a portion of the formation. The heat may be allowed to transfer from the reaction zone to a part of the formation such that heat from one or more heaters pyrolyzes at least some hydrocarbons within the part of the formation. A blending agent may be produced from the part of the formation, wherein a mixture produced with the blending agent has at least one selected property.

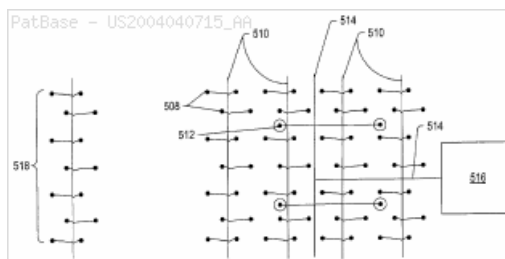
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International (IPC 1-7): E21B43/24

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US: 137/13 166/272.1 166/279 166/302 166/303 166/310 166/75.12 208/370



Family:

Publication number	Publication date	Application number	Application date
US2004040715 AA	20040304	US20020279227	20021024
US7086465 BB	20060808	US20020279227	20021024

Priority:

US20010334568P 20011024 US20010337136P 20011024 US20020374970P 20020424
US20020374995P 20020424 US20020279227 20021024

Probable Assignee: SHELL OIL CO

Assignee(s): (std): SHELL OIL CO

Assignee(s): KARANIKAS JOHN MICHAEL ; MAHER KEVIN ALBERT ; WELLINGTON SCOTT LEE ; SUMNU DINDORUK MELIHA DENIZ ; VINEGAR HAROLD J

Inventor(s): (std): WELLINGTON SCOTT LEE ; VINEGAR HAROLD J ; SUMNU DINDORUK MELIHA DENIZ ; MAHER KEVIN ALBERT ; KARANIKAS JOHN MICHAEL

Title: METHOD AND APPARATUS FOR PRODUCING **SYNTHESIS GAS** FROM BIOMASS

Abstract: The invention relates to a method and apparatus for producing **synthesis gas** (7) from biomass (2). The method comprises a step for producing raw product **gas** (3), and a **purifying** step comprising several processing steps performed in **gas** processing means (10, 12, 13, 14) for converting the raw product **gas** (3) to **synthesis gas** (7). One processing step is a **carbon dioxide** removal step for separating **carbon dioxide** from the stream of raw product **gas** (3) in a **gas** processing means comprising a **gas purifier** (10). The method comprises a step for feeding a stream of the **carbon dioxide** (9) from the **gas purifier** (10) to at least one part of the apparatus, said at least one part of the apparatus being selected from: the biomass supply system (4), the **gasifier** (6) and at least one of the **gas** processing means (10, 12, 13, 14).

Classifications:

International (IPC 8-9): B01J19/00 B01J8/00 B01J8/18 B09B3/00 C01B13/02 C01B3/02 C01B3/22 C01B3/24 C01B3/32 C01B3/34 C01B3/36 C01B3/38 C01B3/48 C01B3/50 C01B3/52 C01B3/56 C01B3/58 C01B31/20 C01B32/50 C01F11/18 C02F1/00 C02F1/42 C02F1/72 C02F101/34 C02F103/02 C02F103/16 C02F103/28 C02F103/36 C02F11/02 C02F11/06 C02F11/10 C02F3/00 C02F9/00 C07C1/04 C07C1/20 C07C27/00 C07C7/04 C09C1/02 C10B3/02 C10B53/02 C10G1/00 C10G2/00 C10G2/20 C10G3/00 C10G45/00 C10G45/58 C10G65/14 C10G65/16 C10G7/00 C10J3/00 C10J3/20 C10J3/46 C10J3/48 C10J3/50 C10J3/52 C10J3/56 C10J3/72 C10J3/84 C10K1/00 C10K1/10 C10K1/14 C10K3/02 C10K3/04 C10L1/04 C10L1/16 D21C11/00 D21C11/06 D21H17/63 D21H17/67 D21H19/38 (Advanced/Invention); C01F11/18 C02F101/34 C02F103/02 C02F103/16 C02F103/28 C02F103/36 C10G2/00 C10J3/00 C10J3/84 D21H17/63 (Advanced/Non-invention); C01B3/00 C01F11/00 C02F11/10 C02F9/00 C07C1/00 C09C1/02 C10B3/00 C10B53/00 C10G1/00 C10G2/00 C10G3/00 C10G45/00 C10G45/58 C10G65/00 C10G7/00 C10J3/00 C10J3/46 C10J3/48 C10L1/00 D21H17/00 (Core/Invention); C10J3/00 (Core/Non-invention); C01F C09C C10B C10G C10J (Subclass/Invention)

International (IPC 1-7): C01F11/18 C10J3/50

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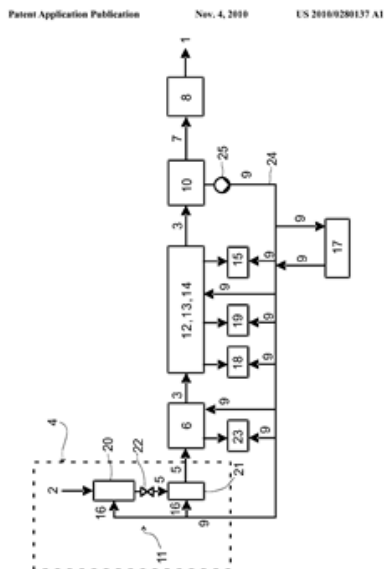
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US: 1/1 162/181.2 162/181.200P 210/195.1 210/259 210/260 210/600 210/600S 210/601 210/601S 210/634 210/660 210/660S 210/758 210/767 210/919 210/928 422/129 422/129S 422/140 422/140S 422/162 422/185 422/198 422/198S 422/608 422/608S 422/609 422/609S 422/610 422/610S 422/611 422/611S 422/612 422/612S 422/643 422/643S 423/437.1 423/437.100S 423/648.1 423/648.100S 518/700 518/700P 518/702 518/702P 518/712 518/712P 585/14 585/14P 585/240 585/240S 585/254 585/254P 585/310 585/800 585/800S

Family:

Publication number	Publication date	Application number	Application date
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PatBase - US2010280137_AA



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US2016083252 AA	20160324	US20150963991	20151209
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US9434615 BB	20160906	US20080669769	20080718
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WO09013232 A3	20100304	WO2008EP59440	20080718
WO09013233 A2	20090129	WO2008EP59441	20080718
WO09013233 A3	20090917	WO2008EP59441	20080718
WO09013392 A2	20090129	WO2008FI50438	20080718
WO09013392 A3	20091119	WO2008FI50438	20080718
WO09059819 A1	20090514	WO2008EP59439	20080718
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WO09059920 A3	20091105	WO2008EP64675	20081029
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WO09059936 A3	20090924	WO2008EP64823	20081031
ZA201001128 A	20101027	ZA20100001128	20100216

Priority:

FI20070005557	20070720	FI20070005794	20071109	FI20080005400	20080430
FI20080005697	20080704	EP20080775215	20080718	EP20080775217	20080718
WO2008EP59441	20080718	WO2008EP59440	20080718	WO2008EP59439	20080718
WO2008FI50438	20080718	EP20080847584	20081029	WO2008EP64675	20081029
WO2008EP64823	20081031	US20100742213	20100823	US20150963991	20151209

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Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: In situ recovery from a oil shale formation

Abstract: IN SITU RECOVERY FROM A OIL SHALE FORMATION Abstract An oil shale formation may be treated using an in situ thermal process. Heat may be provided to a formation from a heat source in the formation. Hydrocarbons within the formation may be pyrolyzed. Hydrocarbons, H₂, and/or other formation fluids may be produced from the formation. In some embodiments, the formation may include a relatively impermeable portion and/or a relatively permeable portion.

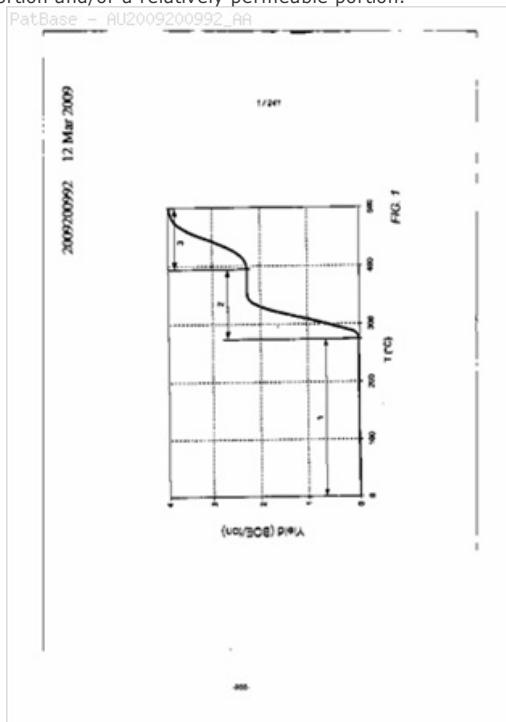
Classifications:

International (IPC 8-9): E21B43/243 E21B43/247 E21B43/30
E21C41/24 G02B5/18 G02B5/32 G02B6/124 G02B6/136

G02B6/293 (Advanced/Invention);
G02B6/12 (Advanced/Non-invention)

CPC: E21B43/24 E21B43/2401 E21B43/243 E21B43/247 E21B43/30

European: E21B43/243 E21B43/247 E21B43/30



Family:

Publication number	Publication date	Application number	Application date
AU2009200992 AA	20090402	AU20090200992	20090312

Priority:

US20010286062P 20010424 US20010337249P 20011024 AU20020257221 20020424
WO2002US13311 20020424 AU20090200992 20090312

Probable Assignee: SHELL INT RESEARCH

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Assignee(s): SHELL INT RESEARCH MIJ BV ; SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B V

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Agent(s): SPRUSON AND FERGUSON

Title: PROCESS FOR UPGRADING A CARBONACEOUS MATERIAL USING MICROCHANNEL PROCESS TECHNOLOGY

Abstract: This invention relates to a process for converting a carbonaceous material to a desired product comprising one or more hydrocarbons or one or more alcohols, the process comprising: (A) gasifying the carbonaceous material at a temperature in excess of about 700 degrees centigrade to form synthesis gas; and (B) flowing the synthesis gas in a microchannel reactor in contact with a catalyst to convert the synthesis gas to the desired product.

Classifications:

International (IPC 8-9): B01J12/00 B01J19/00 B01J23/42 B01J23/75 B01J23/889 B01J23/96 B01J35/02 B01J37/02 B01J38/10 B01J38/12 B09B3/00 B81B1/00 C01B3/34 C01B39/36 C07C1/04 C07C11/00 C07C13/00 C07C13/02 C07C15/02 C07C19/04 C07C27/00 C07C29/152 C07C31/04 C07C31/08 C07C31/10 C07C31/12 C07C31/125 C07C9/00 C10G2/00 C10G45/02 C10G47/00 C10G47/02 C10G47/14 C10J3/00 C10J3/46 C10K3/02 (Advanced/Invention); B01J21/12 C07B61/00 (Advanced/Non-invention); B01J12/00 B01J19/00 C01B39/00 C07C13/00 C07C19/00 C07C27/00 C07C29/00 C10G2/00 C10J3/00 C10J3/46 (Core/Invention); B01J C10G (Subclass/Invention)

International (IPC 1-7): B01J19/00 C07C1/04 C07C29/152 C10G2/00 C10J3/00

CPC: B01J2219/00846 B01J2219/0086 B01J2219/00918 B01J2219/00921 C01B3/34 C01B3/56 C01B13/0259 C01B13/0277 C01B2203/0233 C01B2203/0238 C01B2203/043 C01B2203/0465 C01B2203/047 C01B2203/0475 C01B2203/048 C01B2203/0485 C01B2203/06 C01B2203/061 C01B2203/062 C01B2203/0827 C01B2203/1241 C01B2203/148 C01B2203/84 C01B2210/0046 C01B2210/0064 C07C29/152 C10G2/341 C10J3/00 C10J2300/1659 C10J2300/1662 C10J2300/1665 C10K3/02 Y02E50/18 Y02E50/32 Y02E50/346 Y02T50/678 C01B2203/0495 C10J3/57 C10J2300/0916 C10J2300/092 C10G47/02 Y02P20/145 C10G47/14 C10G2/32 B01J19/0093 B01J21/12 B01J23/42 B01J23/75 B01J23/96 B01J35/023 B01J2219/00783 B01J2219/00788 B01J2219/00835 B01J2219/00873 B01J2219/00889 B01J2219/00891 B01J2219/00984 C10G45/02 C10G47/00 C10G2300/202 C10G2300/4018 Y02P20/582

European: B01J19/00R B01J23/42 B01J23/75 B01J23/96 B01J35/02B C01B13/02D4D C01B13/02D4D8 C01B3/34 C01B3/56 C07C29/152 C10G2/32 C10G2/341 C10G45/02 C10G47/00 C10G47/02 C10J3/00 C10J3/57 L01J21/12 L01J219/00R10F2 L01J219/00R12 L01J219/00R14 L01J219/00R16 L01J219/00R18J L01J219/00R18L L01J219/00R2 L01J219/00R22D L01J219/00R4 L01J219/00R8R L01J219/00R8U M01B203/02B4B

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US: 208/108 208/111.35 208/113 208/209 208/58 208/60 252/373 422/236 422/236S 423/650 423/651 48/127.7 48/127.700P 48/197.00A 48/197.00R 48/197.00RS 48/197A 48/197R 48/201 48/209 48/209S 48/210 518/700 518/700S 585/23 585/23P

Family:

Publication number	Publication date	Application number	Application date
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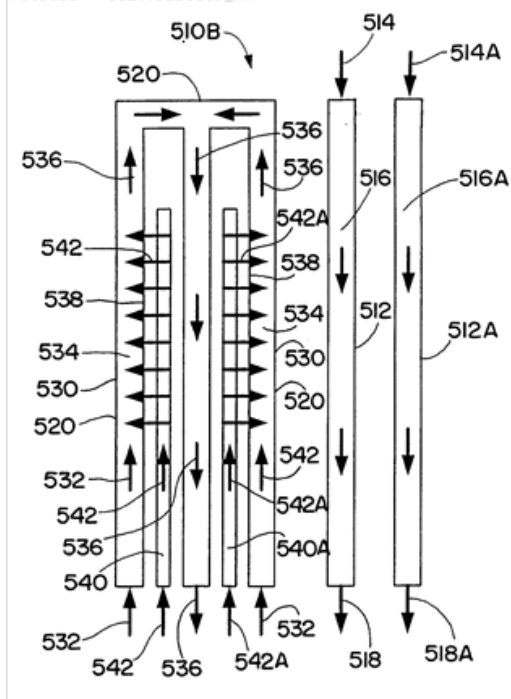
Priority:

US20080043465P 20080409

US20080043465 20080409

US20080104432P 20081010

PatBase - US2009293359_AA



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JP20140242710	20141201	US20160041119	20160211	JP20160196076	20161004

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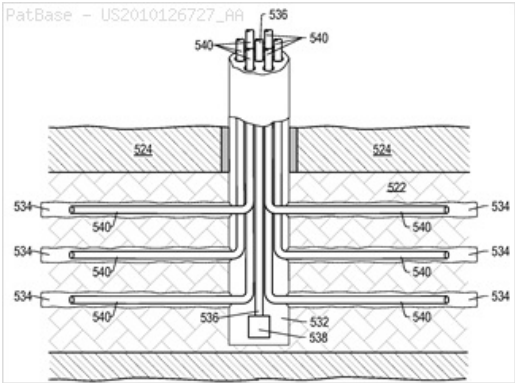
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Title: IN SITU RECOVERY FROM A HYDROCARBON CONTAINING FORMATION

Abstract: An in situ process for treating a hydrocarbon containing formation is provided. The process may include providing heat from one or more heaters to at least a portion of the formation. The heat may be allowed to transfer from the one or more heaters to a part of the formation such that heat from the one or more heat sources pyrolyzes at least some hydrocarbons within the part. Hydrocarbons may be produced from the formation.

Classifications:

International (IPC 8-9): B09C1/02 B09C1/06 C10G45/00 C10G9/24
E21B17/02 E21B36/00 E21B43/02 E21B43/16 E21B43/24
E21B43/243 E21B43/30 E21B44/00 E21B47/022
G01V3/26 (Advanced/Invention)
US: 166/272.1 166/302



Family:

Publication number	Publication date	Application number	Application date
US2010126727 AA	20100527	US20080329942	20081208
US8627887 BB	20140114	US20080329942	20081208

Priority:

US20010334568P 20011024	US20010337136P 20011024	US20020374970P 20020424
US20020374995P 20020424	US20020279288 20021024	US20070657442 20070123
US20080329942 20081208		

Probable Assignee: SHELL OIL CO

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Agent(s): SHELL OIL COMPANY; SHELL OIL CO