

Search history

Search 1: FT=(PIPELINE~ AND INSPECTION~ AND TOOL~) (Results 8112)

Search 2: B08b (Results 230)

Search 3: 1 and 2 (Results 3)

Search 4: FT=(PIPELINE~ AND INSPECTION~ AND TOOL~ AND DETECTION) (Results 4470)

Search 5: FT=(PIPELINE~ AND INSPECTION~ AND TOOL~ AND DETECTION~ AND PROBE) (Results 1791)

Search 6: FT=(PIPELINE~ AND INSPECTION~ AND TOOL~ AND DETECTION~ AND PROBE~ AND PETROLEUM) (Results 331)

Search 7: FT=(PIPELINE~ AND INSPECTION~ AND TOOL~ AND DETECTION~ AND PROBE~ AND PETROLEUM~ AND diagnostic) (Results 126)

Search 8: FT=(PIPELINE~ AND INSPECTION~ AND TOOL~ AND DETECTION~ AND PROBE~ AND PETROLEUM~ AND diagnostic~ AND DISK) (Results 125)

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Search 10: FT=(PIPELINE~ AND INSPECTION~ AND TOOL~ AND DETECTION~ AND PROBE~ AND PETROLEUM~ AND diagnostic~ AND DISK) AND WELLS (Results 50)

Title: In situ recovery from a oil shale formation

Abstract: (Claim 1) 1. A method of treating an oil shale formation in situ, comprising: O providing heat from one or more heat sources to at least one portion of the z formation; wherein providing heat from the one or more heat sources to at least the portion of formation comprises: I allowing the heat to transfer from the one or more heat sources to a selected section of the formation; I controlling the heat from the one or more heat sources such that an average temperature within at least a majority of the selected section of the formation is less than I about 375 C; controlling a pressure and a temperature within at least a majority of the selected section of the formation, wherein the pressure is controlled as a function of temperature, or the temperature is controlled as a function of pressure; heating a selected volume of the oil shale formation from the one or more heat sources, wherein the formation has an average heat capacity and wherein the heating pyrolyzes at least some hydrocarbons within the selected volume of the formation; and wherein heating energy/day provided to the volume is equal to or less than Pwr, wherein Pwr is calculated by the equation: $Pwr = h \cdot VssC$ wherein Pwr is the heating energy/day, h is an average heating rate of the formation, PB is formation bulk density, and wherein the heating rate is less than about 1 C/day; and producing a mixture from the formation which mixture comprises condensable hydrocarbons, wherein about 5 percent by weight to about 3 percent by weight of the condensable hydrocarbons comprise oxygen containing compounds, and wherein the oxygen containing compounds comprise phenols.

Classifications:

International (IPC 8-9): E21B43/243 E21B43/247 E21B43/30 E21C41/24 (Advanced/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
AU2002257221 AA	20021105	AU20020257221	20020424
AU2002257221 BB	20081218	AU20020257221	20020424

Priority:

US20010286062P 20010424 US20010337249P 20011024 WO2002US13311 20020424

Probable Assignee: SHELL INT RESEARCH

Assignee(s): (std): SHELL INT RESEARCH

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

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

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

Agent(s): SPRUSON AND FERGUSON

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AU2002257221 AA	20021105	LSPB	+	published / reissued	
AU2002257221 BB	20081218	LSGT	+	granted / extensions (spc, cpc, pte)	
AU2002257221 BB	20090423	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	
AU2002257221 BB	20161117	LSLE	-MK14	PATENT CEASED SECTION 143(A) (ANNUAL FEES NOT PAID) OR EXPIRED	
AU2002257221 BB	20220424	PEXP		Calculated Patent Term Expiry	

Title: DISTILLATION REACTOR MODULE

Abstract: The distillation reactor consists of a reactor apparatus with corresponding method of upstream distilling and purification of carbon based liquid or liquidized streams for use as fuels, lubricating oils and or gaseous energy and electricity production. The distillation reactor consolidates the atmospheric and vacuum distillation processes along with desalting, defueling, deasphalting, fractionation, thin/wiped film evaporation and Hydro finishing into an advanced high velocity, high volume single reactor system. Carbon based feed streams include either a single stream or preferably, a combined stream of liquefied coal slurries, crude oils, spent oils, Pyrolytic oils and or peat or other plant carbon derived liquids, vapors, mists or gases. The method further consists of controlling the mix ratio, flow velocity, sequential fractionation and filtration technology and processing atmospheres of the carbon feeds with the reactor apparatus. The combined apparatus and method allows for a refinery to consistently produce a finished barrel of oil well below traditional costs and at a higher efficiency than current art and prior art.

Classifications:

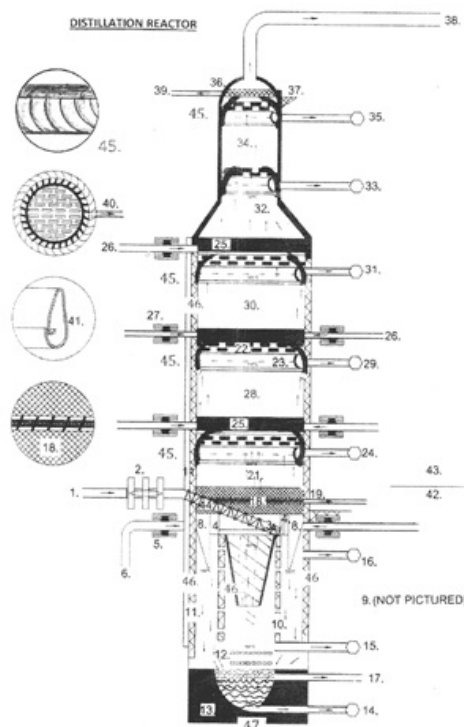
International (IPC 8-9): B01D3/00 B01D3/06 B01D3/10 B01D3/26 B01D3/32 B01D39/20 B01D53/48 B01D53/62 B01D59/04 B01J B01J19/24 B01J19/26 B01J2/00 B01J6/00 B01J8/24 B02C23/00 B03C1/00 B22F3/10 B22F9/00 B29B17/00 C01B17/027 C01B17/74 C02F1/00 C10B49/12 C10G1/00 C10G11/18 C10G33/00 C10G45/00 C10G57/00 C10G7/00 C10G7/06 C10G9/04 C10J3/72 C10L9/10 C22B13/00 C22B15/00 C22B21/00 C22B7/00 C22B9/00 F03G7/00 F27B17/00 G21C1/02 G21D5/00 H01M10/54 H01M8/00 H02K55/02

H02K7/09 (Advanced/Invention)

CPC: Y02E30/40 G21D1/00 B01J19/0093 B01J2219/00864 B01J2219/00867 B01J2219/00871 C01G21/02 C01B3/32 C01B13/02 C01B17/02 C01B2203/0205 C01B2203/0283 C01B2203/043 C01B2203/0445 C01B2203/0475 C10G1/02 C10G1/10 C10G31/08 C10G75/04 Y02P20/129 B09B5/00 Y02P30/446 Y02E30/30 B01D3/10 B01D3/006 B01D3/06 B01D39/2027 F03G7/00 B01D3/009 C10G7/06 G21C1/00 G21D5/00 C10G7/00 C10G57/00 C10G7/003 C10L9/10 C10J3/72 C10G1/00 C01B17/027 C01B17/74 B01J6/008 B01J2/00 B01J19/24 B01D53/48 B01D53/62 C22B9/00 F27B17/00 C02F1/00 C22B7/00 B29B17/00 B22F3/10 B22F9/00 C22B21/00 C22B15/00 C22B13/00 H01M8/00 H01M10/54 H02K55/02 H02K7/09 B02C23/00 B03C1/00 C10L2290/544 C10J2300/093 C10J2300/0946 B22F2009/001 C01B17/48 C10G11/18 C10G33/00 C10G45/00 Y02E20/16 Y02E20/18 Y02W10/33 Y02W10/37 Y02W30/84 C01B32/05 C01B32/20 C01B32/50 Y02P10/143

US: 196/46 202/232 209/213 210/251 241/301 241/65 266/160 310/90.5 422/129 422/170 422/187 422/198 422/255 423/522 423/567.1 429/49 505/163 505/166 60/698

PatBase - US2016030856_AA

**Family:**

Publication number	Publication date	Application number	Application date
CA2907677 AA	20150921	CA20142907677	20140318
EP2969180 A2	20160120	EP20140762668	20140318
EP2969180 A4	20161005	EP20140762668	20140318
IL242590 A0	20160131	IL20140242590	20140318
JP2016512165 T2	20160425	JP20160502609T	20140318
US2016030856 AA	20160204	US20140776734	20140318
US2016032904 AA	20160204	US20140776736	20140318
US2016045841 AA	20160218	US20140776732	20140515
WO14146129 A2	20140918	WO2014US31118	20140318
WO14146129 A3	20150129	WO2014US31118	20140318
WO14153570 A2	20140925	WO2014US38290	20140515
WO14153570 A3	20150219	WO2014US38290	20140515
WO14153570 A9	20150806	WO2014US38290	20140515
WO14200605 A2	20141218	WO2014US31116	20140318
WO14200605 A3	20150326	WO2014US31116	20140318
WO14200605 A4	20150430	WO2014US31116	20140318
WO14200605 A9	20150205	WO2014US31116	20140318

Priority:

US20130800209P 20130315	US20130801170P 20130315	US20130801491P 20130315
US20140776734 20140318	US20140776736 20140318	WO2014US31118 20140318
WO2014US31116 20140318	US20140776732 20140515	WO2014US38290 20140515

Probable Assignee: TRANSTAR GROUP LLC

Assignee(s): (std): BRADLEY RANDALL ; KALPAN ALLEN ; KAPLAN ALLEN ; TRANSTAR GROUP LTD

Assignee(s): TRANSTAR GROUP LLC

Inventor(s): (std): KAPLAN ALLEN ; BRADLEY RANDALL ; KALPAN ALLEN

Agent(s): ADE AND CO INC; NELLIGAN OBRIEN PAYNE LLP; PERRONACE ANDREA; HERSHKOVITZ ABRAHAM ET AL; HERSHKOTIZ ABRAHAM ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL 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 IR 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 PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
CA2907677 AA	20150921	LSPB	+	published / reissued	
CA2907677 AA	20190328	LSES	+EEER	EXAMINATION REQUEST	EFFECTIVE DATE : 20190318
EP2969180 A2	20160120	LSPB	+	published / reissued	
EP2969180 A2	20160120	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20151015
EP2969180 A2	20161005	LSES	+A4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED	EFFECTIVE DATE : 20160907
EP2969180 A2	20161005	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : B01D 39/20 20060101ALI20160901BHEP
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EP2969180 A2	20161005	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : C10G 7/06 20060101ALI20160901BHEP
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EP2969180 A2	20171011	LSDW	-18D	APPLICATION DEEMED TO BE WITHDRAWN	EFFECTIVE DATE : 20170404
JP2016512165 T2	20160425	LSPB	+	published / reissued	
JP2016512165 T2	20160126	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20151117
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JP2016512165 T2	20160216	LSAS	A711	NOTIFICATION OF CHANGE IN APPLICANT	TEXT : JAPANESE INTERMEDIATE CODE: A711 EFFECTIVE DATE : 20160216
JP2016512165 T2	20160303	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A821 EFFECTIVE DATE : 20160216
US2016030856 AA	20160204	LSPB	+	published / reissued	
US2016030856 AA	20150912	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : TRANSTAR GROUP, LTD., CHINA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:KAPLAN, ALLEN; REEL/FRAME:036548/0293 EFFECTIVE DATE : 20150911
US2016030856 AA	20150912	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : TRANSTAR GROUP, LTD., CHINA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BRADLEY, RANDALL; REEL/FRAME:036548/0290 EFFECTIVE DATE : 20150911
US2016030856 AA	20150915	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : TRANSTAR GROUP, LLC, CHINA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:KAPLAN, ALLEN; BRADLEY, RANDALL; SIGNING DATES FROM 20150910 TO 20150911; REEL/FRAME:036570/0104
US2016030856 AA	20170713	LSES	NFA1	Non Final Action Mailed	
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US2016032904 AA	20150912	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : TRANSTAR GROUP, LTD., CHINA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BRADLEY, RANDALL; REEL/FRAME:036548/0296 EFFECTIVE DATE : 20150911
US2016032904 AA	20150915	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : TRANSTAR GROUP, LTD., CHINA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:KAPLAN, ALLEN; BRADLEY, RANDALL; SIGNING DATES FROM 20150910 TO 20150911; REEL/FRAME:036570/0144
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US2016032904 AA	20180510	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2016045841 AA	20160218	LSPB	+	published / reissued	
US2016045841 AA	20150912	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : TRANSTAR GROUP, LTD., CHINA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BRADLEY, RANDALL; REEL/FRAME:036548/0210 EFFECTIVE DATE : 20150911

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US2016045841 AA	20170308	LSES	NFA1	Non Final Action Mailed	
US2016045841 AA	20170821	LSES	NFA1	Non Final Action Mailed	
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WO14146129 A2	20140918	LSPB	+	published / reissued	
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WO14146129 A3	20151015	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : A201510011 COUNTRY OF REF DOCUMENT : UA
WO14153570 A2	20140925	LSPB	+	published / reissued	
WO14153570 A9	20150915	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO14153570 A9	20160406	LSNE	-122	EP: PCT APPLICATION NON-ENTRY IN EUROPEAN PHASE	REF DOCUMENT NUMBER : 14768614 COUNTRY OF REF DOCUMENT : EP KIND CODE OF REF DOCUMENT : A2 DESIGNATED STATE(S) :
WO14200605 A2	20141218	LSPB	+	published / reissued	
WO14200605 A4	20150915	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO14200605 A4	20160406	LSNE	-122	EP: PCT APPLICATION NON-ENTRY IN EUROPEAN PHASE	REF DOCUMENT NUMBER : 14810958 COUNTRY OF REF DOCUMENT : EP KIND CODE OF REF DOCUMENT : A2 DESIGNATED STATE(S) :

Title: IN SITU THERMAL PROCESSING OF AN OIL SHALE FORMATION USING CONDUCTIVE HEATING

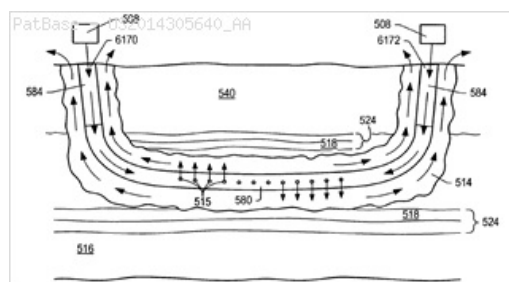
Abstract: Methods and systems of treating an oil shale formation using an in situ thermal process are described herein. A method of treating an oil shale formation in situ includes providing heat from one or more heat sources to at least a portion of the formation; allowing the heat to transfer from at least the portion to a selected section of the formation substantially by conduction of heat; pyrolyzing at least some hydrocarbons within the selected section of the formation; and producing a mixture from the formation.

Classifications:

International (IPC 8-9): E21B43/24 E21B43/243 E21B43/247 E21B43/30 E21C41/24 (Advanced/Invention)

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

US: 166/272.1 166/302



Family:

Publication number	Publication date	Application number	Application date
US2014305640 AA	20141016	US20130104605	20131212

Priority:

US20010286062P	20010424	US20010337249P	20011024	US20020131286	20020424
US20060343913	20060131	US20070809889	20070601	US20100767572	20100426
US20130104605	20131212				

Probable Assignee: SHELL OIL CO A DELAWARE CORP

Assignee(s): (std): BERCHENKO ILYA E ; DE ROUFFIGNAC ERIC ; FOWLER THOMAS D ; KARANIKAS JOHN M ; VINEGAR HAROLD J ; RYAN ROBERT C ; ZHANG ETUAN ; SHELL OIL CO ; WELLINGTON SCOTT L ; STEGEMEIER GEORGE L ; SHAHIN JR GORDON T

Assignee(s): SHELL OIL CO A DELAWARE CORP

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

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2014305640 AA	20141016	LSPB	+	published / reissued	
US2014305640 AA	20150817	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, A DELAWARE CORPORATION, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:BERCHENKO, ILYA EMIL; DE ROUFFIGNAC, ERIC PIERRE; FOWLER, THOMAS DAVID; AND OTHERS; SIGNING DATES FROM 20020916 TO 20020927; REEL/FRAME:036337/0246
US2014305640 AA	20160812	LSWD	-ABD3	Abandoned - - Failure to Respond to an Office Action	

Title: METHODS AND SYSTEMS FOR USING PROBES IN CONDUITS

Abstract: The present disclosure relates to a method and system for identifying and treating corrosion within a conduit. The method involves using probes having a signal generator, and one or more corrosion mitigating chemical treatments such as biocides and/or corrosion inhibitors.

Classifications:

International (IPC 8-9): A01N59/00 C09K8/536 C12Q1/68 C23F11/00

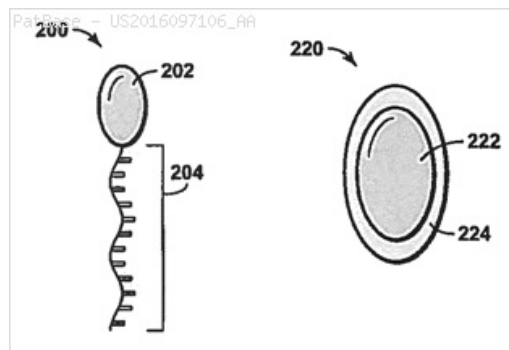
G01N17/00 (Advanced/Invention);

C12Q1/04 (Advanced/Non-invention)

CPC: C12Q1/6888 A01N59/00 C23F11/00 G01N17/00 C23F11/08

C23F15/00 C09K8/03 C09K8/54 C09K2208/10 C09K2208/32

US: 435/287.2 514/44R 536/24.31 536/24.32



Family:

Publication number	Publication date	Application number	Application date
US2016097106 AA	20160407	US20150862696	20150923
WO16053711 A1	20160407	WO2015US51667	20150923

Priority:

US20140058504P 20141001 US20150862696 20150923

Probable Assignee: EXXON MOBIL CORP

Assignee(s): (std): EXXON MOBIL CORP ; EXXONMOBIL UPSTREAM RES CO ; HORNEMANN JENNIFER A ; ROBINSON AMELIA C

Assignee(s): EXXONMOBIL UPSTREAM RESEARCH CO

Inventor(s): (std): HORNEMANN JENNIFER A ; ROBINSON AMELIA C

Agent(s): JENSEN NATHAN O ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL 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 IR IS IT JP KE KG KM KN KP KR KZ LA LC 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 PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2016097106 AA	20160407	LSPB	+	published / reissued	
US2016097106 AA	20170327	LSES	NFA1	Non Final Action Mailed	
US2016097106 AA	20170802	LSES	NFA1	Non Final Action Mailed	
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WO16053711 A1	20160407	LSPB	+	published / reissued	
WO16053711 A1	20170403	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO16053711 A1	20171025	LSNE	-122	EP: PCT APPLICATION NON-ENTRY IN EUROPEAN PHASE	REF DOCUMENT NUMBER : 15778452 COUNTRY OF REF DOCUMENT : EP KIND CODE OF REF DOCUMENT : A1 DESIGNATED STATE(S) :

Title: SENSOR SYSTEM AND METHODS FOR ANALYTE **DETECTION**

Abstract: A system for selectively determining at least two analytes, comprising at least one resonant sensor circuit comprising a sensing material that predictably affects the resonant complex impedance response of a sensor electrode, wherein the sensing material having at least two material properties that change upon exposure to two or more analytes; and a processor that generates a multivariate sensor response pattern that is based at least in part on a change in the two material properties of the sensing material and a sensing device and methods adapted to **detect** an analyte using the same sensor system.

Classifications:

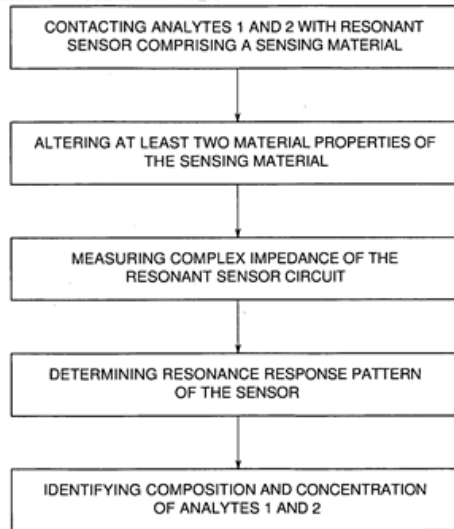
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CPC: G01N27/08 G01N27/22 G01N27/26 G01N33/2847 G01F23/24 G01F23/244 G01F23/26 G21C17/022 G01N33/18 G06K7/10366 G01N33/2823 G01N33/483 H04Q9/00 H04Q2209/40 H04Q2209/47 G01N33/0031 H05K1/16 H05K2201/0338 H05K2201/09263 H05K2201/10151 G01F23/261 G01N33/2888 G01F22/00 G01F23/241 E21B47/10 H04B5/0043 G01N27/02 G01N33/48792 Y10T29/4913 G01D21/02 G01N27/3278 G01N27/025 G07C5/0816 G07C5/006 B60W2400/00 F16N29/04 G07C5/0841 G01F23/284 F01M11/10 F01M2011/1406 F16N2200/00 F16N2200/08 F16N2210/04 F16N2260/18 F16N2270/54 G01N27/023 G01N27/026 G07C5/0808 G01N27/126 G01N33/1893 G01N27/028 G06K19/0717 G06K19/0723 G06K19/07749 G01R27/28 G01R31/2824

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Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL 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 IR 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 PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AU2012359270 AA	20130627	LSPB	+	published / reissued	
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AU2015268746 BB	20180118	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	
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EP2939185 A4	20160907	LSES	+A4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED	EFFECTIVE DATE : 20160809
EP2939185 A4	20160907	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : G06K 19/07 20060101AFI20160803BHEP
EP2939185 A4	20160907	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : G06K 19/077 20060101ALI20160803BHEP
EP2939185 A4	20160907	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : G01N 27/02 20060101ALI20160803BHEP
EP2939185 A4	20180523	LSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20180423
EP3137888 A1	20170308	LSPB	+	published / reissued	
EP3137888 A1	20170308	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20161202
EP3137888 A1	20180613	LSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20180514
EP3137888 A1	20190123	LSAS	RAP1	RIGHTS OF AN APPLICATION TRANSFERRED	PARTYTYPE : OWNER OWNER : BL TECHNOLOGIES, INC.
EP3216228 A1	20170913	LSPB	+	published / reissued	
EP3216228 A1	20170913	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20170428
EP3216228 A1	20190227	LSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20190129
ID201700465 A	20170203	LSPB	+	published / reissued	
ID201700977 A	20170217	LSPB	+	published / reissued	
IN02119CN2015 A	20160701	LSPB	+	published / reissued	
IN02152CN2015 A	20160701	LSPB	+	published /	

IN06853CH2015 A	20160831	LSPB	+	reissued published / reissued	
JP2008129011 A2	20080605	LSPB	+	published / reissued	
JP2008129011 A2	20101103	LSES	+A621	WRITTEN REQUEST FOR APPLICATION EXAMINATION	TEXT : JAPANESE INTERMEDIATE CODE: A621 EFFECTIVE DATE : 20101102
JP2008129011 A2	20111102	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20111101
JP2008129011 A2	20120808	LSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20120807
JP2008129011 A2	20130208	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20130207
JP2008129011 A2	20130222	LSGT	+TRDD	DECISION OF GRANT OR REJECTION WRITTEN	
JP2008129011 A2	20130306	LSGT	+A01	WRITTEN DECISION TO GRANT A PATENT OR TO GRANT A REGISTRATION (UTILITY MODEL)	TEXT : JAPANESE INTERMEDIATE CODE: A01 EFFECTIVE DATE : 20130305
JP2008129011 A2	20130411	LSFE	+A61	FIRST PAYMENT OF ANNUAL FEES (DURING GRANT PROCEDURE)	TEXT : JAPANESE INTERMEDIATE CODE: A61 EFFECTIVE DATE : 20130404
JP2008129011 A2	20130419	LSGT	+R150	CERTIFICATE OF PATENT OR REGISTRATION OF UTILITY MODEL	TEXT : JAPANESE INTERMEDIATE CODE: R150
JP2008129011 A2	20130422	LSFE	+FPAY	RENEWAL FEE PAYMENT (EVENT DATE IS RENEWAL DATE OF DATABASE)	YEAR OF FEE PAYMENT : 3
JP2016126007 A2	20160711	LSPB	+	published / reissued	
JP2016126007 A2	20170307	LSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20170307
JP2016126007 A2	20170523	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20170523
JP2016126007 A2	20171107	LSRV	-A02	DECISION OF REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A02 EFFECTIVE DATE : 20171107
JP2016126007 A2	20180228	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20180228
JP2016126007 A2	20180308	LSAL	A911	TRANSFER OF RECONSIDERATION BY EXAMINER BEFORE APPEAL (ZENCHI)	TEXT : JAPANESE INTERMEDIATE CODE: A911 EFFECTIVE DATE : 20180307
JP2016126007 A2	20180529	LSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20180529
JP2016126007 A2	20180618	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20180618
JP2016126007 A2	20180802	LSGT	+TRDD	DECISION OF GRANT OR REJECTION WRITTEN	
JP2016126007 A2	20180807	LSGT	+A01	WRITTEN DECISION TO	TEXT : JAPANESE INTERMEDIATE CODE: A01

				GRANT A PATENT OR TO GRANT A REGISTRATION (UTILITY MODEL)	EFFECTIVE DATE : 20180807
JP2016126007 A2	20180906	LSFE	+A61	FIRST PAYMENT OF ANNUAL FEES (DURING GRANT PROCEDURE)	TEXT : JAPANESE INTERMEDIATE CODE: A61 EFFECTIVE DATE : 20180831
JP2016126007 A2	20180907	LSGT	+R150	CERTIFICATE OF PATENT OR REGISTRATION OF UTILITY MODEL	TEXT : JAPANESE INTERMEDIATE CODE: R150 REF DOCUMENT NUMBER : 6397395 COUNTRY OF REF DOCUMENT : JP
JP2016505850 T2	20160225	LSPB	+	published / reissued	
JP2016505850 T2	20161213	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20161213
JP2016505850 T2	20161213	LSES	+A621	WRITTEN REQUEST FOR APPLICATION EXAMINATION	TEXT : JAPANESE INTERMEDIATE CODE: A621 EFFECTIVE DATE : 20161213
JP2016505850 T2	20170928	LSGT	+TRDD	DECISION OF GRANT OR REJECTION WRITTEN	
JP2016505850 T2	20171010	LSGT	+A01	WRITTEN DECISION TO GRANT A PATENT OR TO GRANT A REGISTRATION (UTILITY MODEL)	TEXT : JAPANESE INTERMEDIATE CODE: A01 EFFECTIVE DATE : 20171010
JP2016505850 T2	20171116	LSFE	+A61	FIRST PAYMENT OF ANNUAL FEES (DURING GRANT PROCEDURE)	TEXT : JAPANESE INTERMEDIATE CODE: A61 EFFECTIVE DATE : 20171109
JP2016505850 T2	20171117	LSGT	+R150	CERTIFICATE OF PATENT OR REGISTRATION OF UTILITY MODEL	TEXT : JAPANESE INTERMEDIATE CODE: R150 REF DOCUMENT NUMBER : 6243445 COUNTRY OF REF DOCUMENT : JP
JP2016506524 T2	20160303	LSPB	+	published / reissued	
JP2016506524 T2	20161213	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20161213
JP2016506524 T2	20161213	LSES	+A621	WRITTEN REQUEST FOR APPLICATION EXAMINATION	TEXT : JAPANESE INTERMEDIATE CODE: A621 EFFECTIVE DATE : 20161213
JP2016506524 T2	20170928	LSGT	+TRDD	DECISION OF GRANT OR REJECTION WRITTEN	
JP2016506524 T2	20171010	LSGT	+A01	WRITTEN DECISION TO GRANT A PATENT OR TO GRANT A REGISTRATION (UTILITY MODEL)	TEXT : JAPANESE INTERMEDIATE CODE: A01 EFFECTIVE DATE : 20171010
JP2016506524 T2	20171116	LSFE	+A61	FIRST PAYMENT OF ANNUAL FEES (DURING GRANT PROCEDURE)	TEXT : JAPANESE INTERMEDIATE CODE: A61 EFFECTIVE DATE : 20171109
JP2016506524 T2	20171117	LSGT	+R150	CERTIFICATE OF PATENT OR REGISTRATION OF UTILITY MODEL	TEXT : JAPANESE INTERMEDIATE CODE: R150 REF DOCUMENT NUMBER : 6243446 COUNTRY OF REF DOCUMENT : JP
JP5246741 B2	20130724	LSGT	+	granted / extensions (spc, cpc, pte)	
JP5246741 B2	20130307	LSGT	+A01	特許査定書 Decision of patent grant	
JP5246741 B2	20130409	LSFE	R100	特許料納付書 Patent fee payment form	
JP5246741 B2	20160407	LSFE	R20	特許料納付書 Patent fee payment form	
JP5246741 B2	20160412	LSFE	+R250	RECEIPT OF	TEXT : JAPANESE INTERMEDIATE

				ANNUAL FEES	CODE: R250
JP5246741 B2	20170413	LSFE	R20	特許料納付書 Patent fee payment form	
JP5246741 B2	20170418	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP5246741 B2	20180412	LSFE	R20	特許料納付書 Patent fee payment form	
JP5246741 B2	20180417	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP5246741 B2	20190404	LSFE	R20	特許料納付書 Patent fee payment form	
JP5246741 B2	20190409	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP5246741 B2	20271109	PEXP		Calculated Patent Term Expiry	
JP6243445 B2	20171206	LSGT	+	granted / extensions (spc, cpc, pte)	
JP6243445 B2	20331220	PEXP		Calculated Patent Term Expiry	
JP6243446 B2	20171206	LSGT	+	granted / extensions (spc, cpc, pte)	
JP6243446 B2	20331220	PEXP		Calculated Patent Term Expiry	
JP6397395 B2	20180926	LSGT	+	granted / extensions (spc, cpc, pte)	
JP6397395 B2	20180809	LSGT	+A01	特許査定書 Decision of patent grant	
JP6397395 B2	20180904	LSFE	R100	特許料納付書 Patent fee payment form	
JP6397395 B2	20180907	LSGT	+R150	特許証 Patent certificate	
JP6397395 B2	20351216	PEXP		Calculated Patent Term Expiry	
RU2015109373 A	20161120	LSPB	+	published / reissued	
RU2015109381 A	20161120	LSPB	+	published / reissued	
RU2016141592 A	20180605	LSPB	+	published / reissued	
RU2016141592 A	20180720	LSAS	HZ9A	CHANGING ADDRESS FOR CORRESPONDENCE WITH AN APPLICANT	
RU2640090 C2	20171226	LSGT	+	granted / extensions (spc, cpc, pte)	
RU2640090 C2	20180809	LSLI	PC41	OFFICIAL REGISTRATION OF THE TRANSFER OF EXCLUSIVE RIGHT	EFFECTIVE DATE : 20180809
RU2640090 C2	20330910	PEXP		Calculated Patent Term Expiry	
RU2652148 C2	20180425	LSGT	+	granted / extensions (spc, cpc, pte)	
RU2652148 C2	20180809	LSLI	PC41	OFFICIAL REGISTRATION OF THE TRANSFER OF EXCLUSIVE RIGHT	EFFECTIVE DATE : 20180809
RU2652148 C2	20330910	PEXP		Calculated Patent Term Expiry	
RU2682611 C2	20190319	LSGT	+	granted / extensions (spc, cpc, pte)	
RU2682611 C2	20350424	PEXP		Calculated Patent	

SE200702495 A	20080517	LSPB	+	Term Expiry published / reissued	
SE532599 C2	20100302	LSGT	+	granted / extensions (spc, cpc, pte)	
SE532599 C2	20271113	PEXP		Calculated Patent Term Expiry	
SG11201403312Q A1	20140730	LSPB	+	published / reissued	
SG11201501787T A1	20150429	LSPB	+	published / reissued	
SG11201501788R A1	20150429	LSPB	+	published / reissued	
SG11201608700V A1	20161129	LSPB	+	published / reissued	
US2010268479 AA	20101021	LSPB	+	published / reissued	
US2010268479 AA	20130109	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2012114089 AA	20120510	LSPB	+	published / reissued	
US2012114089 AA	20170215	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2012235690 AA	20120920	LSPB	+	published / reissued	
US2013154847 AA	20130620	LSPB	+	published / reissued	
US2014002111 AA	20140102	LSPB	+	published / reissued	
US2014002111 AA	20120719	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GENERAL ELECTRIC COMPANY, NEW YORK OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS: POTYRAILO, RADISLAV ALEXANDROVICH; SURMAN, CHERYL MARGARET; GO, STEVEN YUEHIN; AND OTHERS; REEL/FRAME:028584/0060 EFFECTIVE DATE : 20120629
US2014090451 AA	20140403	LSPB	+	published / reissued	
US2014090454 AA	20140403	LSPB	+	published / reissued	
US2014091811 AA	20140403	LSPB	+	published / reissued	
US2014095102 AA	20140403	LSPB	+	published / reissued	
US2014095102 AA	20121204	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GENERAL ELECTRIC COMPANY GLOBAL RESEARCH, NEW YORK OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS: POTYRAILO, RADISLAV ALEXANDROVICH; ASHE, JEFFREY MICHAEL; HASAN, SM SHAJED; AND OTHERS; SIGNING DATES FROM 20121001 TO 20121010; REEL/FRAME:029398/0455
US2014182362 AA	20140703	LSPB	+	published / reissued	
US2014182363 AA	20140703	LSPB	+	published / reissued	
US2014182363 AA	20130510	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GENERAL ELECTRIC COMPANY, NEW YORK OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS: POTYRAILO, RADISLAV ALEXANDROVICH; LEE, YONGJAE; COTERO, VICTORIA EUGENIA; AND OTHERS; REEL/FRAME:030395/0701

US2015115983 AA	20150430	LSPB	+	published / reissued	
US2015115983 AA	20150122	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GENERAL ELECTRIC COMPANY, NEW YORK OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:POTYRAILO, RADISLAV ALEXANDROVICH; TOKAREV, IGOR; SIGNING DATES FROM 20150115 TO 20150120; REEL/FRAME:034792/0509
US2015115983 AA	20170314	LSES	NFA1	Non Final Action Mailed	
US2015115983 AA	20180208	LSES	NFA1	Non Final Action Mailed	
US2015115983 AA	20190319	LSES	NFA1	Non Final Action Mailed	
US2015233887 AA	20150820	LSPB	+	published / reissued	
US2015233887 AA	20160112	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GENERAL ELECTRIC COMPANY, NEW YORK OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:SURMAN, CHERYL MARGARET; DIERINGER, JON ALBERT; POTYRAILO, RADISLAV ALEXANDROVICH; SIGNING DATES FROM 20150506 TO 20150507; REEL/FRAME:037466/0985
US2015233887 AA	20171004	LSES	ADV1	Advisory Action Mailed	
US2015233887 AA	20171024	LSAL	NAF1	Notice of Appeal Filed	
US2015233887 AA	20180308	LSAL	ABE1	Appeal Brief (or Supplemental Brief) Entered and Forwarded to Examiner	
US2015233887 AA	20180813	LSAL	APL8	TC Return of Appeal	
US2015233887 AA	20181016	LSAL	APL5	On Appeal -- Awaiting Decision by the Board of Appeals	
US2015233887 AA	20181112	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : BL TECHNOLOGIES, INC., MINNESOTA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:GENERAL ELECTRIC COMPANY; REEL/FRAME:047502/0065 EFFECTIVE DATE : 20170929
US2016125210 AA	20160505	LSPB	+	published / reissued	
US2016125210 AA	20141104	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GENERAL ELECTRIC COMPANY, NEW YORK OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:POTYRAILO, RADISLAV ALEXANDROVICH; REEL/FRAME:034096/0887 EFFECTIVE DATE : 20141031
US2016223484 AA	20160804	LSPB	+	published / reissued	
US2016290944 AA	20161006	LSPB	+	published / reissued	
US2016290944 AA	20160607	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GENERAL ELECTRIC COMPANY, NEW YORK OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:POTYRAILO, RADISLAV ALEXANDROVICH; LEE, YONGJAE; SIGNING DATES FROM 20160602

US2016290944 AA	20170301	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US2016290944 AA	20170530	LSFE	+PPR1	Publications -- Issue Fee Payment Received	
US2016290944 AA	20170531	LSFE	+PPV1	Publications -- Issue Fee Payment Verified	
US2017045492 AA	20170216	LSPB	+	published / reissued	
US2017045492 AA	20161021	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GENERAL ELECTRIC COMPANY, NEW YORK OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:SURMAN, CHERYL MARGARET; DIERINGER, JON ALBERT; POTYRAILO, RADISLAV ALEXANDROVICH; SIGNING DATES FROM 20150504 TO 20150717; REEL/FRAME:040081/0993
US2017045492 AA	20180323	LSES	NFA1	Non Final Action Mailed	
US2017045492 AA	20181130	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2018045671 AA	20180215	LSPB	+	published / reissued	
US2018158261 AA	20180607	LSPB	+	published / reissued	
US2018158261 AA	20180131	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GENERAL ELECTRIC COMPANY, NEW YORK OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:OTTIKKUTTI, PRADHEEPARAM; KUZHIYIL, NAJEEB M.; POTYRAILO, RADISLAV ALEXANDROVICH; SIGNING DATES FROM 20180119 TO 20180130; REEL/FRAME:044786/0147
US2018158261 AA	20181219	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GE GLOBAL SOURCING LLC, CONNECTICUT OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:GENERAL ELECTRIC COMPANY; REEL/FRAME:047952/0689 EFFECTIVE DATE : 20181101
US8364419 BB	20130129	LSGT	+	granted / extensions (spc, cpc, pte)	
US8364419 BB	20090507	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GENERAL ELECTRIC COMPANY, NEW YORK OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:POTYRAILO, RADISLAV ALEXANDROVICH; CELLA, JAMES ANTHONY; SURMAN, CHERYL MARGARET; AND OTHERS; SIGNING DATES FROM 20090427 TO 20090504; REEL/FRAME:022649/0923
US8364419 BB	20130109	LSGT	PAT1	Patented Case	
US8364419 BB	20160729	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8364419 BB	20300820	PEXP		Calculated Patent Term Expiry (PTA 492 days)	
US9045973 BB	20150602	LSGT	+	granted / extensions (spc,	

cpc, pte)					
US9045973 BB	20111220	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GENERAL ELECTRIC COMPANY, NEW YORK OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:POTYRAILO, RADISLAV ALEXANDROVICH; SURMAN, CHERYL MARGARET; ELLSON, NICHOLAS JOSEP; SIGNING DATES FROM 20111219 TO 20111220; REEL/FRAME:027417/0415
US9045973 BB	20150513	LSGT	PAT1	Patented Case	
US9045973 BB	20190121	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.); ENTITY STATUS OF PATENT OWNER: LARGE ENTITY
US9045973 BB	20331122	PEXP		Calculated Patent Term Expiry (PTA 703 days)	
US9052263 BB	20150609	LSGT	+	granted / extensions (spc, cpc, pte)	
US9052263 BB	20120531	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GENERAL ELECTRIC COMPANY, NEW YORK OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:POTYRAILO, RADISLAV ALEXANDROVICH; PIETRZYKOWSKI, MATTHEW DAMIAN; LEE, YONGJAE; REEL/FRAME:028295/0678 EFFECTIVE DATE : 20120531
US9052263 BB	20150520	LSGT	PAT1	Patented Case	
US9052263 BB	20181121	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US9052263 BB	20330912	PEXP		Calculated Patent Term Expiry (PTA 469 days)	
US9097639 BB	20150804	LSGT	+	granted / extensions (spc, cpc, pte)	
US9097639 BB	20130510	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GENERAL ELECTRIC COMPANY, NEW YORK OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:POTYRAILO, RADISLAV ALEXANDROVICH; LEE, YONGJAE; COTERO, VICTORIA EUGENIA; AND OTHERS; REEL/FRAME:030394/0961 EFFECTIVE DATE : 20130509
US9097639 BB	20150715	LSGT	PAT1	Patented Case	
US9097639 BB	20190128	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US9097639 BB	20331018	PEXP		Calculated Patent Term Expiry (PTA 294 days)	
US9147144 BB	20150929	LSGT	+	granted / extensions (spc, cpc, pte)	
US9147144 BB	20121204	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GENERAL ELECTRIC COMPANY, NEW YORK OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:POTYRAILO, RADISLAV ALEXANDROVICH; ASHE, JEFFREY MICHAEL; HASAN, SM SHAJED; AND OTHERS; SIGNING DATES FROM 20121001 TO 20121010; REEL/FRAME:029402/0217
US9147144 BB	20150909	LSGT	PAT1	Patented Case	
US9147144 BB	20190222	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US9147144 BB	20331016	PEXP		Calculated Patent	

				Term Expiry (PTA 383 days)	
US9176083 BB	20151103	LSGT	+	granted / extensions (spc, cpc, pte)	
US9176083 BB	20120928	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GENERAL ELECTRIC COMPANY, NEW YORK OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS: SURMAN, CHERYL MARGARET; PLATT, WILLIAM CHESTER; MORRIS, WILLIAM GUY; AND OTHERS; REEL/FRAME:029048/0640 EFFECTIVE DATE : 20120928
US9176083 BB	20151014	LSGT	PAT1	Patented Case	
US9176083 BB	20181112	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : BL TECHNOLOGIES, INC., MINNESOTA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR: GENERAL ELECTRIC COMPANY; REEL/FRAME:047502/0065 EFFECTIVE DATE : 20170929
US9176083 BB	20190503	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US9176083 BB	20331127	PEXP		Calculated Patent Term Expiry (PTA 425 days)	
US9261474 BB	20160216	LSGT	+	granted / extensions (spc, cpc, pte)	
US9261474 BB	20150921	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US9261474 BB	20160127	LSGT	PAT1	Patented Case	
US9261474 BB	20340416	PEXP		Calculated Patent Term Expiry (PTA 474 days)	
US9389260 BB	20160712	LSGT	+	granted / extensions (spc, cpc, pte)	
US9389260 BB	20150910	LSES	NFA1	Non Final Action Mailed	
US9389260 BB	20160622	LSGT	PAT1	Patented Case	
US9389260 BB	20321029	PEXP		Calculated Patent Term Expiry (PTA 31 days)	
US9474157 BB	20161018	LSGT	+	granted / extensions (spc, cpc, pte)	
US9474157 BB	20161214	LSGT	PAT1	Patented Case	
US9474157 BB	20320629	PEXP		Calculated Patent Term Expiry	
US9536122 BB	20170103	LSGT	+	granted / extensions (spc, cpc, pte)	
US9536122 BB	20161214	LSGT	PAT1	Patented Case	
US9536122 BB	20350121	PEXP		Calculated Patent Term Expiry (PTA 78 days)	
US9538657 BB	20170103	LSGT	+	granted / extensions (spc, cpc, pte)	
US9538657 BB	20151020	LSES	NFA1	Non Final Action Mailed	
US9538657 BB	20350224	PEXP		Calculated Patent Term Expiry (PTA 970 days)	
US9589686 BB	20170307	LSGT	+	granted / extensions (spc,	

US9589686 BB	20061116	LSAS	AS	cpc, pte) ASSIGNMENT	PARTYTYPE : OWNER OWNER : GENERAL ELECTRIC COMPANY, NEW YORK OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:POTYRAILO, RADISLAV ALEXANDROVICH; MONK, DAVID JAMES; TAMAKI, RYO; SIGNING DATES FROM 20061026 TO 20061027; REEL/FRA:018526/0833
US9589686 BB	20140320	LSAL	APL5	On Appeal -- Awaiting Decision by the Board of Appeals	
US9589686 BB	20160202	LSAL	BDR1	Board of Appeals Decision Rendered	
US9589686 BB	20170215	LSGT	PAT1	Patented Case	
US9589686 BB	20310616	PEXP		Calculated Patent Term Expiry (PTA 1673 days)	
US9638653 BB	20170502	LSGT	+	granted / extensions (spc, cpc, pte)	
US9638653 BB	20170412	LSGT	PAT1	Patented Case	
US9638653 BB	20350512	PEXP		Calculated Patent Term Expiry	
US9658178 BB	20170523	LSGT	+	granted / extensions (spc, cpc, pte)	
US9658178 BB	20120928	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GENERAL ELECTRIC COMPANY, NEW YORK OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:SURMAN, CHERYL MARGARET; PLATT, WILLIAM CHESTER; MORRIS, WILLIAM GUY; AND OTHERS; REEL/FRA:029048/0472 EFFECTIVE DATE : 20120928
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US9658178 BB	20181112	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : BL TECHNOLOGIES, INC., MINNESOTA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:GENERAL ELECTRIC COMPANY; REEL/FRA:047502/0065 EFFECTIVE DATE : 20170929
US9658178 BB	20321201	PEXP		Calculated Patent Term Expiry (PTA 64 days)	
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ZA201502455 A	20350412	PEXP		Calculated Patent Term Expiry	

Title: METHODS AND APPARATUS FOR REMOVAL AND CONTROL OF MATERIAL IN LASER DRILLING OF A BOREHOLE

Abstract: There is provided a system, apparatus and methods for removal of material for the path of a laser beam during laser drilling of a borehole and for removal of displaced borehole material from the borehole during laser drilling. In particular, there are provided paths, dynamics and parameters of fluid flows, and apparatus for obtaining such, for use in conjunction with a laser bottom hole assembly.

Classifications:

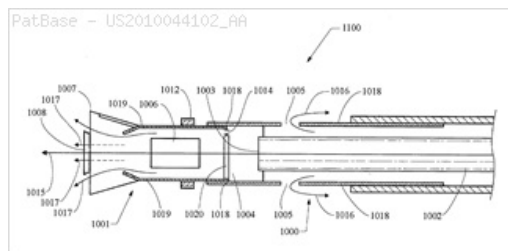
International (IPC 8-9): A61K48/00 B01J19/12 B08B7/00 B08B9/02

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IPC: E21B4/18 E21B17/203 E21B21/12 E21B21/16 H01L31/03046 Y02E10/544 H04B10/807 H01L2924/01015 H01L2924/01047 H01L2924/00014 E21C37/18 E21D9/1073 G02B6/4413 E02B2017/0095 B23K26/24 B23K26/36 G02B6/4402 E01C23/08 E21B4/02 E21C25/00 E21D9/08 E01C23/12 E21B44/00 E21B33/076 E21B36/04 E21B37/00 E21B37/08 F17D5/00 B08B9/04 B08B9/0436 B08B7/0071 B08B9/023 B08B9/027 B23K26/0093 B23K26/0648 B23K26/10 E21B4/04 E21B2023/008 H01L31/0201 H01L31/022433 H01L31/0508 H01L31/054 E02B2017/0052 B08B9/02 B08B9/055 G02B6/502 B23K26/142 B63G2008/007 B63G8/001 E21B41/04 B23K26/1462 E01C23/127 G01M5/0025 G01M5/0033 G01M5/0091 G01M11/35 Y02E10/52 G02B6/4415 G02B6/443 G02B6/4436 G02B6/4492 E21B33/064 B23K26/14 E02D17/00 B23K26/0652 B23K26/127 B23K26/0732 B23K26/0736 H01S3/04 G02B6/44 B08B9/043 E21B43/00 E21B43/01 G21C17/017 E21B17/00 G02B6/02395 B23K26/04 G02B6/4427 G02B2006/4297 E21B43/119 E21B43/26 H01S3/0071 B23K26/38 B60P1/5423 B66C23/36 H01S5/02423 G02B26/0875 E21B33/1204 H01L2924/00011 B23K26/402 E21B43/162 E21B49/00 H01S3/06733 H01S3/1603 H01S3/0941 H01S3/094007 G02B6/2817 G02B6/3871 G02B6/3897 H01S3/08 G02B6/3604 H01S3/302 H01S3/094046 H01S3/09415 H01S3/06708 H01S3/109 E21B29/06 E21B43/2405 B23K26/06 H01S3/094015 H01S3/094092 H01S3/094096 H01S3/1693 H01S3/1695 H01S3/2383 E21B7/15 G02B6/4458 E21B21/00 E21B21/08 E21B21/103 E21B29/00 E21B43/11 E02B17/027 G02B6/4417 B23K26/03 B23K26/0622 B23K26/1476 B23K37/02 G02B6/262 G02B6/3813 H01S3/042 G02B6/14 G02B6/3814 G02B6/3818 E21B41/00 H01S5/4025 H01S5/0071 H01S5/02296 H01S5/042 B23K26/0608 B23K26/046 B23K26/0869 B23K26/703 B23K26/1464 E21B33/13 B23K26/0096 B23K26/106 H01S3/0064 B23K26/1224 E21B33/063 B08B7/0042 B23K26/064 B23K2103/10 B23K2103/30 E21B10/60 B23K26/12 B63B17/00 B63B19/00 B63B21/00 B63B35/00 B63B35/28 E21B19/002 B23K2101/04 B23K2101/06 B23K2103/04 B23K26/0626 B23K26/40 B23K37/0288 B23K2103/52 E21C25/64 E21C27/24 G02B6/0229 B82Y20/00 F16L41/004 F16L55/46 H01S3/02 B23K26/382 B23K2103/50 B23K26/146 E21B7/14 E21B29/02 G02B6/32 G02B6/3624 G02B6/4296 G02B23/2492 H01S3/005 H01S3/0675 H01S3/094003 H01S3/094042 H01S3/1608 H01S3/1616

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Priority:

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Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ 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 IR IS IT JO JP KE KG KH KM KN KP KR KW 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 PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

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(OPINION)					
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EP2664010 A2	20131120	LSPB	+	published / reissued		
EP2664010 A2	20131120	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20130730	
EP2664010 A2	20180328	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01L 31/0304 20060101ALI20180219BHEP	

EP2664010 A2	20180328	LSRE	RIC1	BEFORE GRANT INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H04B 10/80 20130101ALI20180219BHEP
EP2664010 A2	20180328	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01L 31/055 20140101ALI20180219BHEP
EP2664010 A2	20180328	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01L 31/02 20060101ALI20180219BHEP
EP2664010 A2	20180328	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01L 31/05 20140101ALI20180219BHEP
EP2664010 A2	20180328	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01L 31/054 20140101ALI20180219BHEP
EP2664010 A2	20180328	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01L 31/0224 20060101ALI20180219BHEP
EP2664010 A2	20180328	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : B63G 8/00 20060101AFI20180219BHEP
EP2664010 A4	20180627	LSES	+A4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED	EFFECTIVE DATE : 20180528
EP2664010 A4	20180627	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H04B 10/80 20130101ALI20180522BHEP
EP2664010 A4	20180627	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01L 31/0304 20060101ALI20180522BHEP
EP2664010 A4	20180627	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01L 31/055 20060101ALI20180522BHEP
EP2664010 A4	20180627	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01L 31/05 20060101ALI20180522BHEP
EP2664010 A4	20180627	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01L 31/02 20060101ALI20180522BHEP
EP2664010 A4	20180627	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : B63G 8/00 20060101AFI20180522BHEP
EP2664010 A4	20180627	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01L 31/0224 20060101ALI20180522BHEP
EP2664010 A4	20180627	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01L 31/054 20140101ALI20180522BHEP
EP2678512 A1	20140101	LSPB	+	published / reissued	
EP2678512 A1	20140101	LSES	+17P	REQUEST FOR	EFFECTIVE DATE : 20130920

EP2678512 A4	20170614	LSES	+RA4	EXAMINATION FILED SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED (CORRECTED)	EFFECTIVE DATE : 20170517
EP2678512 A4	20170614	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E21B 7/15 20060101AFI20170511BHEP
EP2678512 A4	20180627	LSDW	-18D	APPLICATION DEEMED TO BE WITHDRAWN	EFFECTIVE DATE : 20171213
EP2678521 A1	20140101	LSPB	+	published / reissued	
EP2678521 A1	20140101	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20130920
EP2678521 A4	20180307	LSES	+RA4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED (CORRECTED)	EFFECTIVE DATE : 20180207
EP2678521 A4	20180307	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E21B 33/06 20060101AFI20180201BHEP
EP2678521 A4	20190213	LSDW	-18D	APPLICATION DEEMED TO BE WITHDRAWN	EFFECTIVE DATE : 20180901
EP2715887 A1	20140409	LSPB	+	published / reissued	
EP2715887 A1	20140409	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20131219
EP2715887 A1	20160525	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01S 3/30 20060101AFI20160415BHEP
EP2715887 A1	20160525	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : G02B 6/38 20060101ALI20160415BHEP
EP2715887 A1	20160525	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : G02B 6/42 20060101ALI20160415BHEP
EP2715887 A4	20161123	LSES	+RA4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED (CORRECTED)	EFFECTIVE DATE : 20161020
EP2715887 A4	20161123	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01S 3/30 20060101AFI20161014BHEP
EP2715887 A4	20161123	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : G02B 6/42 20060101ALI20161014BHEP
EP2715887 A4	20161123	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : G02B 6/38 20060101ALI20161014BHEP
EP2715887 A4	20171115	LSDW	-18D	APPLICATION DEEMED TO BE WITHDRAWN	EFFECTIVE DATE : 20170519
EP2739429 A2	20140611	LSPB	+	published / reissued	
EP2739429 A2	20140611	LSES	+17P	REQUEST FOR	EFFECTIVE DATE : 20140228

EP2739429 A2	20160615	LSRE	RIC1	EXAMINATION FILED INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : B23K 26/00 20140101AFI20160512BHEP
EP2739429 A2	20160615	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E02B 17/00 20060101ALI20160512BHEP
EP2739429 A2	20160615	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E21B 29/02 20060101ALI20160512BHEP
EP2739429 A4	20161102	LSSES	+A4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED	EFFECTIVE DATE : 20161006
EP2739429 A4	20161102	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E02B 17/00 20060101ALI20160929BHEP
EP2739429 A4	20161102	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : B23K 26/00 20140101AFI20160929BHEP
EP2739429 A4	20161102	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E21B 29/02 20060101ALI20160929BHEP
EP2739429 A4	20171004	LSSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20170904
EP2739429 A4	20180711	LSGT	+INTG	INTENTION TO GRANT ANNOUNCED	EFFECTIVE DATE : 20180615
EP2820466 A1	20150107	LSPB	+	published / reissued	
EP2820466 A1	20150107	LSSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20141001
EP2820466 A4	20160330	LSSES	+RA4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED (CORRECTED)	EFFECTIVE DATE : 20160229
EP2820466 A4	20160330	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E21B 7/15 20060101ALI20160223BHEP
EP2820466 A4	20160330	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : G02B 27/14 20060101AFI20160223BHEP
EP2820466 A4	20160330	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : B23K 26/00 20140101ALI20160223BHEP
EP2820466 A4	20180829	LSGT	+INTG	INTENTION TO GRANT ANNOUNCED	EFFECTIVE DATE : 20180803
EP2820466 B1	20181010	LSGT	+	granted / extensions (spc, cpc, pte)	
EP2820466 B1	20181010	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : GB REF LEGAL EVENT CODE : FG4D
EP2820466 B1	20181015	LSNP	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : CH REF LEGAL EVENT CODE : EP

EP2820466 B1	20181015	LSNP	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : AT REF LEGAL EVENT CODE : REF REF DOCUMENT NUMBER : 1051920 COUNTRY OF REF DOCUMENT : AT KIND CODE OF REF DOCUMENT : T DESIGNATED STATE(S) : EFFECTIVE DATE : 20181015
EP2820466 B1	20181031	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : IE REF LEGAL EVENT CODE : FG4D
EP2820466 B1	20181108	LSPB	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : DE REF LEGAL EVENT CODE : R096 REF DOCUMENT NUMBER : 602013044874 COUNTRY OF REF DOCUMENT : DE
EP2820466 B1	20190225	LSRV	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : LT REF LEGAL EVENT CODE : MG4D
EP2820466 B1	20190315	LSRV	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : AT REF LEGAL EVENT CODE : MK05 REF DOCUMENT NUMBER : 1051920 COUNTRY OF REF DOCUMENT : AT KIND CODE OF REF DOCUMENT : T DESIGNATED STATE(S) : EFFECTIVE DATE : 20181010
EP2820466 B1	20190329	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NL NOTIFICATIONNOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20181010
EP2820466 B1	20190430	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : AT NOTIFICATIONNOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20181010
EP2820466 B1	20190430	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : ES NOTIFICATIONNOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20181010
EP2820466 B1	20190430	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : FI NOTIFICATIONNOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20181010
EP2820466 B1	20190430	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : PL NOTIFICATIONNOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20181010
EP2820466 B1	20190430	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : NO NOTIFICATIONNOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20190110
EP2820466 B1	20190430	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : IS NOTIFICATIONNOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20190210

EP2820466 B1	20190430	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : LT NOTIFICATIONNOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20181010
EP2820466 B1	20190430	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : LV NOTIFICATIONNOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20181010
EP2820466 B1	20190430	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : BG NOTIFICATIONNOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20190110
EP2820466 B1	20190430	LSLE	-PG25	LAPSED IN A CONTRACTING STATE [ANNOUNCED VIA POSTGRANT INFORMATION FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : HR NOTIFICATIONNOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20181010
EP2820466 B1	20190430	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DE PAYMENT DATE : 20190312 YEAR OF FEE PAYMENT : 7
EP2820466 B1	20190430	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : GB PAYMENT DATE : 20190118 YEAR OF FEE PAYMENT : 7
EP2820466 B1	20330219	PEXP		Calculated Patent Term Expiry	
EP2890859 A2	20150708	LSPB	+	published / reissued	
EP2890859 A2	20150708	LSSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20150331
EP2890859 A2	20160706	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E21B 29/02 20060101AFI20160602BHEP
EP2890859 A2	20160706	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E21B 33/06 20060101ALI20160602BHEP
EP2890859 A4	20161102	LSSES	+A4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED	EFFECTIVE DATE : 20161006
EP2890859 A4	20161102	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E21B 33/06 20060101ALI20160929BHEP
EP2890859 A4	20161102	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E21B 29/02 20060101AFI20160929BHEP
EP2890859 A4	20171115	LSDW	-18D	APPLICATION DEEMED TO BE	EFFECTIVE DATE : 20170505

WITHDRAWN					
EP2929602 A2	20151014	LSPB	+	published / reissued	
EP2929602 A2	20151014	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20150707
EP2929602 A2	20160907	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01S 3/30 20060101ALI20160801BHEP
EP2929602 A2	20160907	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : B23K 26/06 20060101ALI20160801BHEP
EP2929602 A2	20160907	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01S 3/067 20060101ALI20160801BHEP
EP2929602 A2	20160907	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : B23K 26/14 20060101ALI20160801BHEP
EP2929602 A2	20160907	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01S 3/094 20060101ALN20160801BHEP
EP2929602 A2	20160907	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : B23K 26/38 20140101ALI20160801BHEP
EP2929602 A2	20160907	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01S 3/16 20060101ALI20160801BHEP
EP2929602 A2	20160907	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : B23K 26/382 20140101ALI20160801BHEP
EP2929602 A2	20160907	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01S 3/00 20060101AFI20160801BHEP
EP2929602 A2	20160907	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01S 3/23 20060101ALI20160801BHEP
EP2929602 A2	20160907	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01S 3/0941 20060101ALI20160801BHEP
EP2929602 A2	20161221	LSES	+A4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED	EFFECTIVE DATE : 20161123
EP2929602 A2	20161221	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : B23K 26/06 20060101ALI20161117BHEP
EP2929602 A2	20161221	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01S 3/067 20060101ALI20161117BHEP
EP2929602 A2	20161221	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01S 3/0941 20060101ALI20161117BHEP
EP2929602 A2	20161221	LSRE	RIC1	INFORMATION PROVIDED ON	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : B23K 26/38

EP2929602 A2	20161221	LSRE	RIC1	IPC CODE ASSIGNED BEFORE GRANT INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	20140101ALI20161117BHEP CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : E21B 7/14 20060101ALI20161117BHEP
EP2929602 A2	20161221	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01S 3/30 20060101ALI20161117BHEP
EP2929602 A2	20161221	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01S 3/094 20060101ALN20161117BHEP
EP2929602 A2	20161221	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01S 3/23 20060101ALI20161117BHEP
EP2929602 A2	20161221	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : B23K 26/382 20140101ALI20161117BHEP
EP2929602 A2	20161221	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01S 3/00 20060101AFI20161117BHEP
EP2929602 A2	20161221	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : H01S 3/16 20060101ALI20161117BHEP
GC3576 A	20150604	LSGT	+	granted / extensions (spc, cpc, pte)	
GC3576 A	20291031	PEXP		Calculated Patent Term Expiry	
GC5934 A	20170716	LSGT	+	granted / extensions (spc, cpc, pte)	
GC5934 A	20330302	PEXP		Calculated Patent Term Expiry	
JP2012500350 T2	20120105	LSPB	+	published / reissued	
JP2012500350 T2	20120821	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20120820
JP2012500350 T2	20120821	LSSES	+A621	WRITTEN REQUEST FOR APPLICATION EXAMINATION	TEXT : JAPANESE INTERMEDIATE CODE: A621 EFFECTIVE DATE : 20120820
JP2012500350 T2	20120904	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20120903
JP2012500350 T2	20130828	LSSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20130827
JP2012500350 T2	20140227	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20140226
JP2012500350 T2	20140521	LSRV	-A02	DECISION OF REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A02 EFFECTIVE DATE : 20140520
JP2012518210 T2	20120809	LSPB	+	published / reissued	
JP2012518210 T2	20130216	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20130215

JP2012518210 T2	20130216	LSSES	+A621	WRITTEN REQUEST FOR APPLICATION EXAMINATION	TEXT : JAPANESE INTERMEDIATE CODE: A621 EFFECTIVE DATE : 20130215
JP2012518210 T2	20130918	LSSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20130917
JP2012518210 T2	20140318	LSRE	A524	WRITTEN SUBMISSION OF COPY OF AMENDMENT UNDER SECTION 19 (PCT)	TEXT : JAPANESE INTERMEDIATE CODE: A524 EFFECTIVE DATE : 20140317
JP2012518210 T2	20140910	LSSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20140909
JP2012518210 T2	20141202	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20141201
JP2012518210 T2	20141212	LSGT	+TRDD	DECISION OF GRANT OR REJECTION WRITTEN	
JP2012518210 T2	20150107	LSGT	+A01	WRITTEN DECISION TO GRANT A PATENT OR TO GRANT A REGISTRATION (UTILITY MODEL)	TEXT : JAPANESE INTERMEDIATE CODE: A01 EFFECTIVE DATE : 20150106
JP2012518210 T2	20150122	LSFE	+A61	FIRST PAYMENT OF ANNUAL FEES (DURING GRANT PROCEDURE)	TEXT : JAPANESE INTERMEDIATE CODE: A61 EFFECTIVE DATE : 20150114
JP2012518210 T2	20150123	LSGT	+R150	CERTIFICATE OF PATENT OR REGISTRATION OF UTILITY MODEL	TEXT : JAPANESE INTERMEDIATE CODE: R150 REF DOCUMENT NUMBER : 5684151 COUNTRY OF REF DOCUMENT : JP
JP2015017498 A2	20150129	LSPB	+	published / reissued	
JP2015017498 A2	20150708	LSSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20150707
JP2015017498 A2	20151001	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20151001
JP2015017498 A2	20151105	LSGT	+TRDD	DECISION OF GRANT OR REJECTION WRITTEN	
JP2015017498 A2	20151112	LSGT	+A01	WRITTEN DECISION TO GRANT A PATENT OR TO GRANT A REGISTRATION (UTILITY MODEL)	TEXT : JAPANESE INTERMEDIATE CODE: A01 EFFECTIVE DATE : 20151111
JP2015017498 A2	20151126	LSFE	+A61	FIRST PAYMENT OF ANNUAL FEES (DURING GRANT PROCEDURE)	TEXT : JAPANESE INTERMEDIATE CODE: A61 EFFECTIVE DATE : 20151119
JP2015017498 A2	20151127	LSGT	+R150	CERTIFICATE OF PATENT OR REGISTRATION OF UTILITY MODEL	TEXT : JAPANESE INTERMEDIATE CODE: R150 REF DOCUMENT NUMBER : 5844868 COUNTRY OF REF DOCUMENT : JP
JP5684151 B2	20150311	LSGT	+	granted / extensions (spc, cpc, pte)	
JP5684151 B2	20150108	LSGT	+A01	特許査定書 Decision of patent grant	
JP5684151 B2	20150120	LSFE	R100	特許料納付書 Patent fee	

JP5684151 B2	20150123	LSGT	+R150	payment form 特許証 Patent certificate	
JP5684151 B2	20180125	LSFE	R20	特許料納付書 Patent fee payment form	
JP5684151 B2	20180130	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP5684151 B2	20181227	LSFE	R20	特許料納付書 Patent fee payment form	
JP5684151 B2	20190108	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP5684151 B2	20300217	PEXP		Calculated Patent Term Expiry	
JP5844868 B2	20160120	LSGT	+	granted / extensions (spc, cpc, pte)	
JP5844868 B2	20151119	LSGT	+A01	特許査定書 Decision of patent grant	
JP5844868 B2	20151124	LSFE	R100	特許料納付書 Patent fee payment form	
JP5844868 B2	20151127	LSGT	+R150	特許証 Patent certificate	
JP5844868 B2	20181011	LSFE	R20	特許料納付書 Patent fee payment form	
JP5844868 B2	20181016	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP5844868 B2	20340919	PEXP		Calculated Patent Term Expiry	
MX2011001908 A1	20110620	LSPB	+	published / reissued	
MX2011001908 A1	20180425	LSGT	+FG	GRANT OR REGISTRATION	
MX355677 B	20180425	LSGT	+	granted / extensions (spc, cpc, pte)	
MX355677 B	20290819	PEXP		Calculated Patent Term Expiry	
RU2011110388 A	20120927	LSPB	+	published / reissued	
RU2011138270 A	20130327	LSPB	+	published / reissued	
RU2522016 C2	20140710	LSGT	+	granted / extensions (spc, cpc, pte)	
RU2522016 C2	20290819	PEXP		Calculated Patent Term Expiry	
RU2551392 C2	20150520	LSGT	+	granted / extensions (spc, cpc, pte)	
RU2551392 C2	20300217	PEXP		Calculated Patent Term Expiry	
SG192915 A1	20130930	LSPB	+	published / reissued	
US10001612 BB	20180619	LSGT	+	granted / extensions (spc, cpc, pte)	
US10001612 BB	20360513	PEXP		Calculated Patent Term Expiry	
US10036232 BB	20180731	LSGT	+	granted / extensions (spc, cpc, pte)	

US10036232 BB	20180711	LSGT	PAT1	Patented Case	
US10036232 BB	20350131	PEXP		Calculated Patent Term Expiry (PTA 467 days and a terminal disclaimer has been filed)	
US10042123 BB	20180807	LSGT	+	granted / extensions (spc, cpc, pte)	
US10042123 BB	20180718	LSGT	PAT1	Patented Case	
US10042123 BB	20360505	PEXP		Calculated Patent Term Expiry	
US10053967 BB	20180821	LSGT	+	granted / extensions (spc, cpc, pte)	
US10053967 BB	20180801	LSGT	PAT1	Patented Case	
US10053967 BB	20350405	PEXP		Calculated Patent Term Expiry (PTA 506 days)	
US10195687 BB	20190205	LSGT	+	granted / extensions (spc, cpc, pte)	
US10195687 BB	20190116	LSGT	PAT1	Patented Case	
US10195687 BB	20351211	PEXP		Calculated Patent Term Expiry (PTA 718 days)	
US10199798 BB	20190205	LSGT	+	granted / extensions (spc, cpc, pte)	
US10199798 BB	20190116	LSGT	PAT1	Patented Case	
US10199798 BB	20351226	PEXP		Calculated Patent Term Expiry (PTA 23 days)	
US2010044102 AA	20100225	LSPB	+	published / reissued	
US2010044102 AA	20140108	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2010044103 AA	20100225	LSPB	+	published / reissued	
US2010044103 AA	20140820	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2010044104 AA	20100225	LSPB	+	published / reissued	
US2010044104 AA	20140813	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2010044105 AA	20100225	LSPB	+	published / reissued	
US2010044105 AA	20130403	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2010044106 AA	20100225	LSPB	+	published / reissued	
US2010044106 AA	20130307	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; RINZLER, CHARLES C.; FAIRCLOTH, BRIAN O.; AND OTHERS; SIGNING DATES FROM 20090818 TO 20090819; REEL/FRAME:029938/0294
US2010044106 AA	20130731	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2010215326 AA	20100826	LSPB	+	published /	

reissued					
US2010215326 AA	20100507	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; RINZLER, CHARLES C.; FAIRCLOTH, BRIAN O.; AND OTHERS; REEL/FRAME:024384/0594 EFFECTIVE DATE : 20100504
US2010215326 AA	20110304	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:KOBlick, YESHAYA; REEL/FRAME:025900/0904 EFFECTIVE DATE : 20110213
US2012020631 AA	20120126	LSPB	+	published / reissued	
US2012067643 AA	20120322	LSPB	+	published / reissued	
US2012067643 AA	20111206	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:DEWITT, RON A.; ZEDIKER, MARK S.; RINZLER, CHARLES S.; AND OTHERS; SIGNING DATES FROM 20111110 TO 20111202; REEL/FRAME:027340/0897
US2012067643 AA	20170405	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2012068086 AA	20120322	LSPB	+	published / reissued	
US2012074110 AA	20120329	LSPB	+	published / reissued	
US2012074110 AA	20111215	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; GRUBB, DARYL L.; KOLACHALAM, SHARATH K.; AND OTHERS; SIGNING DATES FROM 20111107 TO 20111201; REEL/FRAME:027391/0191
US2012074110 AA	20150706	LSES	NFA1	Non Final Action Mailed	
US2012074110 AA	20161121	LSES	NFA1	Non Final Action Mailed	
US2012074110 AA	20170731	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2012217018 AA	20120830	LSPB	+	published / reissued	
US2012248078 AA	20121004	LSPB	+	published / reissued	
US2012255774 AA	20121011	LSPB	+	published / reissued	
US2012255774 AA	20120625	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:GRUBB, DARYL L.; KOLACHALAM, SHARATH K.; FAIRCLOTH, BRIAN O.; AND OTHERS; SIGNING DATES FROM 20120516 TO 20120611; REEL/FRAME:028433/0832
US2012255933 AA	20121011	LSPB	+	published / reissued	
US2012261188 AA	20121018	LSPB	+	published / reissued	
US2012261188 AA	20120706	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO

					OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; FAIRCLOTH, BRIAN O.; ALLEN, ERIK C.; SIGNING DATES FROM 20120517 TO 20120605; REEL/FRAME:028497/0831
US2012261188 AA	20161102	LSES	NFA1	Non Final Action Mailed	
US2012261188 AA	20170824	LSES	NFA1	Non Final Action Mailed	
US2012261188 AA	20180411	LSES	NFA1	Non Final Action Mailed	
US2012261188 AA	20190219	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2012266803 AA	20121025	LSPB	+	published / reissued	
US2012267168 AA	20121025	LSPB	+	published / reissued	
US2012273269 AA	20121101	LSPB	+	published / reissued	
US2012273269 AA	20120716	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:RINZLER, CHARLES C.; GRAY, WILLIAM C.; FAIRCLOTH, BRIAN O.; AND OTHERS; SIGNING DATES FROM 20120516 TO 20120517; REEL/FRAME:028554/0242
US2012273470 AA	20121101	LSPB	+	published / reissued	
US2012273470 AA	20120713	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; FAIRCLOTH, BRIAN O.; REEL/FRAME:028541/0978 EFFECTIVE DATE : 20120517
US2012273470 AA	20170307	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2012275159 AA	20121101	LSPB	+	published / reissued	
US2012275159 AA	20120713	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FRAZE, JASON D.; FAIRCLOTH, BRIAN O.; ZEDIKER, MARK S.; SIGNING DATES FROM 20120516 TO 20120517; REEL/FRAME:028542/0338
US2013011102 AA	20130110	LSPB	+	published / reissued	
US2013011102 AA	20120926	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:RINZLER, CHARLES C.; GRAY, WILLIAM C.; FRAZE, JASON D.; AND OTHERS; REEL/FRAME:029029/0609 EFFECTIVE DATE : 20120919
US2013175090 AA	20130711	LSPB	+	published / reissued	
US2013175090 AA	20150220	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S., MR.; RINZLER, CHARLES C., MR.; FAIRCLOTH, BRIAN O., MR.; AND OTHERS; SIGNING DATES FROM 20090818 TO 20090819; REEL/FRAME:034999/0249
US2013192893 AA	20130801	LSPB	+	published /	

US2013192894 AA	20130801	LSPB	+	reissued published / reissued	
US2013192894 AA	20140509	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; RINZLER, CHARLES C.; FAIRCLOTH, BRIAN O.; AND OTHERS; SIGNING DATES FROM 20090818 TO 20090819; REEL/FRAAME:032861/0013
US2013228372 AA	20130905	LSPB	+	published / reissued	
US2013228372 AA	20160125	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., TEXAS OLDPARTY : EMPLOYEE AGREEMENT; ASSIGNOR: SCHROIT, SAM; REEL/FRAAME:037590/0976 EFFECTIVE DATE : 20100322
US2013228372 AA	20160125	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:LINYAEV, EUGENE J.; ZEDIKER, MARK S.; GRUBB, DARYL L.; AND OTHERS; SIGNING DATES FROM 20150120 TO 20150602; REEL/FRAAME:037575/0336
US2013228372 AA	20170525	LSSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US2013228372 AA	20170623	LSFE	+PPR1	Publications -- Issue Fee Payment Received	
US2013228372 AA	20170626	LSFE	+PPV1	Publications -- Issue Fee Payment Verified	
US2013228557 AA	20130905	LSPB	+	published / reissued	
US2013228557 AA	20150522	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; FAIRCLOTH, BRIAN O.; KOLACHALAM, SHARATH K.; AND OTHERS; SIGNING DATES FROM 20150420 TO 20150422; REEL/FRAAME:035702/0220
US2013266031 AA	20131010	LSPB	+	published / reissued	
US2013266031 AA	20141018	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:NORTON, RYAN J.; MCKAY, RYAN P.; FAIRCLOTH, BRIAN O.; AND OTHERS; SIGNING DATES FROM 20140909 TO 20140915; REEL/FRAAME:033976/0255
US2013319984 AA	20131205	LSPB	+	published / reissued	
US2013319984 AA	20140806	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:LINYAEV, EUGENE J.; MARSHALL, SCOTT A.; GRUBB, DARYL L.; AND OTHERS; SIGNING DATES FROM 20140203 TO 20140207; REEL/FRAAME:033474/0049
US2013319984 AA	20170427	LSFE	+PPV1	Publications -- Issue Fee Payment Verified	
US2014000902 AA	20140102	LSPB	+	published / reissued	

US2014000902 AA	20150515	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:WOLFE, DANIEL L.; GRUBB, DARYL L.; DEUTCH, PAUL D.; AND OTHERS; SIGNING DATES FROM 20150420 TO 20150427; REEL/FRAAME:035652/0351
US2014000902 AA	20150515	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : CHEVRON U.S.A. INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:WOLFE, DANIEL L.; GRUBB, DARYL L.; DEUTCH, PAUL D.; AND OTHERS; SIGNING DATES FROM 20150420 TO 20150427; REEL/FRAAME:035652/0351
US2014000902 AA	20170321	LSES	NFA1	Non Final Action Mailed	
US2014000902 AA	20170616	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:CHEVRON, U.S.A. INC.; REEL/FRAAME:042734/0962 EFFECTIVE DATE : 20170117
US2014000902 AA	20170810	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US2014000902 AA	20171113	LSFE	+PPR1	Publications -- Issue Fee Payment Received	
US2014000902 AA	20171114	LSFE	+PPV1	Publications -- Issue Fee Payment Verified	
US2014060802 AA	20140306	LSPB	+	published / reissued	
US2014060802 AA	20140723	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; RINZLER, CHARLES C.; FAIRCLOTH, BRIAN O.; AND OTHERS; SIGNING DATES FROM 20090818 TO 20090819; REEL/FRAAME:033373/0862
US2014060930 AA	20140306	LSPB	+	published / reissued	
US2014060930 AA	20140722	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; RINZLER, CHARLES C.; FAIRCLOTH, BRIAN O.; AND OTHERS; SIGNING DATES FROM 20090818 TO 20090819; REEL/FRAAME:033364/0486
US2014090846 AA	20140403	LSPB	+	published / reissued	
US2014090846 AA	20140814	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:DEUTCH, PAUL D.; MARSHALL, SCOTT A.; GRUBB, DARYL L.; AND OTHERS; SIGNING DATES FROM 20140812 TO 20140813; REEL/FRAAME:033536/0434
US2014190949 AA	20140710	LSPB	+	published / reissued	
US2014190949 AA	20140827	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; FAIRCLOTH, BRIAN O.; GRUBB, DARYL L.; AND OTHERS; SIGNING DATES FROM 20140815 TO 20140818; REEL/FRAAME:033621/0769

US2014231085 AA	20140821	LSPB	+	published / reissued	
US2014231398 AA	20140821	LSPB	+	published / reissued	
US2014231398 AA	20140814	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:LAND, MARK S.; VOLKMAR, JOHN F.; ZEDIKER, MARK S.; AND OTHERS; SIGNING DATES FROM 20140203 TO 20140725; REEL/FRAAME:033535/0209
US2014231398 AA	20180316	LSES	NFA1	Non Final Action Mailed	
US2014248025 AA	20140904	LSPB	+	published / reissued	
US2015129203 AA	20150514	LSPB	+	published / reissued	
US2015129203 AA	20140815	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:DEUTCH, PAUL D.; DE WITT, RONALD A.; KELLERMANN, FRED C.; AND OTHERS; SIGNING DATES FROM 20140204 TO 20140209; REEL/FRAAME:033545/0460
US2015129203 AA	20150715	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ENERGY, UNITED STATES DEPARTMENT OF, DISTRICT OF C OLDPARTY : CONFIRMATORY LICENSE; ASSIGNOR:FORO ENERGY, INC.; REEL/FRAAME:036109/0947 EFFECTIVE DATE : 20150323
US2015129203 AA	20171207	LSES	-NFA2	Non Final Action Counted, Not Yet Mailed	
US2015129203 AA	20171208	LSES	NFA1	Non Final Action Mailed	
US2015129203 AA	20180421	LSFE	-AWA4	Awaiting TC Resp., Issue Fee Not Paid	
US2015129203 AA	20180423	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US2015129203 AA	20180428	LSFE	-AWA4	Awaiting TC Resp., Issue Fee Not Paid	
US2015129203 AA	20180430	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US2015129203 AA	20180717	LSFE	+PPR1	Publications -- Issue Fee Payment Received	
US2015307174 AA	20151029	LSPB	+	published / reissued	
US2015307174 AA	20151214	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; FAIRCLOTH, BRIAN O.; RINZLER, CHARLES C.; REEL/FRAAME:037283/0491 EFFECTIVE DATE : 20120706
US2015308194 AA	20151029	LSPB	+	published / reissued	
US2015308194 AA	20150220	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO

					OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:MOXLEY, JOEL F., MR.; LAND, MARK S., MR.; RINZLER, CHARLES C., MR.; AND OTHERS; SIGNING DATES FROM 20090818 TO 20090819; REEL/FRAME:034999/0661
US2015308194 AA	20170505	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2015321290 AA	20151112	LSPB	+	published / reissued	
US2015321290 AA	20161003	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; GRUBB, DARYL L.; DE WITT, RONALD A.; AND OTHERS; SIGNING DATES FROM 20121003 TO 20121005; REEL/FRAME:039924/0987
US2015322738 AA	20151112	LSPB	+	published / reissued	
US2015322738 AA	20160128	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:RINZLER, CHARLES C.; ZEDIKER, MARK S.; FAIRCLOTH, BRIAN O.; AND OTHERS; REEL/FRAME:037614/0307 EFFECTIVE DATE : 20090818
US2016017661 AA	20160121	LSPB	+	published / reissued	
US2016017661 AA	20151202	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; LAND, MARK S.; RINZLER, CHARLES C.; AND OTHERS; SIGNING DATES FROM 20090818 TO 20090819; REEL/FRAME:037193/0679
US2016084008 AA	20160324	LSPB	+	published / reissued	
US2016084008 AA	20160401	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FAIRCLOTH, BRIAN O.; KOBlick, YESHAYA; MOXLEY, JOEL F.; AND OTHERS; SIGNING DATES FROM 20160210 TO 20160401; REEL/FRAME:038176/0033
US2016084008 AA	20170322	LSES	NFA1	Non Final Action Mailed	
US2016084008 AA	20170906	LSES	NFA1	Non Final Action Mailed	
US2016090790 AA	20160331	LSPB	+	published / reissued	
US2016186497 AA	20160630	LSPB	+	published / reissued	
US2016186497 AA	20151014	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., COLORADO OLDPARTY : CORRECTIVE ASSIGNMENT TO CORRECT THE APPLICATION SERIAL 13/403,287 PREVIOUSLY RECORDED ON REEL 036769 FRAME 0244. ASSIGNOR(S) HEREBY CONFIRMS THE ASSIGNMENT; ASSIGNORS:GRUBB, DARYL L.; ZEDIKER, MARK S.; FAIRCLOTH, BRIAN O.; SIGNING DATES FROM 20120516 TO 20120517; REEL/FRAME:036955/0440
US2016186497 AA	20170606	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US2016186497 AA	20170901	LSFE	+PPV1	Publications --	

US2016186524 AA	20160630	LSPB	+	Issue Fee Payment Verified published / reissued	
US2016186524 AA	20160805	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FAIRCLOTH, BRIAN O; ZEDIKER, MARK S; SIGNING DATES FROM 20160802 TO 20160803; REEL/FRA:039359/0170
US2016186524 AA	20170616	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:CHEVRON, U.S.A. INC.,; REEL/FRA:042734/0962 EFFECTIVE DATE : 20170117
US2016186524 AA	20170927	LSES	-NFA2	Non Final Action Counted, Not Yet Mailed	
US2016186524 AA	20171002	LSES	NFA1	Non Final Action Mailed	
US2016186524 AA	20180402	LSES	NFA1	Non Final Action Mailed	
US2016187588 AA	20160630	LSPB	+	published / reissued	
US2016187588 AA	20160304	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:NORTON, RYAN J; MCKAY, RYAN P; FRAZE, JASON D; AND OTHERS; SIGNING DATES FROM 20140909 TO 20140915; REEL/FRA:037897/0747
US2016187588 AA	20170418	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2016221125 AA	20160804	LSPB	+	published / reissued	
US2016221125 AA	20140814	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FAIRCLOTH, BRIAN O.; ZEDIKER, MARK S.; KOLACHALAM, SHARATH K.; AND OTHERS; SIGNING DATES FROM 20140203 TO 20140207; REEL/FRA:033536/0573
US2016222763 AA	20160804	LSPB	+	published / reissued	
US2016222763 AA	20140106	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:DEWITT, RONALD A.; ZEDIKER, MARK S.; FAIRCLOTH, BRIAN O.; AND OTHERS; SIGNING DATES FROM 20111107 TO 20111202; REEL/FRA:031900/0416
US2016222763 AA	20170807	LSES	NFA1	Non Final Action Mailed	
US2016222763 AA	20180322	LSES	+ALW2	Allowed -- Notice of Allowance Not Yet Mailed	
US2016222763 AA	20180323	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US2016222763 AA	20180403	LSFE	-AWA4	Awaiting TC Resp., Issue Fee Not Paid	
US2016222763 AA	20180405	LSES	+NAM1	Notice of Allowance	

US2016222763 AA	20180627	LSFE	+PPR1	Mailed -- Application Received in Office of Publications -- Issue Fee Payment Received	
US2016222763 AA	20180628	LSFE	+PPV1	Publications -- Issue Fee Payment Verified	
US2016251940 AA	20160901	LSPB	+	published / reissued	
US2016251940 AA	20160622	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:DEWITT, RONALD A; NEHLSSEN, JAMES P; MOXLEY, JOEL F; AND OTHERS; SIGNING DATES FROM 20160421 TO 20160610; REEL/FRAAME:038980/0071
US2016251940 AA	20171220	LSES	-NFA2	Non Final Action Counted, Not Yet Mailed	
US2016251940 AA	20171227	LSES	NFA1	Non Final Action Mailed	
US2016251940 AA	20190103	LSFE	+PPV1	Publications -- Issue Fee Payment Verified	
US2016299304 AA	20161013	LSPB	+	published / reissued	
US2016299304 AA	20161214	LSES	NFA1	Non Final Action Mailed	
US2016299304 AA	20180222	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US2016299304 AA	20180306	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC, COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S; RINZLER, CHARLES C; FAIRCLOTH, BRIAN O; AND OTHERS; REEL/FRAAME:045117/0305 EFFECTIVE DATE : 20100504
US2016299304 AA	20180530	LSGT	PAT1	Patented Case	
US2016341906 AA	20161124	LSPB	+	published / reissued	
US2016341906 AA	20160728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:RINZLER, CHARLES C; GRAY, WILLIAM C; FRAZE, JASON D; AND OTHERS; REEL/FRAAME:039284/0712 EFFECTIVE DATE : 20120919
US2016341906 AA	20170731	LSES	NFA1	Non Final Action Mailed	
US2016341906 AA	20180325	LSES	+ALW2	Allowed -- Notice of Allowance Not Yet Mailed	
US2016341906 AA	20180326	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US2016341906 AA	20180627	LSFE	+PPR1	Publications -- Issue Fee Payment Received	
US2016341906 AA	20180628	LSFE	+PPV1	Publications --	

US2017016299 AA	20170119	LSPB	+	Issue Fee Payment Verified published / reissued	
US2017016299 AA	20161004	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FAIRCLOTH, BRIAN O; GRUBB, DARYL; MARSHALL, SCOTT A; AND OTHERS; SIGNING DATES FROM 20160810 TO 20160829; REEL/FRAME:039929/0822
US2017016299 AA	20190208	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US2017059854 AA	20170302	LSPB	+	published / reissued	
US2017059854 AA	20160805	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FRAZE, JASON D; FAIRCLOTH, BRIAN O; ZEDIKER, MARK S; SIGNING DATES FROM 20160802 TO 20160803; REEL/FRAME:039359/0122
US2017059854 AA	20170818	LSES	NFA1	Non Final Action Mailed	
US2017059854 AA	20171228	LSES	-NFA2	Non Final Action Counted, Not Yet Mailed	
US2017059854 AA	20180104	LSES	NFA1	Non Final Action Mailed	
US2017059854 AA	20180730	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2017191314 AA	20170706	LSPB	+	published / reissued	
US2017191314 AA	20170530	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FAIRCLOTH, BRIAN O; ZEDIKER, MARK S; LAND, MARK S; AND OTHERS; SIGNING DATES FROM 20170424 TO 20170523; REEL/FRAME:042525/0352
US2017191314 AA	20180605	LSES	-NFA2	Non Final Action Counted, Not Yet Mailed	
US2017191314 AA	20180606	LSES	NFA1	Non Final Action Mailed	
US2017214213 AA	20170727	LSPB	+	published / reissued	
US2017214213 AA	20140813	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; FAIRCLOTH, BRIAN O.; RINZLER, CHARLES C.; SIGNING DATES FROM 20140210 TO 20140812; REEL/FRAME:033525/0747
US2017214213 AA	20170907	LSES	NFA1	Non Final Action Mailed	
US2017214213 AA	20180130	LSES	NFA1	Non Final Action Mailed	
US2017214213 AA	20180904	LSES	NFA1	Non Final Action Mailed	
US2017252858 AA	20170907	LSPB	+	published / reissued	
US2017252858 AA	20170628	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO

					OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; GRUBB, DARYL L.; DEWITT, RONALD A.; AND OTHERS; SIGNING DATES FROM 20121003 TO 20121005; REEL/FRAME:043019/0860	
US2017252858 AA	20190329	LSES	NFA1	Non Final Action Mailed		
US2017266760 AA	20170921	LSPB	+	published / reissued		
US2017321486 AA	20171109	LSPB	+	published / reissued		
US2017321486 AA	20181219	LSES	NFA1	Non Final Action Mailed		
US2018045024 AA	20180215	LSPB	+	published / reissued		
US2018045024 AA	20181212	LSES	NFA1	Non Final Action Mailed		
US2018045895 AA	20180215	LSPB	+	published / reissued		
US2018045895 AA	20181207	LSES	NFA1	Non Final Action Mailed		
US2018163477 AA	20180614	LSPB	+	published / reissued		
US2018163477 AA	20190204	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications		
US2018163477 AA	20190313	LSFE	-AWA4	Awaiting TC Resp., Issue Fee Not Paid		
US2018163477 AA	20190322	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications		
US2018328150 AA	20181115	LSPB	+	published / reissued		
US2018328150 AA	20190328	LSES	NFA1	Non Final Action Mailed		
US2019040726 AA	20190207	LSPB	+	published / reissued		
US8424617 BB	20130423	LSGT	+	granted / extensions (spc, cpc, pte)		
US8424617 BB	20090821	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC.,COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FAIRCLOTH, BRIAN O.; ZEDIKER, MARK S.; RINZLER, CHARLES C.; AND OTHERS; SIGNING DATES FROM 20090818 TO 20090819; REEL/FRAME:023131/0563	
US8424617 BB	20090821	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FAIRCLOTH, BRIAN O.; ZEDIKER, MARK S.; RINZLER, CHARLES C.; AND OTHERS; SIGNING DATES FROM 20090818 TO 20090819; REEL/FRAME:023131/0563	
US8424617 BB	20130403	LSGT	PAT1	Patented Case		
US8424617 BB	20130709	LSRE	CC	CERTIFICATE OF CORRECTION		
US8424617 BB	20141230	LSRE	CC	CERTIFICATE OF CORRECTION		
US8424617 BB	20161024	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4	
US8424617 BB	20300303	PEXP		Calculated Patent Term		

US8511401 BB	20130820	LSGT	+	Expiry (PTA 196 days) granted / extensions (spc, cpc, pte)	
US8511401 BB	20090821	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC.,COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; RINZLER, CHARLES C.; FAIRCLOTH, BRIAN O.; AND OTHERS; SIGNING DATES FROM 20090818 TO 20090819; REEL/FRAME:023131/0870
US8511401 BB	20090821	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; RINZLER, CHARLES C.; FAIRCLOTH, BRIAN O.; AND OTHERS; SIGNING DATES FROM 20090818 TO 20090819; REEL/FRAME:023131/0870
US8511401 BB	20130731	LSGT	PAT1	Patented Case	
US8511401 BB	20170220	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8511401 BB	20310310	PEXP		Calculated Patent Term Expiry (PTA 568 days)	
US8571368 BB	20131029	LSGT	+	granted / extensions (spc, cpc, pte)	
US8571368 BB	20100727	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:RINZLER, CHARLES C.; ZEDIKER, MARK S.; REEL/FRAME:024843/0221 EFFECTIVE DATE : 20100721
US8571368 BB	20131009	LSGT	PAT1	Patented Case	
US8571368 BB	20140311	LSRE	CC	CERTIFICATE OF CORRECTION	
US8571368 BB	20170501	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8571368 BB	20301024	PEXP		Calculated Patent Term Expiry (PTA 95 days)	
US8627901 BA	20140114	LSGT	+	granted / extensions (spc, cpc, pte)	
US8627901 BA	20101123	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:UNDERWOOD, LANCE D.; NORTON, RYAN J.; MCKAY, RYAN P.; AND OTHERS; REEL/FRAME:025308/0653 EFFECTIVE DATE : 20101116
US8627901 BA	20131224	LSGT	PAT1	Patented Case	
US8627901 BA	20170714	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8627901 BA	20311203	PEXP		Calculated Patent Term Expiry (PTA 428 days)	
US8636085 BB	20140128	LSGT	+	granted / extensions (spc, cpc, pte)	
US8636085 BB	20090821	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:RINZLER, CHARLES C.; ZEDIKER, MARK S.; FAIRCLOTH, BRIAN O.; AND OTHERS; REEL/FRAME:023131/0725

EFFECTIVE DATE : 20090818					
US8636085 BB	20090821	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC.,COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:RINZLER, CHARLES C.; ZEDIKER, MARK S.; FAIRCLOTH, BRIAN O.; AND OTHERS; REEL/FRAME:023131/0725 EFFECTIVE DATE : 20090818
US8636085 BB	20140108	LSGT	PAT1	Patented Case	
US8636085 BB	20170728	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8636085 BB	20320117	PEXP		Calculated Patent Term Expiry (PTA 881 days)	
US8662160 BB	20140304	LSGT	+	granted / extensions (spc, cpc, pte)	
US8662160 BB	20140106	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:DEWITT, RONALD A.; ZEDIKER, MARK S.; FAIRCLOTH, BRIAN O.; AND OTHERS; SIGNING DATES FROM 20111107 TO 20111202; REEL/FRAME:031900/0416
US8662160 BB	20140212	LSGT	PAT1	Patented Case	
US8662160 BB	20140715	LSRE	CC	CERTIFICATE OF CORRECTION	
US8662160 BB	20170831	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8662160 BB	20320731	PEXP		Calculated Patent Term Expiry (PTA 350 days)	
US8701794 BB	20140422	LSGT	+	granted / extensions (spc, cpc, pte)	
US8701794 BB	20140402	LSGT	PAT1	Patented Case	
US8701794 BB	20160824	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; RINZLER, CHARLES C; FAIRCLOTH, BRIAN O; AND OTHERS; SIGNING DATES FROM 20090818 TO 20090819; REEL/FRAME:039520/0954
US8701794 BB	20171010	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8701794 BB	20330313	PEXP		Calculated Patent Term Expiry (a terminal disclaimer has been filed)	
US8757292 BB	20140624	LSGT	+	granted / extensions (spc, cpc, pte)	
US8757292 BB	20140604	LSGT	PAT1	Patented Case	
US8757292 BB	20171110	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8757292 BB	20330313	PEXP		Calculated Patent Term Expiry	
US8783361 BB	20140722	LSGT	+	granted / extensions (spc, cpc, pte)	
US8783361 BB	20110825	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S., MR.; BERGERON, HENRY A., MR.;

					CLARK, PHILIP V., MR.; AND OTHERS; SIGNING DATES FROM 20110713 TO 20110817; REEL/FRAME:026806/0781
US8783361 BB	20110825	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : CHEVRON U.S.A. INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S., MR.; BERGERON, HENRY A., MR.; CLARK, PHILIP V., MR.; AND OTHERS; SIGNING DATES FROM 20110713 TO 20110817; REEL/FRAME:026806/0781
US8783361 BB	20110913	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : CORRECTIVE ASSIGNMENT TO CORRECT THE OMISSION OF PAUL D. DEUTCH AS AN ASSIGNOR TO PREVIOUSLY MAILED NOTICE OF RECORDATION OF ASSIGNMENT DOCUMENT PREVIOUSLY RECORDED ON REEL 026806 FRAME 0781. ASSIGNOR(S) HEREBY CONFIRMS THE ASSIGNMENT OF U.S. APPLN. 13/034,175 TO CHEVRON U.S.A. INC. AND FORO ENERGY INC.; ASSIGNORS:ZEDIKER, MARK S., MR.; BERGERON, HENRY A., MR.; CLARK, PHILIP V., MR.; AND OTHERS; SIGNING DATES FROM 20110713 TO 20110817; REEL/FRAME:026893/0644
US8783361 BB	20110913	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : CHEVRON U.S.A. INC., TEXAS OLDPARTY : CORRECTIVE ASSIGNMENT TO CORRECT THE OMISSION OF PAUL D. DEUTCH AS AN ASSIGNOR TO PREVIOUSLY MAILED NOTICE OF RECORDATION OF ASSIGNMENT DOCUMENT PREVIOUSLY RECORDED ON REEL 026806 FRAME 0781. ASSIGNOR(S) HEREBY CONFIRMS THE ASSIGNMENT OF U.S. APPLN. 13/034,175 TO CHEVRON U.S.A. INC. AND FORO ENERGY INC.; ASSIGNORS:ZEDIKER, MARK S., MR.; BERGERON, HENRY A., MR.; CLARK, PHILIP V., MR.; AND OTHERS; SIGNING DATES FROM 20110713 TO 20110817; REEL/FRAME:026893/0644
US8783361 BB	20140702	LSGT	PAT1	Patented Case	
US8783361 BB	20170616	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:CHEVRON, U.S.A. INC.; REEL/FRAME:042734/0962 EFFECTIVE DATE : 20170117
US8783361 BB	20171224	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : ENTITY STATUS SET TO SMALL (ORIGINAL EVENT CODE: SMAL)
US8783361 BB	20180110	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8783361 BB	20321021	PEXP		Calculated Patent Term Expiry (PTA 605 days)	
US8820434 BB	20140902	LSGT	+	granted / extensions (spc, cpc, pte)	
US8820434 BB	20090821	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; LAND, MARK S.; RINZLER, CHARLES C.; AND OTHERS; SIGNING DATES FROM 20090818 TO 20090819; REEL/FRAME:023131/0922
US8820434 BB	20090821	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC.,COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; LAND, MARK S.; RINZLER, CHARLES C.; AND OTHERS; SIGNING DATES FROM 20090818 TO 20090819; REEL/FRAME:023131/0922

US8820434 BB	20140813	LSGT	PAT1	Patented Case	
US8820434 BB	20180221	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8820434 BB	20320720	PEXP		Calculated Patent Term Expiry (PTA 1066 days)	
US8826973 BB	20140909	LSGT	+	granted / extensions (spc, cpc, pte)	
US8826973 BB	20090821	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:MOXLEY, JOEL F.; LAND, MARK S.; RINZLER, CHARLES C.; AND OTHERS; SIGNING DATES FROM 20090818 TO 20090819; REEL/FRAME:023640/0326
US8826973 BB	20090821	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC.,COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:MOXLEY, JOEL F.; LAND, MARK S.; RINZLER, CHARLES C.; AND OTHERS; SIGNING DATES FROM 20090818 TO 20090819; REEL/FRAME:023640/0326
US8826973 BB	20140820	LSGT	PAT1	Patented Case	
US8826973 BB	20180221	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8826973 BB	20310726	PEXP		Calculated Patent Term Expiry (PTA 706 days)	
US8869914 BB	20141028	LSGT	+	granted / extensions (spc, cpc, pte)	
US8869914 BB	20141008	LSGT	PAT1	Patented Case	
US8869914 BB	20180314	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8869914 BB	20330313	PEXP		Calculated Patent Term Expiry (a terminal disclaimer has been filed)	
US8879876 BB	20141104	LSGT	+	granted / extensions (spc, cpc, pte)	
US8879876 BB	20140728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:RINZLER, CHARLES C.; ZEDIKER, MARK S.; REEL/FRAME:033400/0559 EFFECTIVE DATE : 20100721
US8879876 BB	20141015	LSGT	PAT1	Patented Case	
US8879876 BB	20180424	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8879876 BB	20331018	PEXP		Calculated Patent Term Expiry (a terminal disclaimer has been filed)	
US8936108 BB	20150120	LSGT	+	granted / extensions (spc, cpc, pte)	
US8936108 BB	20141230	LSGT	PAT1	Patented Case	
US8936108 BB	20180628	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8936108 BB	20330313	PEXP		Calculated Patent Term Expiry (a terminal disclaimer has been filed)	

US8997894 BB	20150407	LSGT	+	granted / extensions (spc, cpc, pte)	
US8997894 BB	20150318	LSGT	PAT1	Patented Case	
US8997894 BB	20180912	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8997894 BB	20330226	PEXP		Calculated Patent Term Expiry	
US9027668 BB	20150512	LSGT	+	granted / extensions (spc, cpc, pte)	
US9027668 BB	20120621	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; MAKKI, SIAMAK; FAIRCLOTH, BRIAN O.; AND OTHERS; SIGNING DATES FROM 20120517 TO 20120614; REEL/FRAME:028419/0715
US9027668 BB	20150422	LSGT	PAT1	Patented Case	
US9027668 BB	20181017	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US9027668 BB	20330310	PEXP		Calculated Patent Term Expiry (PTA 381 days)	
US9074422 BB	20150707	LSGT	+	granted / extensions (spc, cpc, pte)	
US9074422 BB	20120710	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:GRUBB, DARYL L.; FAIRCLOTH, BRIAN O.; ZEDIKER, MARK S.; SIGNING DATES FROM 20120516 TO 20120517; REEL/FRAME:028523/0749
US9074422 BB	20150617	LSGT	PAT1	Patented Case	
US9074422 BB	20151009	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:GRUBB, DARYL L.; ZEDIKER, MARK S.; FAIRCLOTH, BRIAN O.; SIGNING DATES FROM 20120516 TO 20120517; REEL/FRAME:036769/0244
US9074422 BB	20181210	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US9074422 BB	20330716	PEXP		Calculated Patent Term Expiry (PTA 509 days)	
US9080425 BB	20150714	LSGT	+	granted / extensions (spc, cpc, pte)	
US9080425 BB	20120709	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; JONES-ALBERTUS, REBECCA; FAIRCLOTH, BRIAN O.; AND OTHERS; SIGNING DATES FROM 20120706 TO 20120708; REEL/FRAME:028515/0625
US9080425 BB	20150624	LSGT	PAT1	Patented Case	
US9080425 BB	20151002	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; JONES-ALBERTUS, REBECCA; FAIRCLOTH, BRIAN O.; AND OTHERS; REEL/FRAME:036715/0504 EFFECTIVE DATE : 20120706

US9080425 BB	20181217	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US9080425 BB	20330119	PEXP		Calculated Patent Term Expiry (PTA 375 days)	
US9089928 BB	20150728	LSGT	+	granted / extensions (spc, cpc, pte)	
US9089928 BB	20121016	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZEDIKER, MARK S.; GRUBB, DARYL L.; DE WITT, RONALD A.; AND OTHERS; SIGNING DATES FROM 20121003 TO 20121005; REEL/FRAAME:029135/0702
US9089928 BB	20150708	LSGT	PAT1	Patented Case	
US9089928 BB	20181218	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US9089928 BB	20330412	PEXP		Calculated Patent Term Expiry (PTA 253 days)	
US9138786 BB	20150922	LSGT	+	granted / extensions (spc, cpc, pte)	
US9138786 BB	20120629	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:MCKAY, RYAN P.; RINZLER, CHARLES C.; MOXLEY, JOEL F.; AND OTHERS; SIGNING DATES FROM 20120516 TO 20120614; REEL/FRAAME:028467/0757
US9138786 BB	20150902	LSGT	PAT1	Patented Case	
US9138786 BB	20190222	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US9138786 BB	20321206	PEXP		Calculated Patent Term Expiry (PTA 304 days)	
US9242309 BB	20160126	LSGT	+	granted / extensions (spc, cpc, pte)	
US9242309 BB	20151027	LSSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US9242309 BB	20151216	LSFE	+PPR1	Publications -- Issue Fee Payment Received	
US9242309 BB	20151222	LSFE	+PPV1	Publications -- Issue Fee Payment Verified	
US9242309 BB	20160106	LSGT	PAT1	Patented Case	
US9242309 BB	20331117	PEXP		Calculated Patent Term Expiry (PTA 275 days)	
US9244235 BB	20160126	LSGT	+	granted / extensions (spc, cpc, pte)	
US9244235 BB	20151029	LSSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US9244235 BB	20151113	LSFE	+PPR1	Publications -- Issue Fee	

US9244235 BB	20151218	LSFE	+PPV1	Payment Received Publications -- Issue Fee Payment Verified	
US9244235 BB	20160106	LSGT	PAT1	Patented Case	
US9244235 BB	20331205	PEXP		Calculated Patent Term Expiry (PTA 279 days)	
US9267330 BB	20160223	LSGT	+	granted / extensions (spc, cpc, pte)	
US9267330 BB	20151221	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US9267330 BB	20160203	LSGT	PAT1	Patented Case	
US9267330 BB	20320810	PEXP		Calculated Patent Term Expiry (PTA 169 days)	
US9284783 BA	20160315	LSGT	+	granted / extensions (spc, cpc, pte)	
US9284783 BA	20140815	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : FORO ENERGY, INC., COLORADO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FAIRCLOTH, BRIAN O.; ZEDIKER, MARK S.; RINZLER, CHARLES C.; AND OTHERS; SIGNING DATES FROM 20090818 TO 20090819; REEL/FRAME:033542/0310
US9284783 BA	20160224	LSGT	PAT1	Patented Case	
US9284783 BA	20331105	PEXP		Calculated Patent Term Expiry (PTA 222 days)	
US9327810 BB	20160503	LSGT	+	granted / extensions (spc, cpc, pte)	
US9327810 BB	20150824	LSES	NFA1	Non Final Action Mailed	
US9327810 BB	20160413	LSGT	PAT1	Patented Case	
US9327810 BB	20350702	PEXP		Calculated Patent Term Expiry (a terminal disclaimer has been filed)	
US9347271 BB	20160524	LSGT	+	granted / extensions (spc, cpc, pte)	
US9347271 BB	20160420	LSFE	+PPV1	Publications -- Issue Fee Payment Verified	
US9347271 BB	20160504	LSGT	PAT1	Patented Case	
US9347271 BB	20311207	PEXP		Calculated Patent Term Expiry (PTA 659 days)	
US9360631 BB	20160607	LSGT	+	granted / extensions (spc, cpc, pte)	
US9360631 BB	20151127	LSES	NFA1	Non Final Action Mailed	
US9360631 BB	20160518	LSGT	PAT1	Patented Case	
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US9360643 BB	20160607	LSGT	+	granted / extensions (spc, cpc, pte)
US9360643 BB	20150925	LSES	NFA1	Non Final Action Mailed
US9360643 BB	20160518	LSGT	PAT1	Patented Case
US9360643 BB	20330509	PEXP		Calculated Patent Term Expiry (PTA 342 days)
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US9399269 BB	20160705	LSGT	PAT1	Patented Case
US9399269 BB	20350111	PEXP		Calculated Patent Term Expiry (PTA 303 days)
US9492885 BB	20161115	LSGT	+	granted / extensions (spc, cpc, pte)
US9492885 BB	20161026	LSGT	PAT1	Patented Case
US9492885 BB	20350720	PEXP		Calculated Patent Term Expiry
US9512679 BB	20161206	LSGT	+	granted / extensions (spc, cpc, pte)
US9512679 BB	20151207	LSES	NFA1	Non Final Action Mailed
US9512679 BB	20161116	LSGT	PAT1	Patented Case
US9512679 BB	20340815	PEXP		Calculated Patent Term Expiry (PTA 246 days)
US9534447 BB	20170103	LSGT	+	granted / extensions (spc, cpc, pte)
US9534447 BB	20161214	LSGT	PAT1	Patented Case
US9534447 BB	20350130	PEXP		Calculated Patent Term Expiry (PTA 196 days)
US9545692 BB	20170117	LSGT	+	granted / extensions (spc, cpc, pte)
US9545692 BB	20161228	LSGT	PAT1	Patented Case
US9545692 BB	20350818	PEXP		Calculated Patent Term Expiry (PTA 642 days)
US9562395 BB	20170207	LSGT	+	granted / extensions (spc, cpc, pte)
US9562395 BB	20170118	LSGT	PAT1	Patented Case
US9562395 BB	20341231	PEXP		Calculated Patent Term Expiry (PTA 1042 days)
US9664012 BB	20170530	LSGT	+	granted / extensions (spc, cpc, pte)
US9664012 BB	20170510	LSGT	PAT1	Patented Case
US9664012 BB	20350223	PEXP		Calculated Patent Term Expiry (PTA 437 days)
US9669492 BB	20170606	LSGT	+	granted / extensions (spc, cpc, pte)
US9669492 BB	20170517	LSGT	PAT1	Patented Case
US9669492 BB	20360311	PEXP		Calculated Patent Term Expiry (PTA 940

days)					
US9719302 BB	20170801	LSGT	+	granted / extensions (spc, cpc, pte)	
US9719302 BB	20151123	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US9719302 BB	20170712	LSGT	PAT1	Patented Case	
US9719302 BB	20340416	PEXP		Calculated Patent Term Expiry (PTA 411 days)	
US9784037 BB	20171010	LSGT	+	granted / extensions (spc, cpc, pte)	
US9784037 BB	20170920	LSGT	PAT1	Patented Case	
US9784037 BB	20350622	PEXP		Calculated Patent Term Expiry (a terminal disclaimer has been filed)	
US9845652 BB	20171219	LSGT	+	granted / extensions (spc, cpc, pte)	
US9845652 BB	20171129	LSGT	PAT1	Patented Case	
US9845652 BB	20350402	PEXP		Calculated Patent Term Expiry (PTA 580 days and a terminal disclaimer has been filed)	
WO10096086 A1	20100826	LSPB	+	published / reissued	
WO10096086 A1	20090819	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 200980141304.7 COUNTRY OF REF DOCUMENT : CN
WO10096086 A1	20110210	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2009340454 COUNTRY OF REF DOCUMENT : AU
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WO10096086 A1	20110218	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : MX/A/2011/001908 COUNTRY OF REF DOCUMENT : MX
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WO10096086 A1	20110222	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
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WO10144160 A1	20110817	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2011551172 COUNTRY OF REF DOCUMENT : JP
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WO12012436 A3	20130121	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
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WO12031009 A1	20120308	LSPB	+	published / reissued	
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WO12096966 A3	20130711	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO12116148 A1	20120830	LSPB	+	published / reissued	
WO12116148 A1	20130821	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2012749304 COUNTRY OF REF DOCUMENT : EP
WO12116148 A1	20130826	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
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WO12116153 A1	20120830	LSPB	+	published / reissued	
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WO12116155 A1	20120830	LSPB	+	published / reissued	
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WO12167102 A1	20121206	LSPB	+	published / reissued	
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WO13019959 A2	20130207	LSPB	+	published / reissued	
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WO14036430 A2	20140306	LSPB	+	published / reissued	
WO14036430 A3	20170704	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 112015004458 COUNTRY OF REF DOCUMENT : BR KIND CODE OF REF DOCUMENT : A2 DESIGNATED STATE(S) : EFFECTIVE DATE : 20150227
WO14078663 A2	20140522	LSPB	+	published / reissued	
WO14078663 A3	20150513	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2891500 COUNTRY OF REF DOCUMENT : CA
WO14078663 A3	20151209	LSNE	-122	EP: PCT APPLICATION NON-ENTRY IN EUROPEAN PHASE	REF DOCUMENT NUMBER : 13855812 COUNTRY OF REF DOCUMENT : EP KIND CODE OF REF DOCUMENT : A2 DESIGNATED STATE(S) :
WO14089544 A2	20140612	LSPB	+	published / reissued	
WO14089544 A3	20150706	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2013860660 COUNTRY OF REF DOCUMENT : EP
WO14144591 A2	20140918	LSPB	+	published / reissued	
WO14144591 A3	20150914	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2906738 COUNTRY OF REF DOCUMENT : CA
WO14144591 A3	20151008	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2014228980 COUNTRY OF REF DOCUMENT : AU DATE OF REF DOCUMENT : 20140314 KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :
WO14144591 A3	20160406	LSNE	-122	EP: PCT APPLICATION NON-ENTRY IN EUROPEAN PHASE	REF DOCUMENT NUMBER : 14764013 COUNTRY OF REF DOCUMENT : EP KIND CODE OF REF DOCUMENT : A2 DESIGNATED STATE(S) :
WO14144887 A2	20140918	LSPB	+	published / reissued	
WO14144887 A3	20160406	LSNE	-122	EP: PCT APPLICATION NON-ENTRY IN EUROPEAN PHASE	REF DOCUMENT NUMBER : 14763264 COUNTRY OF REF DOCUMENT : EP KIND CODE OF REF DOCUMENT : A2 DESIGNATED STATE(S) :
WO14149114 A2	20140925	LSPB	+	published / reissued	
WO14149114 A3	20160120	LSNE	-122	EP: PCT APPLICATION NON-ENTRY IN EUROPEAN PHASE	REF DOCUMENT NUMBER : 13879091 COUNTRY OF REF DOCUMENT : EP KIND CODE OF REF DOCUMENT : A2 DESIGNATED STATE(S) :
WO18075799 A1	20180426	LSPB	+	published / reissued	

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.

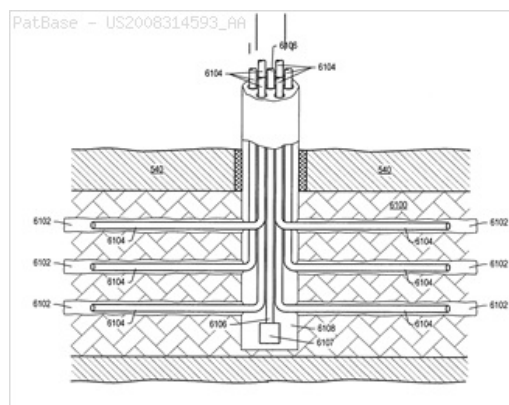
Classifications:

International (IPC 8-9): E21B36/00 E21B43/24 E21B43/243 E21B43/247 E21B43/28 E21B43/30 E21C41/24 (Advanced/Invention)

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

European: E21B43/243 E21B43/247 E21B43/30

US: 166/272.1 166/302 299/4 299/5



Family:

Publication number	Publication date	Application number	Application date
US2008314593 AA	20081225	US20070809889	20070601
US7735935 BB	20100615	US20070809889	20070601

Priority:

US20010286062P 20010424 US20010337249P 20011024 US20020131286 20020424
US20060343913 20060131 US20070809889 20070601

Probable Assignee: SHELL OIL CO

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

Assignee(s): SHELL OIL COMPANY

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

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

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2008314593 AA	20081225	LSPB	+	published / reissued	
US2008314593 AA	20091104	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:BERCHENKO, ILYA EMIL; DE ROUFFIGNAC, ERIC PIERRE; FOWLER, THOMAS DAVID; AND OTHERS; REEL/FRAME:023470/0888; SIGNING DATES FROM 20020916 TO 20020927
US2008314593 AA	20091104	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:BERCHENKO, ILYA EMIL; DE ROUFFIGNAC, ERIC PIERRE; FOWLER, THOMAS DAVID; AND OTHERS; SIGNING DATES FROM 20020916 TO 20020927; REEL/FRAME:023470/0888
US7735935 BB	20100615	LSGT	+	granted / extensions (spc, cpc, pte)	
US7735935 BB	20100526	LSGT	PAT1	Patented Case	
US7735935 BB	20131113	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7735935 BB	20180129	LSFE	FEPP	FEE PAYMENT	TEXT : MAINTENANCE FEE REMINDER

				PROCEDURE	MAILED (ORIGINAL EVENT CODE: REM.)
US7735935 BB	20180716	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US7735935 BB	20180716	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7735935 BB	20180716	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7735935 BB	20180807	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180615
US7735935 BB	20180821	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180615
US7735935 BB	20270717	PEXP		Calculated Patent Term Expiry (PTA 46 days and a terminal disclaimer has been filed)	

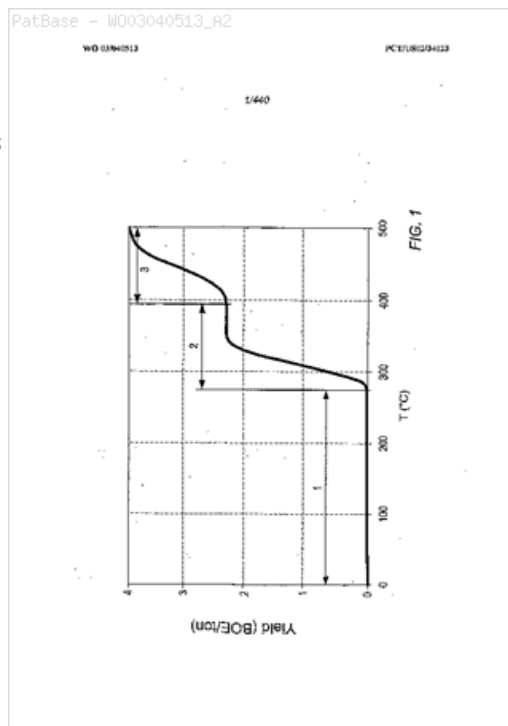
Title: IN SITU THERMAL PROCESSING OF A HYDROCARBON CONTAINING FORMATION

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



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 TAIXU ; 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): TAIXU 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

Legal status (INPADOC)[View legal status timeline](#)

Patent	Date recorded	Event group	Code	Event	Details
AU2002349904 AA	20030519	LSPB	+	published / reissued	
AU2002349904 AA	20040708	LSLE	-MK6	APPLICATION LAPSED SECTION 142(2) (F)/REG. 8.3(3) - PCT APPLIC. NOT ENTERING NATIONAL PHASE	
WO03040513 A2	20030515	LSPB	+	published / reissued	
WO03040513 A2	20040427	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO03040513 A2	20051228	LSNE	-122	EP: PCT APPLICATION NON-ENTRY IN EUROPEAN PHASE	REF COUNTRY CODE : WO
WO03040513 A2	20060525	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : JP
WO03040513 A2	20060525	LSWD	-WWW	WIPO INFORMATION: WITHDRAWN IN NATIONAL OFFICE	TEXT : JP

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.

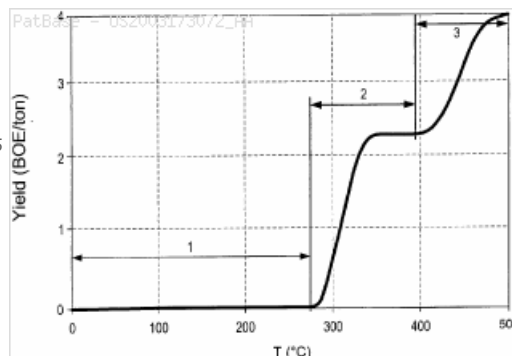
Classifications:

International (IPC 8-9): B09C1/02 B09C1/06 C10G45/00 C10G9/24 E21B17/02 E21B36/00 E21B43/16 E21B43/24 E21B43/243 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 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: 166/66.5 175/45 175/61 175/62 324/346



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

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2003173072 AA	20030918	LSPB	+	published / reissued	
US2003173072 AA	20060111	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US6991045 BB	20060131	LSGT	+	granted / extensions (spc, cpc, pte)	
US6991045 BB	20030402	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VINEGAR, HAROLD; HARTMANN, ROBIN ADRIANUS; HARRIS, CHRISTOPHER KELVIN; AND OTHERS; REEL/FRAME:013934/0172 EFFECTIVE DATE : 20030225
US6991045 BB	20060111	LSGT	PAT1	Patented Case	
US6991045 BB	20090630	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6991045 BB	20130703	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US6991045 BB	20170724	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 12
US6991045 BB	20230812	PEXP		Calculated Patent Term	

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.

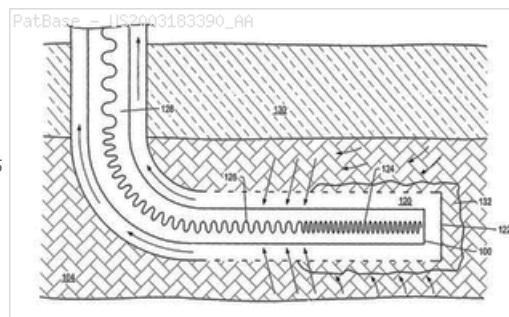
Classifications:

International (IPC 8-9): B09C1/02 B09C1/06 C10G45/00 C10G9/24 E21B17/02 E21B36/00 E21B36/02 E21B43/16 E21B43/24 E21B43/243 E21B43/30 E21B44/00 E21B47/022 E21B7/04 G01V3/26 (Advanced/Invention)

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

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

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2003183390 AA	20031002	LSPB	+	published / reissued	
US7063145 BB	20060620	LSGT	+	granted / extensions (spc, cpc, pte)	
US7063145 BB	20030224	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VEENSTRA, PETER; VINEGAR, HAROLD J.; KARANIKAS, JOHN MICHAEL; AND OTHERS; REEL/FRAME:013796/0686 EFFECTIVE DATE : 20030203
US7063145 BB	20060531	LSGT	PAT1	Patented Case	
US7063145 BB	20091007	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7063145 BB	20131120	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7063145 BB	20180129	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7063145 BB	20180716	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US7063145 BB	20180716	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees	

US7063145 BB	20180716	LSLE	-STCH	Under 37 CFR 1.362	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
				INFORMATION ON STATUS: PATENT DISCONTINUATION	
				EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	
				EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	
US7063145 BB	20180807	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180620
US7063145 BB	20180821	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180620
US7063145 BB	20230901	PEXP		Calculated Patent Term Expiry (PTA 312 days)	

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.

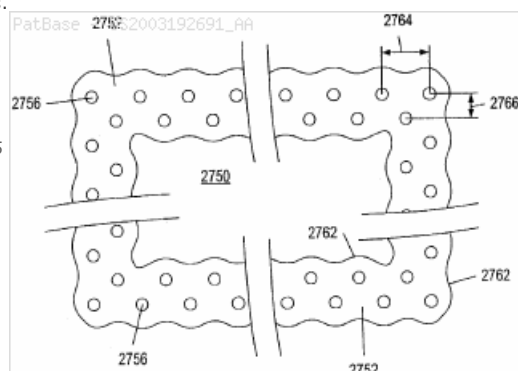
Classifications:

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

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

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

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2003192691 AA	20031016	LSPB	+	published / reissued	
US7077198 BB	20060718	LSGT	+	granted / extensions (spc, cpc, pte)	
US7077198 BB	20030312	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VINEGAR, HAROLD J.; STEGEMEIER, GEORGE LEO; AYMOND, DANNIE ANTOINE, JR.; AND OTHERS; REEL/FRAME:013847/0172; SIGNING DATES FROM 20030128 TO 20030225
US7077198 BB	20060628	LSGT	PAT1	Patented Case	
US7077198 BB	20091216	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7077198 BB	20131218	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7077198 BB	20180226	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7077198 BB	20180813	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US7077198 BB	20180813	LSLE	-PEX1	Patent Expired Due	

				to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7077198 BB	20180813	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7077198 BB	20180904	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180718
US7077198 BB	20231211	PEXP		Calculated Patent Term Expiry (PTA 413 days and a terminal disclaimer has been filed)	

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.

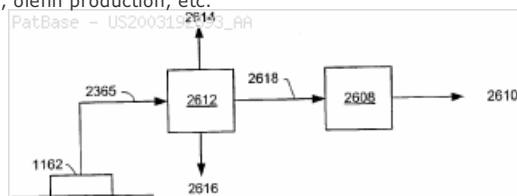
Classifications:

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

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2003192693 AA	20031016	LSPB	+	published / reissued	
US7090013 BB	20060815	LSGT	+	granted / extensions (spc, cpc, pte)	
US7090013 BB	20030225	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:WELLINGTON, SCOTT LEE; VINEGAR, HAROLD J.; RYAN, ROBERT CHARLES; AND OTHERS; REEL/FRAME:013800/0353; SIGNING DATES FROM 20030128 TO 20030203
US7090013 BB	20060726	LSGT	PAT1	Patented Case	
US7090013 BB	20091216	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7090013 BB	20140115	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7090013 BB	20180326	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7090013 BB	20180917	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.); ENTITY STATUS OF PATENT OWNER: LARGE ENTITY
US7090013 BB	20180917	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7090013 BB	20180917	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362

US7090013 BB	20181009	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180815
US7090013 BB	20240430	PEXP		Calculated Patent Term Expiry (PTA 554 days)	

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.

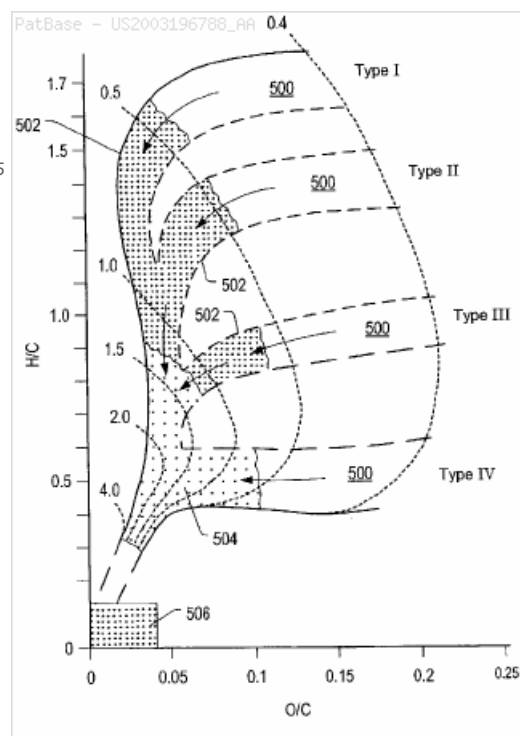
Classifications:

International (IPC 8-9): B09C1/02 B09C1/06 C10G45/00 C10G9/24 E21B17/02 E21B36/00 E21B41/00 E21B43/16 E21B43/24 E21B43/241 E21B43/243 E21B43/28 E21B43/30 E21B43/40 E21B44/00 E21B47/022 G01V3/26 (Advanced/Invention)

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



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

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

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2003196788 AA	20031023	LSPB	+	published / reissued	
US7100994 BB	20060905	LSGT	+	granted / extensions (spc, cpc, pte)	
US7100994 BB	20030310	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VINEGAR, HAROLD J.; WELLINGTON, SCOTT LEE; MAHER, KEVIN ALBERT; AND OTHERS;

US7100994 BB	20060816	LSGT	PAT1	Patented Case	
US7100994 BB	20091216	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7100994 BB	20140206	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7100994 BB	20180416	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7100994 BB	20181008	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7100994 BB	20181008	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7100994 BB	20181030	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180905
US7100994 BB	20240506	PEXP		Calculated Patent Term Expiry (PTA 560 days)	

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.

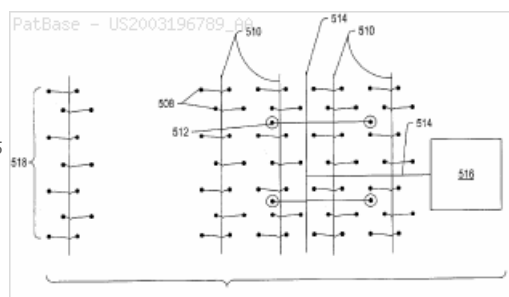
Classifications:

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

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: 166/64



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 ; WELLINGTON SCOTT LEE ; SHELL OIL CO

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

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2003196789 AA	20031023	LSPB	+	published / reissued	
US2003196789 AA	20030312	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:WELLINGTON, SCOTT LEE; MADGAVKAR, AJAY MADHAV; RYAN, ROBERT CHARLES; REEL/FRAME:013854/0272; SIGNING DATES FROM 20030128 TO 20030203
US2003196789 AA	20050418	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2003196789 AA	20050418	LSWD	-STCB	INFORMATION ON STATUS: APPLICATION DISCONTINUATION	TEXT : ABANDONED -- FAILURE TO RESPOND TO AN OFFICE ACTION

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.

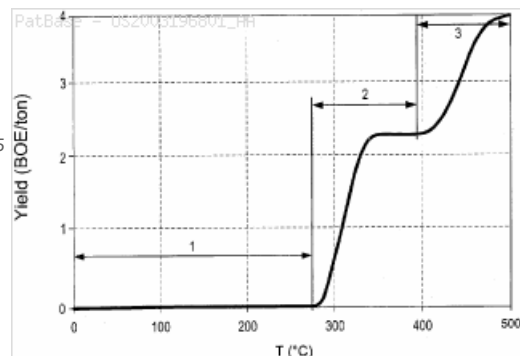
Classifications:

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

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

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2003196801 AA	20031023	LSPB	+	published / reissued	
US6932155 BB	20050823	LSGT	+	granted / extensions (spc, cpc, pte)	
US6932155 BB	20030310	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VINEGAR, HAROLD J.; WELLINGTON, SCOTT LEE; DE ROUFFIGNAC, ERIC PIERRE; AND OTHERS; REEL/FRAME:013847/0874 EFFECTIVE DATE : 20030207
US6932155 BB	20050803	LSGT	PAT1	Patented Case	
US6932155 BB	20090205	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6932155 BB	20121204	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US6932155 BB	20170918	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US6932155 BB	20170918	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	

US6932155 BB	20170918	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US6932155 BB	20171010	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20170823
US6932155 BB	20230818	PEXP		Calculated Patent Term Expiry (PTA 298 days and a terminal disclaimer has been filed)	

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.

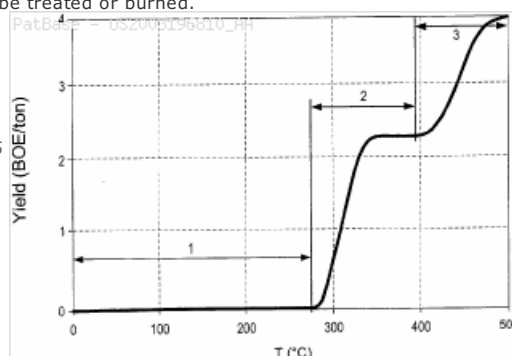
Classifications:

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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 ; PALFREYMAN BRUCE DONALD ; MCKINZIE BILLY JOHN ; ROUFFIGNAC ERIC PIERRE DE ; RYAN ROBERT CHARLES ; VINEGAR HAROLD J ; WELLINGTON SCOTT LEE ; STEGEMEIER GEORGE LEO ; WARD JOHN MICHAEL

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

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2003196810 AA	20031023	LSPB	+	published / reissued	
US7128153 BB	20061031	LSGT	+	granted / extensions (spc, cpc, pte)	
US7128153 BB	20030311	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VINEGAR, HAROLD J.; STEGEMEIER, GEORGE LEO; WELLINGTON, SCOTT LEE; AND OTHERS; REEL/FRAME:013847/0854; SIGNING DATES FROM 20030128 TO 20030206
US7128153 BB	20061011	LSGT	PAT1	Patented Case	
US7128153 BB	20091216	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7128153 BB	20140402	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7128153 BB	20180611	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7128153 BB	20181203	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.);

ENTITY STATUS OF PATENT OWNER:
LARGE ENTITY

US7128153 BB	20181203	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7128153 BB	20181203	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7128153 BB	20181225	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20181031
US7128153 BB	20230719	PEXP		Calculated Patent Term Expiry (PTA 268 days)	

Title: NANO-MICROFLUIDIC APPARATUS FOR CONTINUOUS REAL-TIME ANALYSIS OF TARGETS IN THIN LIQUID FILMS

Abstract: Nano-microfluidic devices and uses thereof are described. In particular, systems and methods are described for continuous real-time monitoring and analysis of targets in thin liquid films; such targets can include living cells and tissues. In some embodiments, nano-microfluidic devices can be utilized to observe living cells in layers of thin liquid media by IR-spectroscopy.

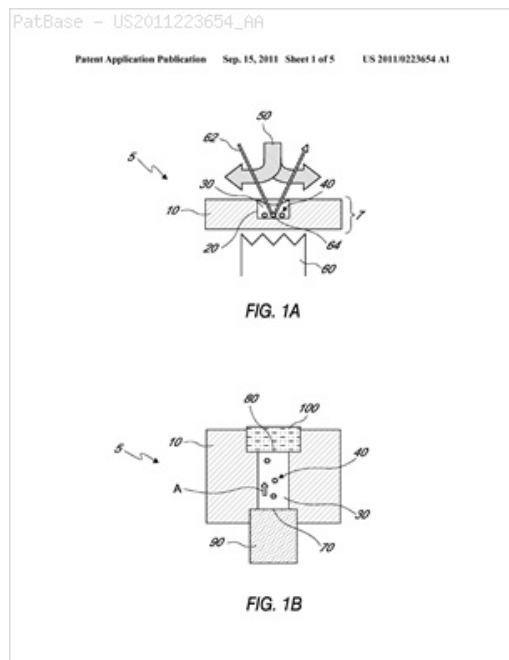
Classifications:

International (IPC 8-9): B06B1/00 C12M1/42 C12Q1/00 C12Q1/06 G01N15/06 G01N15/14 G01N21/35 G01N21/65 (Advanced/Invention); B06B1/00 C12Q1/00 (Core/Invention)

CPC: G01N2021/0346 G01N21/03 G01N21/6458 B01L3/5027 B01L2200/0647 B01L2300/0877 B01L2300/161 B01L2300/18 G01N15/1456 G01N21/0332 G01N21/05 G01N21/35 G01N35/1095 G01N2021/151 G01N2021/3595 G01N21/3577 B82Y15/00 C12Q1/06 G01N15/1463 G01N21/65

European: B01L3/5027 B82Y15/00 G01N21/05 G01N21/35 G01N21/64P4C L01L200/06J L01L300/08E10 L01L300/16A L01L300/18 S01N15/14G S01N21/03G S01N21/15B S01N21/35H S01N35/10V

US: 435/288.7 435/288.700P



Family:

Publication number	Publication date	Application number	Application date
US2011223654 AA	20110915	US20080672251	20080805
US2017138845 AA	20170518	US20140550904	20141121
US9927352 BB	20180327	US20140550904	20141121
WO09020982 A1	20090212	WO2008US72253	20080805

Priority:

US20070954311P	20070806	US20080672251	20080805	WO2008US72253	20080805
US20100672251	20100204	US20130908014P	20131122	US20140550904	20141121

Probable Assignee: THE UNIV OF CALIFORNIA

Assignee(s): (std): HOLMAN HOI YING N ; L LIVERMORE NAT SECURITY LLC ; MILES ROBIN ; UNIV CALIFORNIA

Assignee(s): THE UNIV OF CALIFORNIA ; UNITED STATES DEPARTMENT OF ENERGY ; ENERGY UNITED STATES DEPARTMENT OF ; THE REGENTS OF THE UNIVERSITY OF CALIFORNIA ; THE UNIV CALIFORNIA ; LAWRENCE LIVERMORE NATIONAL SECURITY LLC

Inventor(s): (std): HOLMAN HOI YING N ; MILES ROBIN ; BIRARDA GIOVANNI ; PROBST ALEXANDER ; HOLMAN HOI YING

Agent(s): LAWRENCE BERKELEY NATIONAL LABORATORY; MICHELLE CHEW; HART DANIEL

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 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

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2011223654 AA	20110915	LSPB	+	published / reissued	
US2011223654 AA	20081106	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : THE REGENTS OF THE UNIVERSITY OF CALIFORNIA, CALIF OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:HOLMAN, HOI-YING; REEL/FRAME:021796/0076 EFFECTIVE DATE : 20081106
US2011223654 AA	20100318	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : ENERGY, UNITED STATES

					DEPARTMENT OF, DISTRICT OF C OLDPARTY : CONFIRMATORY LICENSE; ASSIGNOR:REGENTS OF THE UNIVERSITY OF CALIFORNIA, THE; REEL/FRAME:024105/0719 EFFECTIVE DATE : 20100211
US2011223654 AA	20150223	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2017138845 AA	20170518	LSPB	+	published / reissued	
US2017138845 AA	20151208	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : UNITED STATES DEPARTMENT OF ENERGY, DISTRICT OF CO OLDPARTY : CONFIRMATORY LICENSE; ASSIGNOR:REGENTS OF THE UNIVERSITY OF CALIFORNIA, THE; REEL/FRAME:037257/0366 EFFECTIVE DATE : 20151027
US2017138845 AA	20160808	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : THE REGENTS OF THE UNIVERSITY OF CALIFORNIA, CALIF OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:BIRARDA, GIOVANNI; PROBST, ALEXANDER J.; HOLMAN, HOI-YING N.; SIGNING DATES FROM 20160728 TO 20160802; REEL/FRAME:039369/0397
US2017138845 AA	20170322	LSES	NFA1	Non Final Action Mailed	
US2017138845 AA	20180120	LSES	+ALW2	Allowed -- Notice of Allowance Not Yet Mailed	
US9927352 BB	20180327	LSGT	+	granted / extensions (spc, cpc, pte)	
US9927352 BB	20180307	LSGT	PAT1	Patented Case	
US9927352 BB	20341121	PEXP		Calculated Patent Term Expiry	
WO09020982 A1	20090212	LSPB	+	published / reissued	
WO09020982 A1	20100204	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 12672251 COUNTRY OF REF DOCUMENT : US
WO09020982 A1	20100209	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO09020982 A1	20100901	LSNE	-122	EP: PCT APPLICATION NON-ENTRY IN EUROPEAN PHASE	REF DOCUMENT NUMBER : 08827088 COUNTRY OF REF DOCUMENT : EP KIND CODE OF REF DOCUMENT : A1 DESIGNATED STATE(S) :

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.

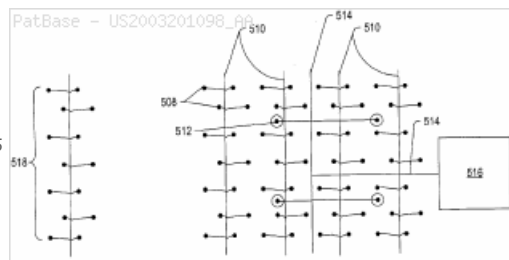
Classifications:

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

International (IPC 1-7): E21B44/00

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: 166/53 702/12



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 ; SCHOELING LANNY GENE ; KARANIKAS JOHN MICHAEL ; ROUFFIGNAC ERIC PIERRE DE ; VINEGAR HAROLD J ; SHAHIN GORDON THOMAS ; SUMNU DINDORUK MELIHA DENIZ ; SHELL OIL CO

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

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2003201098 AA	20031030	LSPB	+	published / reissued	
US2003201098 AA	20030326	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:KARANIKAS, JOHN MICHAEL; SHAHIN, GORDON THOMAS, JR.; DE ROUFFIGNAC, ERIC PIERRE; AND OTHERS; REEL/FRAME:013909/0242 EFFECTIVE DATE : 20030220
US2003201098 AA	20050330	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2003201098 AA	20050330	LSWD	-STCB	INFORMATION ON STATUS: APPLICATION DISCONTINUATION	TEXT : ABANDONED -- FAILURE TO RESPOND TO AN OFFICE ACTION

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.

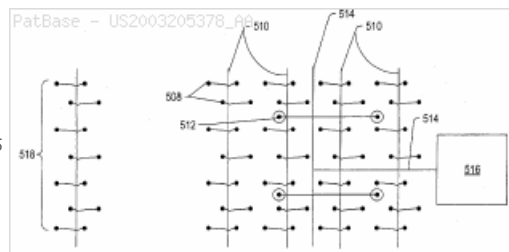
Classifications:

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

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



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

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

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2003205378 AA	20031106	LSPB	+	published / reissued	
US7066257 BB	20060627	LSGT	+	granted / extensions (spc, cpc, pte)	
US7066257 BB	20030304	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:WELLINGTON, SCOTT LEE; DE ROUFFIGNAC, ERIC PIERRE; VINEGAR, HAROLD J.; REEL/FRAME:013822/0650 EFFECTIVE DATE : 20030203
US7066257 BB	20060607	LSGT	PAT1	Patented Case	
US7066257 BB	20091007	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7066257 BB	20131127	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7066257 BB	20180205	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7066257 BB	20180723	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US7066257 BB	20180723	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7066257 BB	20180723	LSLE	-STCH	INFORMATION ON STATUS: PATENT	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES

				DISCONTINUATION	UNDER 37 CFR 1.362
US7066257 BB	20180814	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180627
US7066257 BB	20230312	PEXP		Calculated Patent Term Expiry (PTA 139 days and a terminal disclaimer has been filed)	

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.

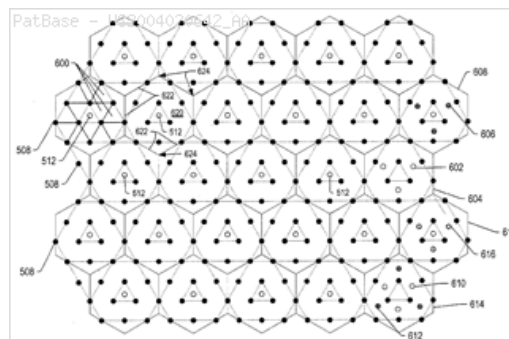
Classifications:

International (IPC 8-9): B09C1/02 B09C1/06 E21B17/02 E21B43/00 E21B47/022 G01V3/26 (Advanced/Invention)

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

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2004020642 AA	20040205	LSPB	+	published / reissued	
US7165615 BB	20070123	LSGT	+	granted / extensions (spc, cpc, pte)	
US7165615 BB	20030317	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VINEGAR, HAROLD J.; BASS, RONALD MARSHALL; REEL/FRAME:013866/0749; SIGNING DATES FROM 20030128 TO 20030131
US7165615 BB	20100308	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7165615 BB	20150123	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US7165615 BB	20150223	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7165615 BB	20150223	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7165615 BB	20150317	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20150123

US7165615 BB	20221024	PEXP	Calculated Patent Term Expiry (a terminal disclaimer has been filed)
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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.

Classifications:

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

E21B17/02 E21B36/00 E21B43/16 E21B43/24 E21B43/243 E21B43/30

E21B44/00 E21B47/022 G01V3/26 (Advanced/Invention)

International (IPC 1-7): E21B43/24

CPC: E21B43/2401 B09C1/02 B09C1/06 B09C2101/00 C10G9/24

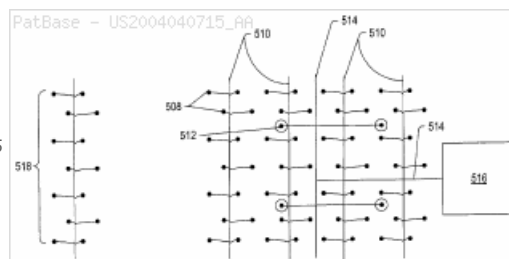
C10G45/00 E21B17/028 E21B43/168 E21B43/24 E21B43/243 E21B43/305

E21B47/02208 G01V3/26 Y02P30/30 Y02P30/44 Y10S210/901

Y10T137/0391

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

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2004040715 AA	20040304	LSPB	+	published / reissued	
US7086465 BB	20060808	LSGT	+	granted / extensions (spc, cpc, pte)	
US7086465 BB	20030224	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:WELLINGTON, SCOTT LEE; VINEGAR, HAROLD J.; KARANIKAS, JOHN MICHAEL; AND OTHERS; REEL/FRAME:013796/0673 EFFECTIVE DATE : 20030203
US7086465 BB	20060719	LSGT	PAT1	Patented Case	
US7086465 BB	20091216	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7086465 BB	20140108	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7086465 BB	20180319	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7086465 BB	20180910	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.); ENTITY STATUS OF PATENT OWNER: LARGE ENTITY
US7086465 BB	20180910	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	

US7086465 BB	20180910	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7086465 BB	20181002	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180808
US7086465 BB	20240302	PEXP		Calculated Patent Term Expiry (PTA 495 days and a terminal disclaimer has been filed)	

Title: INSTALLATION AND USE OF REMOVABLE HEATERS IN A HYDROCARBON CONTAINING FORMATION

Abstract: In an embodiment, a system may be used to heat a hydrocarbon containing formation. The system may include a heater placed in an opening in the formation. The system may allow heat to transfer from the heater to a part of the formation. The transferred heat may pyrolyze at least some hydrocarbons in the formation. The heater may be removable from the opening in the formation and redeployable in at least one alternative opening in the formation.

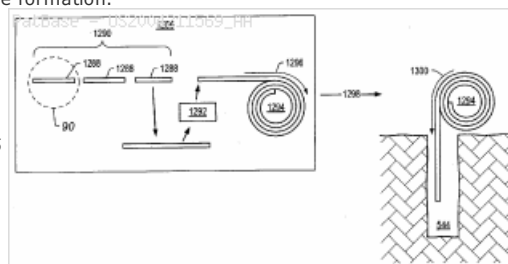
Classifications:

International (IPC 8-9): B09C1/02 B09C1/06 C10G45/00 C10G9/24 E21B17/02 E21B36/00 E21B36/04 E21B43/16 E21B43/24 E21B43/243 E21B43/30 E21B44/00 E21B47/022 G01V3/26 (Advanced/Invention)

International (IPC 1-7): E21B19/22

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: 166/302 166/380 166/381 166/385



US7156176 BB	20190204	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7156176 BB	20190226	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20190102
US7156176 BB	20221204	PEXP		Calculated Patent Term Expiry (PTA 41 days)	

Title: IN SITU THERMAL PROCESSING OF A HYDROCARBON CONTAINING FORMATION USING A NATURAL DISTRIBUTED COMBUSTOR

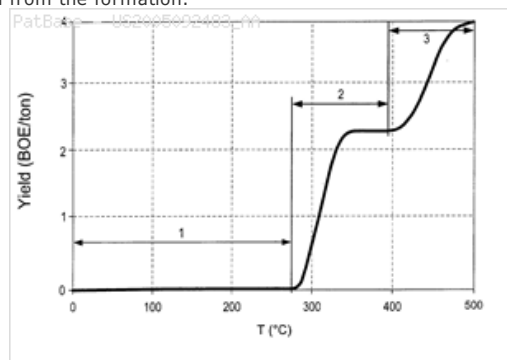
Abstract: An in situ process for treating a hydrocarbon containing formation is provided. The process may include providing heat from one or more heat sources to at least a portion of the formation. Heat sources may include a natural distributed combustor. The natural distributed combustor may include an oxidizing fluid source to provide oxidizing fluids to a reaction zone in the formation to generate heat within the reaction zone. The heat may be allowed, in some embodiments, to transfer from the reaction zone to a selected section of the formation such that heat from one or more heat sources pyrolyzes at least some hydrocarbons within the selected section. Hydrocarbons may be produced from the formation.

Classifications:

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

International (IPC 1-7): E21B36/04

US: 166/256 166/257 166/60



Family:

Publication number	Publication date	Application number	Application date
US2005092483 AA	20050505	US20020279220	20021024
US7114566 BB	20061003	US20020279220	20021024

Priority:

US20010334568P 20011024 US20010337136P 20011024 US20020374970P 20020424
US20020374995P 20020424 US20020279220 20021024

Probable Assignee: SHELL OIL CO

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

Assignee(s): VAN HARDEVELD ROBERT M ; VINEGAR HAROLD J ; WELLINGTON SCOTT L ; ROUFFIGNAC ERIC PD

Inventor(s): (std): ROUFFIGNAC ERIC P D ; VAN HARDEVELD ROBERT M ; VINEGAR HAROLD J ; WELLINGTON SCOTT L ; WELLINGTON SCOTT LEE ; VAN HARDEVELD ROBERT MARTIJN ; DE ROUFFIGNAC ERIC PIERRE

Inventor(s): ROUFFIGNAC ERIC ; VAN HARDEVELD ROBERT ; ROUFFIGNAC ERIC PD ; WELLINGTON SCOTT ; VINEGAR HAROLD

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

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2005092483 AA	20050505	LSPB	+	published / reissued	
US7114566 BB	20061003	LSGT	+	granted / extensions (spc, cpc, pte)	
US7114566 BB	20030224	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VINEGAR, HAROLD J.; PIERRE DE ROUFFIGNAC, ERIC; WELLINGTON, SCOTT LEE; AND OTHERS; REEL/FRAME:013799/0952; SIGNING DATES FROM 20030127 TO 20030203
US7114566 BB	20091216	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7114566 BB	20141003	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US7114566 BB	20141103	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7114566 BB	20141103	LSLE	-STCH	INFORMATION ON STATUS: PATENT	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES

				DISCONTINUATION	UNDER 37 CFR 1.362
US7114566 BB	20141125	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20141003
US7114566 BB	20230209	PEXP		Calculated Patent Term Expiry (PTA 108 days and a terminal disclaimer has been filed)	

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.

International (IPC 8-9): B09C1/02 B09C1/06 C10G45/00 C10G9/24
E21B17/02 E21B36/00 E21B36/04 E21B43/16 E21B43/24 E21B43/243
E21B43/30 E21B44/00 E21B47/022 G01V3/26 (Advanced/Invention)

[illegible]

Publication number	Publication date	Application number	Application date
US2007209799 AA	20070913	US20070657442	20070123
US7461691 BB	20081209	US20070657442	20070123

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

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

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Patent	Date recorded	Event group	Code	Event	Details
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US2007209799 AA	20070913	LSPB	+	published / reissued	
US7461691 BB	20081209	LSGT	+	granted / extensions (spc, cpc, pte)	
US7461691 BB	20121209	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US7461691 BB	20130107	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7461691 BB	20130107	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7461691 BB	20130129	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20121209
US7461691 BB	20270220	PEXP		Calculated Patent Term Expiry (PTA 28 days and a terminal disclaimer has been filed)	

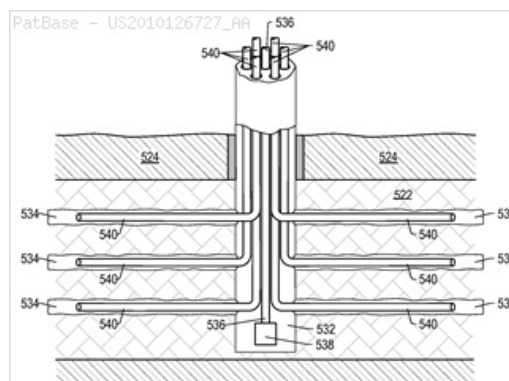
Title: IN SITU RECOVERY FROM A HYDROCARBON CONTAINING FORMATION

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 E21B47/02 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

Assignee(s): (std): CRANE STEVEN DEXTER ; DE ROUFFIGNAC ERIC PIERRE ; KARANIKAS JOHN MICHAEL ; MAHER KEVIN ALBERT ; SHELL OIL CO ; VINEGAR HAROLD J ; WELLINGTON SCOTT LEE ; SUMNU DINDORUK MELIHA DENIZ ; MESSIER MARGARET ANN ; ROBERTS BRUCE EDMUNDS

Inventor(s): (std): WELLINGTON SCOTT LEE ; VINEGAR HAROLD J ; SUMNU DINDORUK MELIHA DENIZ ; SUMNU DINDORUK MELIHA DENIZ ; ROBERTS BRUCE EDMUNDS ; MESSIER MARGARET ANN ; MAHER KEVIN ALBERT ; KARANIKAS JOHN MICHAEL ; DE ROUFFIGNAC ERIC PIERRE ; CRANE STEVEN DEXTER

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

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2010126727 AA	20100527	LSPB	+	published / reissued	
US8627887 BB	20140114	LSGT	+	granted / extensions (spc, cpc, pte)	
US8627887 BB	20090722	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VINEGAR, HAROLD J; SUMNU-DINDORUK, MELIHA DENIZ; WELLINGTON, SCOTT LEE; AND OTHERS; SIGNING DATES FROM 20090522 TO 20090714; REEL/FRAME:022987/0050
US8627887 BB	20131224	LSGT	PAT1	Patented Case	
US8627887 BB	20170828	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US8627887 BB	20180212	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US8627887 BB	20180212	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	

US8627887 BB	20180212	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US8627887 BB	20180306	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180114
US8627887 BB	20300313	PEXP		Calculated Patent Term Expiry (PTA 460 days)	

Title: METHOD OF SELECTING A PRODUCTION WELL LOCATION IN A HYDROCARBON SUBSURFACE FORMATION

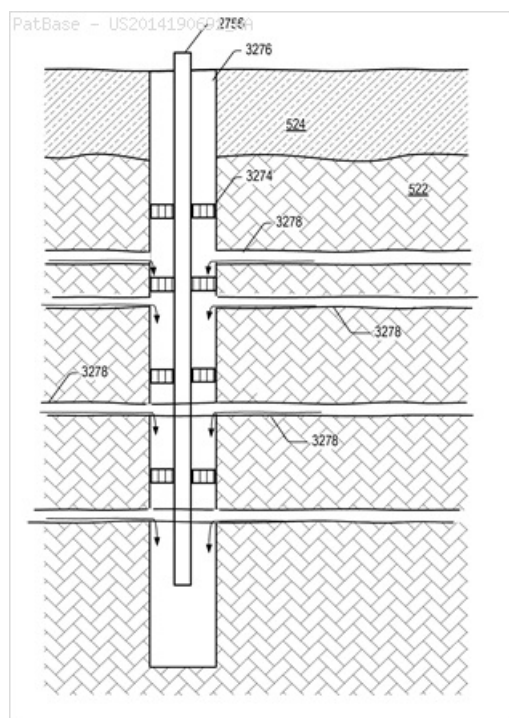
Abstract: An in situ process for treating a hydrocarbon containing formation is provided. A method for treating a tar sands formation includes providing heat from one or more heaters to a hydrocarbon containing layer in the formation such that at least some hydrocarbons in the layer are mobilized; and producing at least some of the hydrocarbons through one or more production wells located in the hydrocarbon containing layer. At least one of the production wells is located at a selected depth in the hydrocarbon containing layer so that hydrocarbons of a selected quality are produced from a part of the hydrocarbon containing layer.

Classifications:

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

CPC: E21B43/2401

US: 166/272.1



Family:

Publication number	Publication date	Application number	Application date
US2014190691 AA	20140710	US20140155043	20140114

Priority:

US20010334568P 20011024	US20010337136P 20011024	US20020374970P 20020424
US20020374995P 20020424	US20020279288 20021024	US20070657442 20070123
US20080329942 20081208	US20140155043 20140114	

Probable Assignee: CRANE STEVEN DEXTER

Assignee(s): (std): CRANE STEVEN DEXTER ; DE ROUFFIGNAC ERIC PIERRE ; KARANIKAS JOHN MICHAEL ; MAHER KEVIN ALBERT ; VINEGAR HAROLD J ; WELLINGTON SCOTT LEE ; SUMNU DINDORUK MELIHA DENIZ ; MESSIER MARGARET ANN ; ROBERTS BRUCE EDMUNDS

Inventor(s): (std): ROBERTS BRUCE EDMUNDS ; MAHER KEVIN ALBERT ; MESSIER MARGARET ANN ; CRANE STEVEN DEXTER ; KARANIKAS JOHN MICHAEL ; SUMNU DINDORUK MELIHA DENIZ ; WELLINGTON SCOTT LEE ; DE ROUFFIGNAC ERIC PIERRE ; VINEGAR HAROLD J

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2014190691 AA	20140710	LSPB	+	published / reissued	
US2014190691 AA	20151007	LSSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US2014190691 AA	20160201	LSWD	-ABD2	Abandoned -- Failure to Pay Issue Fee	

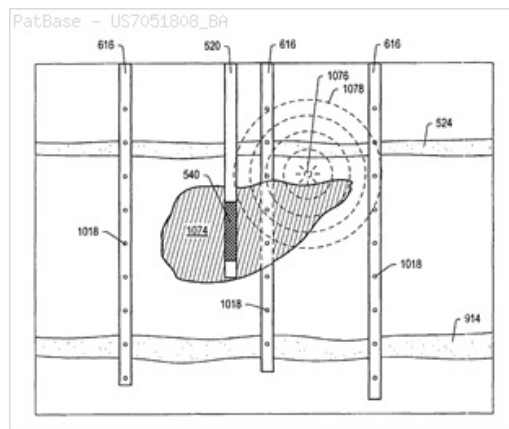
Title: SEISMIC MONITORING OF IN SITU CONVERSION IN A HYDROCARBON CONTAINING FORMATION

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.

Classifications:

International (IPC 8-9): B09C1/02 B09C1/06 E21B17/02 E21B47/022
E21B47/09 G01V3/26 (Advanced/Invention);
E21B47/00 (Core/Invention)

US: 166/250.01 166/250.1 166/250.15 166/302 166/66



Family:

Publication number	Publication date	Application number	Application date
US7051808 BA	20060530	US20020279228	20021024

Priority:

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

Probable Assignee: SHELL OIL CO

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

Assignee(s): SHELL OIL COMPANY

Inventor(s): (std): BERCHENKO ILYA EMIL ; DEMARTINI DAVID CHARLES ; VINEGAR HAROLD J

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US7051808 BA	20060530	LSGT	+	granted / extensions (spc, cpc, pte)	
US7051808 BA	20030325	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VINEGAR, HAROLD J.; DEMARTINI, DAVID CHARLES; BERCHENKO, ILYA EMIL; REEL/FRAME:013903/0452; SIGNING DATES FROM 20030130 TO 20030225
US7051808 BA	20060510	LSGT	PAT1	Patented Case	
US7051808 BA	20091007	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7051808 BA	20131030	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7051808 BA	20180108	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7051808 BA	20180625	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US7051808 BA	20180625	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	

US7051808 BA	20180625	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7051808 BA	20180717	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180530
US7051808 BA	20240418	PEXP		Calculated Patent Term Expiry (PTA 542 days)	

Title: HAND-HELD WIRELESS PLATFORM AND OPTICS FOR MEASUREMENT OF DNA, RNA, MICRORNAS, AND OTHER MARKERS OF PATHOGENS, GENETIC DISEASES, AND CANCER

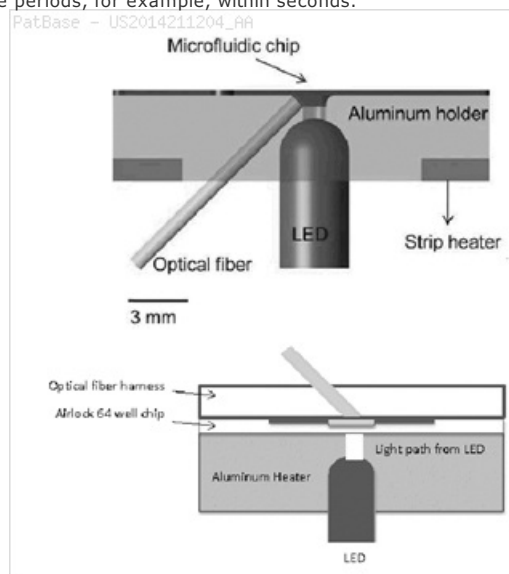
Abstract: The present invention provides compositions for making and methods of using a hand-held nucleic acid amplification device, comprising a disposable biochip with a series of sample **wells**, each sample well having a novel optical arrangement that includes a light-emitting diode (LED) and a single light capturing element (e.g. a photodiode) for quickly measuring light emissions from biological samples such as nucleic acid amplification reactions. Such a device can utilize isothermal amplification for obtaining **detectable** yields of amplified nucleic acid product in short time periods, for example, within seconds.

Classifications:

International (IPC 8-9): G01N21/01 G01N21/64 (Advanced/Invention)

CPC: G01N21/6452 G01N21/6486 C12Q1/686

US: 250/206 250/458.1 356/244



Family:

Publication number	Publication date	Application number	Application date
US2014211204 AA	20140731	US20130015787	20130830

Priority:

US20120696048P 20120831 US20130015787 20130830

Probable Assignee: BOARD OF TRUSTEES OF MICHIGAN STATE UNIV

Assignee(s): (std): UNIV MICHIGAN STATE

Assignee(s): BOARD OF TRUSTEES OF MICHIGAN STATE UNIV

Inventor(s): (std): KRONLEIN MAGGIE ; HASHSHAM SYED ; TOURLOUSSE DIETER ; TIEDJE JAMES ; SEYRIG GREGOIRE ; LIU YEN CHENG TERRY ; AHMAD FARHAN ; GULARI ERDOGAN ; STEDTFELD ROBERT

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2014211204 AA	20140731	LSPB	+	published / reissued	
US2014211204 AA	20150401	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : BOARD OF TRUSTEES OF MICHIGAN STATE UNIVERSITY, MI OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:STEDTFELD, ROBERT; HASHSHAM, SYED; TIEDJE, JAMES; AND OTHERS; SIGNING DATES FROM 20131001 TO 20140228; REEL/FRAME:035309/0001
US2014211204 AA	20160514	LSWD	-ABD3	Abandoned - Failure to Respond to an Office Action	

Title: DISCHARGE VALVES FOR AIRBAGS AND AIRBAGS INCLUDING THE SAME

Abstract: Discharge valve for an airbag including a fixed member adapted to be arranged in connection with or associated with the airbag and having a pattern of openings and a movable member having a pattern of openings substantially identical to the pattern of openings of the fixed member. The movable member is movable relative to and alongside the fixed member to vary the correspondence between the openings on the movable member and the openings in the fixed member to thereby vary valve openings defined by the fixed member and the movable member. Variation in the valve openings results in control and/or regulation of the outflow of gas from the airbag through the discharge valve. The members may be plates, cylinders or cones.

Classifications:

International (IPC 8-9): B60C11/24 B60C23/00 B60C23/04 B60K28/00 B60K28/02 B60K28/14 B60L1/00 B60N2/02 B60N2/28 B60Q1/00 B60R21/01 B60R21/0136 B60R21/015 B60R21/016 B60R21/16 B60R21/20 B60R21/205 B60R21/213 B60R21/23 B60R21/232 B60R21/233 B60R21/235 B60R21/239 B60R21/26 B60R21/276 B60R21/30 B60R21/33 B60R22/00 B60R25/10 B62D1/11 E05F15/00 G01G19/10 G01G19/52 G01H11/00 G01M17/00 G01M17/02 G05D27/00 G06F17/00 G06F19/00 G06F7/00 G06K9/00 G07C5/00 G07C5/08 G08B21/00 G08C19/00 G09G5/00 H01H13/70 H01L43/06 H02B1/24 H03K17/97 H03K17/975 H04Q5/22 (Advanced/Invention); B60R21/00 B60R21/01 B60R21/013 B60R21/0132 B60R21/0134 B60R21/21 (Advanced/Non-invention); B60C23/00 B60K28/00 B60K28/10 B60L1/00 B60N2/02 B60R21/01 B60R21/015 B60R21/16 B60R21/20 B60R21/23 B60R21/26 B60R21/33 B60R22/00 B60R25/10 E05F15/00 G01G19/08 G01G19/52 G01H11/00 G01M17/00 G01M17/02 G05D27/00 G06F17/00 G06F19/00 G06F7/00 G06K9/00 G08B21/00 G08C19/00 G09G5/00 H01H13/70 H02B1/00 H03K17/94 (Core/Invention); B60R21/01 (Core/Non-invention)

International (IPC 1-7): F16K3/00

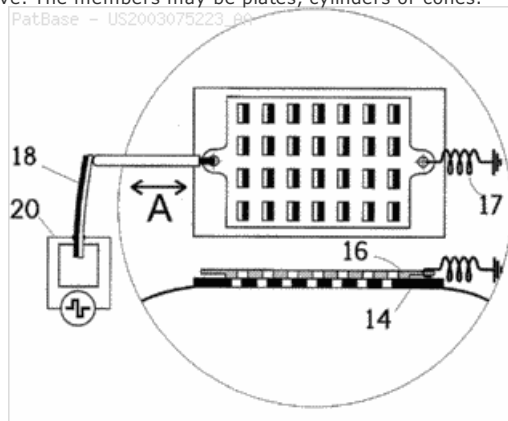
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European: B60C23/04C B60C23/04C3 B60C23/04C6B B60C23/04C6D B60J10/00 B60K28/06D B60N2/00C B60N2/015 B60N2/02B4 B60N2/02B6 B60N2/02B6B B60N2/02B6C B60N2/02B6W B60N2/02C B60N2/06S B60N2/28 B60N2/28B2 B60N2/28P4 B60N2/48C2C B60N2/48C3C B60N2/48W B60N2/66 B60Q1/14C1 B60Q1/14C1B B60R16/037 B60R19/48D B60R21/013 B60R21/0132 B60R21/0136 B60R21/0136 B60R21/015 B60R21/16B6 B60R21/20 B60R21/203F B60R21/205 B60R21/206 B60R21/20G2 B60R21/214 B60R21/232 B60R21/233 B60R21/2338 B60R21/235 B60R21/239 B60R21/264 B60R21/276 B60R21/28 B60R21/30 B60R21/33 B60R22/20 B60R25/20R B60R25/24 B60R25/25 B60W40/08 B60W50/02A B62D21/15 E05F15/00B1 E05F15/00B6B E05F15/00B6B2 G01D5/00 G01F23/00G1A G01F23/20 G01F23/296D G01F23/296F G01G19/414A G01G23/37W G01S15/52B G01S15/87 G01S15/88 G01S17/88 G01S7/41D G01S7/48A G01S7/539 G06F17/50C2 G06F17/50V G06K9/00H G06K9/00H1 G06K9/00V7 G07C5/00T G07C5/08D G07C5/08R2 G08B21/04 H01H35/14E H04Q9/00 L60N2/02B6S L60Q300/410 L60Q300/420 L60R1/12C L60R1/12G L60R19/48D L60R21/00A1 L60R21/00A2 L60R21/00A4 L60R21/00C L60R21/01 L60R21/0132 L60R21/0132V L60R21/0132W L60R21/0134 L60R21/0136 L60R21/013B L60R21/013R L60R21/015G2 L60R21/015G6 L60R21/015G6B L60R21/015G6D L60R21/015G6F L60R21/015G6H L60R21/015G7 L60R21/015G8 L60R21/015G8E L60R21/015G9 L60R21/015J L60R21/015N L60R21/01H3Y L60R21/01LSA L60R21/01LSA1 L60R21/01LSA3 L60R21/01L7A L60R21/01N3 L60R21/01P1 L60R21/01P1B L60R21/203 L60R21/203F L60R21/206 L60R21/21 L60R21/214 L60R21/2165S L60R21/231C L60R21/231M L60R21/231N L60R21/231P L60R21/231W L60R21/232 L60R21/233 L60R21/2338B L60R21/233A L60R21/233F L60R21/233H L60R21/233M L60R21/235M1C L60R21/235M3 L60R21/235M5 L60R21/235P L60R21/235P6 L60R21/235S4 L60R21/235S6 L60R21/239 L60R21/239L L60R21/263L3 L60R21/26V L60R21/276 L60R21/276L L60R22/20B L60R22/20R L60R22/28L L60R22/46L L60R22/48B1 L60R22/48B2 L60R22/48B5 L60R22/48B7 L60R325/10B L60R325/20B L60W40/08D L60W40/08E L60W40/08P L60W40/08S L60W420/52 L60W420/54 L60W50/14B L60W50/14D L60W540/24 P05F15/00B6B5R P05Y900/550 S01S13/04 S01S15/04 S01S15/06 S01S17/89 S07C5/008R4C S10K210/1282 S10K210/3219 T03K217/960A2

US: 137/625.3 137/625.31 177/136 177/144 177/208 177/254 180/268 180/268S 180/271 180/273 180/274 180/282 200/1.00RS 200/1R 200/600 280/728.1 280/728.100P 280/729 280/729P 280/729S 280/730.1 280/730.2 280/730.200P 280/730.200S 280/731 280/731P 280/732 280/732S 280/734 280/735 280/735P 280/738 280/739 280/739S 280/740 280/740S 280/742 280/742S 280/743.1 280/743.100S 280/777 280/801.1 280/801.100S 297/217.3 307/10.1 307/10.100S 307/116 307/116P 324/200 324/207.2 340/10.33 340/10.42 340/13.24 340/13.240S 340/4.62 340/4.620P 340/425.5 340/426.13 340/426.130P 340/436 340/436S 340/438 340/444 340/447 340/447P 340/459 340/475 340/572.1 340/572.4 340/575 340/665 340/665S 340/667 340/825.72 345/8 345/8P 382/100 382/100P 382/103 382/104 382/104P 382/151 382/154 382/181 701/1 701/1P 701/1S 701/29 701/29.1 701/29.100P 701/29P 701/29S 701/31.4 701/31.400S 701/31.5 701/31.9 701/31.900P 701/33.7 701/33.700P 701/34.4 701/36 701/36P 701/45 701/45P 701/45S 701/48 701/48P 702/173 710/100 710/34 710/36 714/25 714/25S 73/146 73/146.2 73/146.5 73/146P 73/514.28 73/862.392 73/862.473

Family:

Publication number	Publication date	Application number	Application date
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Priority:

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Assignee(s): AMERICAN VEHICULAR SCIENCES LLC ; ATI 2 ; ATI 295 ; AUTOMOTIVE TECHNOLOGIES INT ; AUTOMOTIVE TECHNOLOGIES INT INC ; AUTOMOTIVE TECHNOLOGIES INTERNATIONAL INC ; AUTOMOTIVE TECHNOLOGIES INTIONAL

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Inventor(s): BREED DAVID ; MORIN JEFFREY ; JOHNSON WENDELL ; DUVALL WILBUR

Agent(s): BRIAN ROFFE ESQ; ROFFE BRIAN; BRIAN

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
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US2006097494 AA	20091023	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US2006097494 AA	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
US2006097494 AA	20140509	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US2006097494 AA	20140609	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US2006097494 AA	20140701	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20140509
US2006202452 AA	20060914	LSPB	+	published / reissued	
US2006202452 AA	20060504	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE

					TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS: BREED, DAVID S.; SANDERS, SYLVIA ON BEHALF OF THOMAS SANDERS (DECEASED); REEL/FRAME: 017875/0403; SIGNING DATES FROM 20060418 TO 20060504
US2006202452 AA	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR: AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME: 028023/0087 EFFECTIVE DATE : 20120405
US2006202452 AA	20120611	LSWD	-ABD1	Abandoned -- After Examiner's Answer or Board of Appeals Decision	
US2006202452 AA	20120611	LSWD	-STCB	INFORMATION ON STATUS: APPLICATION DISCONTINUATION	TEXT : ABANDONED -- AFTER EXAMINER'S ANSWER OR BOARD OF APPEALS DECISION
US2006212193 AA	20060921	LSPB	+	published / reissued	
US2006212194 AA	20060921	LSPB	+	published / reissued	
US2006212194 AA	20100210	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2006232052 AA	20061019	LSPB	+	published / reissued	
US2006243043 AA	20061102	LSPB	+	published / reissued	
US2006244581 AA	20061102	LSPB	+	published / reissued	
US2006261579 AA	20061123	LSPB	+	published / reissued	
US2006273556 AA	20061207	LSPB	+	published / reissued	
US2006273556 AA	20060808	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL INC., NEW JE OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS: BREED, DAVID S.; SANDERS, SYLVIA ON BEHALF OF THOMAS SANDERS (DECEASED); JOHNSON, WENDELL C.; REEL/FRAME: 018173/0627; SIGNING DATES FROM 20060418 TO 20060601
US2006273556 AA	20071226	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2006273556 AA	20071226	LSWD	-STCB	INFORMATION ON STATUS: APPLICATION DISCONTINUATION	TEXT : ABANDONED -- FAILURE TO RESPOND TO AN OFFICE ACTION
US2006273556 AA	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR: AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME: 028023/0087 EFFECTIVE DATE : 20120405
US2006273558 AA	20061207	LSPB	+	published / reissued	
US2006273558 AA	20060817	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL INC., NEW JE OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS: BREED, DAVID S.; SANDERS, SYLVIA ON BEHALF OF

THOMAS SANDERS;
REEL/FRAME:018245/0266; SIGNING
DATES FROM 20060418 TO 20060504

US2006273558 AA	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
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US2006273558 AA	20121204	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
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US2006273558 AA	20121204	LSWD	-STCB	INFORMATION ON STATUS: APPLICATION DISCONTINUATION	TEXT : ABANDONED -- FAILURE TO RESPOND TO AN OFFICE ACTION
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US2007005202 AA	20070104	LSPB	+	published / reissued	
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US2007075919 AA	20070405	LSPB	+	published / reissued	
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US2007085697 AA	20070419	LSPB	+	published / reissued	
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US2007086624 AA	20070419	LSPB	+	published / reissued	
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US2007096445 AA	20070503	LSPB	+	published / reissued	
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US2007096446 AA	20070503	LSPB	+	published / reissued	
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US2007096565 AA	20070503	LSPB	+	published / reissued	
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US2007096565 AA	20110112	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
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US2007116327 AA	20070524	LSPB	+	published / reissued	
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US2007120347 AA	20070531	LSPB	+	published / reissued	
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US2007126561 AA	20070607	LSPB	+	published / reissued	
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US2007126561 AA	20070111	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BREED, DAVID S.; REEL/FRAME:018774/0030 EFFECTIVE DATE : 20070108
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US2007126561 AA	20110320	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
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US2007126561 AA	20110320	LSWD	-STCB	INFORMATION ON STATUS: APPLICATION DISCONTINUATION	TEXT : ABANDONED -- FAILURE TO RESPOND TO AN OFFICE ACTION
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US2007126561 AA	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
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US2007132219 AA	20070614	LSPB	+	published / reissued	
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US2007132219 AA	20090729	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
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US2007135982 AA	20070614	LSPB	+	published / reissued	
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US2007135982 AA	20061121	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER
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					OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS: BREED, DAVID S.; MORIN, JEFFREY L.; DUVALL, WILBUR E.; REEL/FRAME:018618/0851; SIGNING DATES FROM 20061109 TO 20061114
US2007135982 AA	20111115	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2007135982 AA	20111115	LSWD	-STCB	INFORMATION ON STATUS: APPLICATION DISCONTINUATION	TEXT : ABANDONED -- FAILURE TO RESPOND TO AN OFFICE ACTION
US2007135982 AA	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR: AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
US2007154063 AA	20070705	LSPB	+	published / reissued	
US2007154063 AA	20061117	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR: BREED, DAVID S.; REEL/FRAME:018567/0012 EFFECTIVE DATE : 20061109
US2007154063 AA	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR: AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
US2007154063 AA	20150309	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2007154063 AA	20150309	LSWD	-STCB	INFORMATION ON STATUS: APPLICATION DISCONTINUATION	TEXT : ABANDONED -- FAILURE TO RESPOND TO AN OFFICE ACTION
US2007228703 AA	20071004	LSPB	+	published / reissued	
US2007228703 AA	20090107	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2007251749 AA	20071101	LSPB	+	published / reissued	
US2007271014 AA	20071122	LSPB	+	published / reissued	
US2007271014 AA	20110824	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2007280505 AA	20071206	LSPB	+	published / reissued	
US2007282506 AA	20071206	LSPB	+	published / reissued	
US2007282506 AA	20100714	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2008040005 AA	20080214	LSPB	+	published / reissued	
US2008042410 AA	20080221	LSPB	+	published / reissued	
US2008042410 AA	20091214	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE

					TECHNOLOGIES INTERNATIONAL, INC., NEW JE OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS: BREED, DAVID S.; JOHNSON, WENDELL C.; DUVALL, WILBUR E.; SIGNING DATES FROM 20070902 TO 20070906; REEL/FRAAME: 023650/0177
US6899134 BB	20050531	LSGT	+	granted / extensions (spc, cpc, pte)	
US6899134 BB	20021211	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS: BREED, DAVID S.; DUVAL, WILBUR E.; JOHNSON, WENDELL C.; REEL/FRAAME: 013581/0600; SIGNING DATES FROM 20021202 TO 20021203
US6899134 BB	20081116	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6899134 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR: AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAAME: 028023/0087 EFFECTIVE DATE : 20120405
US6899134 BB	20130531	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US6899134 BB	20130701	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US6899134 BB	20130723	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20130531
US6899134 BB	20221023	PEXP		Calculated Patent Term Expiry	
US7040653 BA	20060509	LSGT	+	granted / extensions (spc, cpc, pte)	
US7040653 BA	20041027	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR: BREED, DAVID S.; REEL/FRAAME: 015949/0848 EFFECTIVE DATE : 20041025
US7040653 BA	20140609	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7040653 BA	20241027	PEXP		Calculated Patent Term Expiry	
US7147246 BB	20061212	LSGT	+	granted / extensions (spc, cpc, pte)	
US7147246 BB	20070313	LSRE	CC	CERTIFICATE OF CORRECTION	
US7147246 BB	20100610	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7147246 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR: AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAAME: 028023/0087 EFFECTIVE DATE : 20120405

US7147246 BB	20141212	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US7147246 BB	20150112	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7147246 BB	20150112	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7147246 BB	20150203	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20141212
US7147246 BB	20250224	PEXP		Calculated Patent Term Expiry	
US7284769 BB	20071023	LSGT	+	granted / extensions (spc, cpc, pte)	
US7284769 BB	20071225	LSRE	CC	CERTIFICATE OF CORRECTION	
US7284769 BB	20111019	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7284769 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
US7284769 BB	20151023	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US7284769 BB	20151123	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7284769 BB	20151215	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20151023
US7284769 BB	20240917	PEXP		Calculated Patent Term Expiry (PTA 403 days)	
US7338069 BB	20080304	LSGT	+	granted / extensions (spc, cpc, pte)	
US7338069 BB	20090224	LSRE	CC	CERTIFICATE OF CORRECTION	
US7338069 BB	20120304	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US7338069 BB	20120402	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7338069 BB	20120402	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7338069 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
US7338069 BB	20120424	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20120304
US7338069 BB	20260612	PEXP		Calculated Patent Term Expiry	

US7379800 BB	20080527	LSGT	+	granted / extensions (spc, cpc, pte)	
US7379800 BB	20060418	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BREED, DAVID S.; REEL/FRAME:017499/0304 EFFECTIVE DATE : 20060417
US7379800 BB	20060418	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BREED, DAVID S.; REEL/FRAME:017499/0318 EFFECTIVE DATE : 20060417
US7379800 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
US7379800 BB	20120527	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US7379800 BB	20120625	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7379800 BB	20120625	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7379800 BB	20260418	PEXP		Calculated Patent Term Expiry	
US7481453 BB	20090127	LSGT	+	granted / extensions (spc, cpc, pte)	
US7481453 BB	20050518	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL INC., NEW JE OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BREED, DAVID S.; REEL/FRAME:016582/0883 EFFECTIVE DATE : 20050517
US7481453 BB	20090107	LSGT	PAT1	Patented Case	
US7481453 BB	20090317	LSRE	CC	CERTIFICATE OF CORRECTION	
US7481453 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
US7481453 BB	20130118	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7481453 BB	20160714	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7481453 BB	20260321	PEXP		Calculated Patent Term Expiry (PTA 307 days)	
US7523803 BB	20090428	LSGT	+	granted / extensions (spc, cpc, pte)	
US7523803 BB	20060612	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE

					TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR: BREED, DAVID S.; REEL/FRAME: 017777/0345 EFFECTIVE DATE : 20060610
US7523803 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR: AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME: 028023/0087 EFFECTIVE DATE : 20120405
US7523803 BB	20130428	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US7523803 BB	20130527	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7523803 BB	20130527	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7523803 BB	20130618	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20130428
US7523803 BB	20261012	PEXP		Calculated Patent Term Expiry (PTA 122 days and a terminal disclaimer has been filed)	
US7527288 BB	20090505	LSGT	+	granted / extensions (spc, cpc, pte)	
US7527288 BB	20061026	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR: BREED, DAVID S.; REEL/FRAME: 018449/0958 EFFECTIVE DATE : 20060915
US7527288 BB	20090415	LSGT	PAT1	Patented Case	
US7527288 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR: AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME: 028023/0087 EFFECTIVE DATE : 20120405
US7527288 BB	20130416	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7527288 BB	20170505	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US7527288 BB	20170605	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7527288 BB	20170605	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7527288 BB	20170627	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20170505
US7527288 BB	20260905	PEXP		Calculated Patent Term Expiry	
US7549327 BB	20090623	LSGT	+	granted / extensions (spc, cpc, pte)	

US7549327 BB	20060508	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BREED, DAVID S.; REEL/FRAME:017594/0328 EFFECTIVE DATE : 20060504
US7549327 BB	20090603	LSGT	PAT1	Patented Case	
US7549327 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
US7549327 BB	20130619	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7549327 BB	20170623	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US7549327 BB	20170724	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7549327 BB	20170724	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7549327 BB	20170815	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20170623
US7549327 BB	20260913	PEXP		Calculated Patent Term Expiry (PTA 128 days)	
US7575248 BB	20090818	LSGT	+	granted / extensions (spc, cpc, pte)	
US7575248 BB	20060713	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BREED, DAVID S.; REEL/FRAME:017940/0001 EFFECTIVE DATE : 20060711
US7575248 BB	20090729	LSGT	PAT1	Patented Case	
US7575248 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
US7575248 BB	20130703	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7575248 BB	20170808	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7575248 BB	20260808	PEXP		Calculated Patent Term Expiry (PTA 27 days)	
US7596242 BB	20090929	LSGT	+	granted / extensions (spc, cpc, pte)	
US7596242 BB	20061005	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL INC., NEW JE OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:BREED, DAVID S.; JOHNSON, WENDELL C.; KHAVSTUKHIN, MYKHAILO; REEL/FRAME:018372/0032; SIGNING

						DATES FROM 20061003 TO 20061004
US7596242 BB	20090909	LSGT	PAT1	Patented Case		
US7596242 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR: AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405	
US7596242 BB	20130911	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4	
US7596242 BB	20171030	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)	
US7596242 BB	20171030	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362		
US7596242 BB	20171030	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362	
US7596242 BB	20171121	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20170929	
US7596242 BB	20270518	PEXP		Calculated Patent Term Expiry (PTA 225 days)		
US7650210 BB	20100119	LSGT	+	granted / extensions (spc, cpc, pte)		
US7650210 BB	20060814	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL INC., NEW JE OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR: BREED, DAVID S.; REEL/FRAME:018116/0469 EFFECTIVE DATE : 20060811	
US7650210 BB	20091230	LSGT	PAT1	Patented Case		
US7650210 BB	20101123	LSRE	CC	CERTIFICATE OF CORRECTION		
US7650210 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR: AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405	
US7650210 BB	20130516	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4	
US7650210 BB	20130903	LSOP	IPR	AIA TRIAL PROCEEDING FILED BEFORE THE PATENT AND APPEAL BOARD: INTER PARTES REVIEW	PARTYTYPE : OPPONENT OPPONENT : TOYOTA MOTOR CORPORATION OLDPARTY : TRIAL NO: IPR2013-00415 EFFECTIVE DATE : 20130708	
US7650210 BB	20140520	LSOP	IPR	AIA TRIAL PROCEEDING FILED BEFORE THE PATENT AND APPEAL BOARD: INTER PARTES REVIEW	PARTYTYPE : OPPONENT OPPONENT : AMERICAN HONDA MOTOR CO., INC. HONDA OF AMERICA OLDPARTY : TRIAL NO: IPR2014-00633 EFFECTIVE DATE : 20140415	
US7650210 BB	20141223	LSOP	IPR	AIA TRIAL PROCEEDING FILED BEFORE THE PATENT AND APPEAL BOARD: INTER PARTES REVIEW	PARTYTYPE : OPPONENT OPPONENT : HYUNDAI MOTOR COMPANY, HYUNDAI MOTOR AMERICA, HYUNDAI OLDPARTY : TRIAL NO: IPR2015-00177 EFFECTIVE DATE : 20141028	

US7650210 BB	20170904	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7650210 BB	20180219	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US7650210 BB	20180219	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7650210 BB	20180219	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7650210 BB	20180313	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180119
US7650210 BB	20280505	PEXP		Calculated Patent Term Expiry (PTA 630 days)	
US7657354 BB	20100202	LSGT	+	granted / extensions (spc, cpc, pte)	
US7657354 BB	20100113	LSGT	PAT1	Patented Case	
US7657354 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
US7657354 BB	20131105	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7657354 BB	20170918	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7657354 BB	20180305	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US7657354 BB	20180314	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7657354 BB	20180314	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7657354 BB	20180327	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180202
US7657354 BB	20271104	PEXP		Calculated Patent Term Expiry (PTA 6 days)	
US7672756 BB	20100302	LSGT	+	granted / extensions (spc, cpc, pte)	
US7672756 BB	20060601	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.,NEW JE OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BREED, DAVID S.; REEL/FRAME:017719/0989 EFFECTIVE DATE : 20060601
US7672756 BB	20060601	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BREED, DAVID S.; REEL/FRAME:017719/0989

					EFFECTIVE DATE : 20060601
US7672756 BB	20100210	LSGT	PAT1	Patented Case	
US7672756 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
US7672756 BB	20140204	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7672756 BB	20171016	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7672756 BB	20180215	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : 7.5 YR SURCHARGE - LATE PMT W/IN 6 MO, LARGE ENTITY (ORIGINAL EVENT CODE: M1555)
US7672756 BB	20180215	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7672756 BB	20280429	PEXP		Calculated Patent Term Expiry (PTA 698 days)	
US7712777 BB	20100511	LSGT	+	granted / extensions (spc, cpc, pte)	
US7712777 BB	20061012	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL INC., NEW JE OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BREED, DAVID S.; REEL/FRAME:018391/0090 EFFECTIVE DATE : 20061009
US7712777 BB	20061012	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL INC.,NEW JER OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BREED, DAVID S.; REEL/FRAME:018391/0090 EFFECTIVE DATE : 20061009
US7712777 BB	20100421	LSGT	PAT1	Patented Case	
US7712777 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
US7712777 BB	20140312	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7712777 BB	20171225	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7712777 BB	20180611	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US7712777 BB	20180611	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7712777 BB	20180611	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7712777 BB	20290120	PEXP		Calculated Patent Term Expiry (PTA 834 days)	

US7760080 BB	20100720	LSGT	+	granted / extensions (spc, cpc, pte)	
US7760080 BB	20060713	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:BREED, DAVID S.; DUVALL, WILBUR E.; JOHNSON, WENDELL C.; REEL/FRAME:017939/0960; SIGNING DATES FROM 20060712 TO 20060713
US7760080 BB	20060713	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:BREED, DAVID S.; DUVALL, WILBUR E.; JOHNSON, WENDELL C.; SIGNING DATES FROM 20060712 TO 20060713; REEL/FRAME:017939/0960
US7760080 BB	20100831	LSRE	CC	CERTIFICATE OF CORRECTION	
US7760080 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
US7760080 BB	20140720	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US7760080 BB	20140818	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7760080 BB	20140818	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7760080 BB	20140909	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20140720
US7760080 BB	20280614	PEXP		Calculated Patent Term Expiry (PTA 702 days)	
US7762582 BB	20100727	LSGT	+	granted / extensions (spc, cpc, pte)	
US7762582 BB	20060907	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL INC., NEW JE OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BREED, DAVID S.; REEL/FRAME:018237/0953 EFFECTIVE DATE : 20060827
US7762582 BB	20100707	LSGT	PAT1	Patented Case	
US7762582 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
US7762582 BB	20140718	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7762582 BB	20180312	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)

US7762582 BB	20180903	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.); ENTITY STATUS OF PATENT OWNER: LARGE ENTITY
US7762582 BB	20180903	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7762582 BB	20180903	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7762582 BB	20180925	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180727
US7762582 BB	20281022	PEXP		Calculated Patent Term Expiry (PTA 776 days)	
US7766383 BB	20100803	LSGT	+	granted / extensions (spc, cpc, pte)	
US7766383 BB	20070206	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:BREED, DAVID S.; JOHNSON, WENDELL C.; DUVALL, WILBUR E.; SIGNING DATES FROM 20070126 TO 20070129; REEL/FRAME:023480/0917
US7766383 BB	20070206	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:BREED, DAVID S.; JOHNSON, WENDELL C.; DUVALL, WILBUR E.; REEL/FRAME:023480/0917; SIGNING DATES FROM 20070126 TO 20070129
US7766383 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
US7766383 BB	20140803	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US7766383 BB	20140901	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7766383 BB	20140901	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7766383 BB	20140923	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20140803
US7766383 BB	20280711	PEXP		Calculated Patent Term Expiry (PTA 529 days)	
US7769513 BB	20100803	LSGT	+	granted / extensions (spc, cpc, pte)	
US7769513 BB	20070820	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF

					ASSIGNORS INTEREST; ASSIGNORS:BREED, DAVID S.; CHEN, TIE-QI; SIGNING DATES FROM 20070816 TO 20070818; REEL/FRAME:019718/0798
US7769513 BB	20070820	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:BREED, DAVID S.; CHEN, TIE-QI; REEL/FRAME:019718/0798; SIGNING DATES FROM 20070816 TO 20070818
US7769513 BB	20100714	LSGT	PAT1	Patented Case	
US7769513 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
US7769513 BB	20140718	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7769513 BB	20180319	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7769513 BB	20180725	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : 7.5 YR SURCHARGE - LATE PMT W/IN 6 MO, LARGE ENTITY (ORIGINAL EVENT CODE: M1555)
US7769513 BB	20180725	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7769513 BB	20280612	PEXP		Calculated Patent Term Expiry (PTA 297 days)	
US7779956 BB	20100824	LSGT	+	granted / extensions (spc, cpc, pte)	
US7779956 BB	20061127	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:BREED, DAVID S.; MORIN, JEFFREY L.; DUVALL, WILBUR E.; SIGNING DATES FROM 20061109 TO 20061114; REEL/FRAME:018628/0537
US7779956 BB	20061127	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:BREED, DAVID S.; MORIN, JEFFREY L.; DUVALL, WILBUR E.; REEL/FRAME:018628/0537; SIGNING DATES FROM 20061109 TO 20061114
US7779956 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
US7779956 BB	20140824	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US7779956 BB	20140922	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	

US7779956 BB	20140922	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7779956 BB	20141014	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20140824
US7779956 BB	20281213	PEXP		Calculated Patent Term Expiry (PTA 754 days and a terminal disclaimer has been filed)	
US7788008 BB	20100831	LSGT	+	granted / extensions (spc, cpc, pte)	
US7788008 BB	20070816	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BREED, DAVID S.; REEL/FRAME:019703/0699 EFFECTIVE DATE : 20070815
US7788008 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
US7788008 BB	20140831	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US7788008 BB	20140929	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7788008 BB	20140929	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7788008 BB	20141021	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20140831
US7788008 BB	20271201	PEXP		Calculated Patent Term Expiry (PTA 107 days)	
US7832762 BB	20101116	LSGT	+	granted / extensions (spc, cpc, pte)	
US7832762 BB	20060605	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BREED, DAVID S.; REEL/FRAME:017735/0659 EFFECTIVE DATE : 20060601
US7832762 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
US7832762 BB	20141116	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US7832762 BB	20141215	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7832762 BB	20141215	LSLE	-STCH	INFORMATION ON	TEXT : PATENT EXPIRED DUE TO

				STATUS: PATENT DISCONTINUATION	NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7832762 BB	20150106	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20141116
US7832762 BB	20270208	PEXP		Calculated Patent Term Expiry (PTA 252 days and a terminal disclaimer has been filed)	
US7880594 BB	20110201	LSGT	+	granted / extensions (spc, cpc, pte)	
US7880594 BB	20060706	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:BREED, DAVID S.; DUVALL, WILBUR W.; JOHNSON, WENDELL C.; REEL/FRAME:017889/0566 EFFECTIVE DATE : 20060630
US7880594 BB	20110112	LSGT	PAT1	Patented Case	
US7880594 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
US7880594 BB	20150202	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7880594 BB	20180924	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.); ENTITY STATUS OF PATENT OWNER: LARGE ENTITY
US7880594 BB	20190128	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : 7.5 YR SURCHARGE - LATE PMT W/IN 6 MO, LARGE ENTITY (ORIGINAL EVENT CODE: M1555); ENTITY STATUS OF PATENT OWNER: LARGE ENTITY
US7880594 BB	20190128	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7880594 BB	20281005	PEXP		Calculated Patent Term Expiry (PTA 825 days)	
US8019501 BB	20110913	LSGT	+	granted / extensions (spc, cpc, pte)	
US8019501 BB	20070806	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BREED, DAVID S.; REEL/FRAME:019655/0286 EFFECTIVE DATE : 20070731
US8019501 BB	20110824	LSGT	PAT1	Patented Case	
US8019501 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
US8019501 BB	20130903	LSOP	IPR	AIA TRIAL PROCEEDING FILED BEFORE THE PATENT AND APPEAL BOARD: INTER PARTES	PARTYTYPE : OPPONENT OPPONENT : TOYOTA MOTOR CORPORATION OLDPARTY : TRIAL NO: IPR2013- 00416 EFFECTIVE DATE : 20130708

REVIEW					
US8019501 BB	20150805	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8019501 BB	20190506	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.); ENTITY STATUS OF PATENT OWNER: LARGE ENTITY
US8019501 BB	20300705	PEXP		Calculated Patent Term Expiry (PTA 1068 days)	
US8060282 BB	20111115	LSGT	+	granted / extensions (spc, cpc, pte)	
US8060282 BB	20070806	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BREED, DAVID S.; REEL/FRAME:019655/0301 EFFECTIVE DATE : 20070731
US8060282 BB	20111026	LSGT	PAT1	Patented Case	
US8060282 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405
US8060282 BB	20151115	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US8060282 BB	20151214	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US8060282 BB	20151214	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US8060282 BB	20160105	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20151115
US8060282 BB	20300806	PEXP		Calculated Patent Term Expiry (PTA 1100 days)	
USRE39868 E	20100718	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
USRE39868 E	20100816	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
USRE39868 E	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME:028023/0087 EFFECTIVE DATE : 20120405

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:

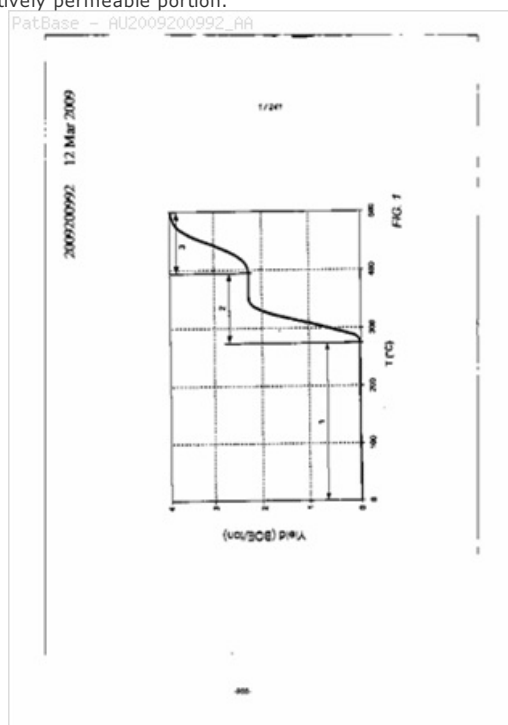
International (IPC 8-9): E21B43/243 E21B43/247 E21B43/30 E21C41/24 G02B5/18 G02B5/32 G02B6/124 G02B6/136

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

Assignee(s): (std): SHELL INT RESEARCH

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

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

Inventor(s): AJAY M MADGAVKAR ; WADE WATKINS ; STEVE CRANE ; THOMAS D FOWLER ; TOM MIKUS ; VAN HARDEVELD MARTIJN ; SCOTT L WELLINGTON ; RONALD BASS ; ROBERT C RYAN ; PETER VEENSTRA ; PHILIP T BAXLEY ; MARGARET MESSIER ; MARTIJN VAN HARDEVELD ; MELIHA D SUMNI DINDORUK ; KEVIN A MAHER ; KIP PRATT ; LANNY SCHOELING ; LAWRENCE J BIELAMOWICZ ; ILYA E BERCHENKO ; JAMES L MENOTTI ; JOHN M COLES ; JOHN M KARANIKAS ; JOHN M WARD ; HAROLD J VINEGAR ; GORDON T SHAHIN ; FRED G CARL ; GEORGE L STEGEMEIER ; CARLOS GIANDT ; CHARLIE R KEEDY ; DE ROUFFIGNAC ERIC ; ERIC DE ROUFFIGNAC ; ETUAN ZHANG ; BRUCE G HUNSUCKER ; BRUCE LEPPER ; BRUCE ROBERTS

Agent(s): SPRUSON AND FERGUSON

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AU2009200992 AA	20090402	LSPB	+	published / reissued	
AU2009200992 AA	20121122	LSLE	-MK4	APPLICATION LAPSED SECTION 142(2)(D) - NO CONTINUATION FEE PAID FOR THE APPLICATION	

Title: METHODS, APPARATUSES, AND SYSTEMS FOR ANALYZING MICROORGANISM STRAINS FROM COMPLEX HETEROGENEOUS COMMUNITIES, PREDICTING AND IDENTIFYING FUNCTIONAL RELATIONSHIPS AND INTERACTIONS THEREOF, AND SELECTING AND SYNTHESIZING MICROBIAL ENSEMBLES BASED THEREON

Abstract: Methods, apparatuses, and systems for screening, analyzing and selecting microorganisms from complex heterogeneous communities, predicting and identifying functional relationships and interactions thereof, and synthesizing microbial ensembles based thereon are disclosed. Methods for identifying and determining the absolute cell count of microorganism types and strains, along with identifying the network relationships between active microorganisms and environmental parameters, are also disclosed.

Classifications:

International (IPC 8-9): A01N63/00 A23J1/20 A23K10/10 A23K10/16 A23K10/18 A23K20/10 A23K20/153 A23K40/30 A23K40/35 A23K50/10 A23K50/30 A23K50/70 A23K50/75 A23L31/10 A23L33/135 A61K35/66 A61K35/74 A61K35/741 A61K35/742 A61K36/06 A61K36/064 A61K39/02 A61K9/00 A61P31/04 C12N1/00 C12N1/14 C12N1/20 C12N11/04 C12Q C12Q1/04 C12Q1/06 C12Q1/68 C12Q1/686 C12Q1/6869 C12Q1/689 C40B20/08 G01N33/569 G01N33/84 G01N33/92 G06F19/00 G06F19/10 G06F19/12 G06F19/24 G06G7/58 G06G7/60 (Advanced/Invention); C12Q (Subclass/Invention)

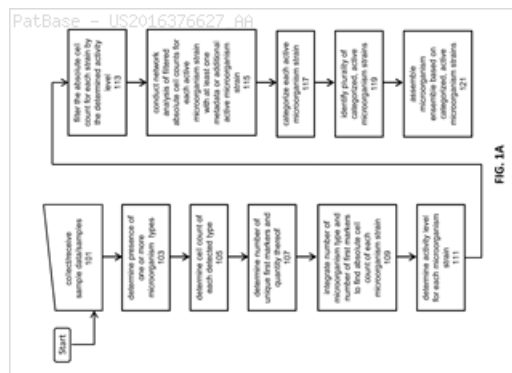
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Family:

Publication number	Publication date	Application number	Application date
AR105178 AA	20170913	AR2016P101955	20160628
AR108031 AA	20180711	AR2017P100052	20170109
AU2016282996 AA	20180118	AU20160282996	20160624
AU2017206051 AA	20180802	AU20170206051	20170106
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CA2989889 AA	20171215	CA20162989889	20160624
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IL256471 A0	20180228	IL20160256471	20160624
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JP2019506856 T2	20190314	JP20180535389T	20170106
MX2017016924 A1	20180815	MX20170016924	20160624
MX2018008492 A1	20180823	MX20180008492	20170106
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US2017107557 AA	20170420	US20160392913	20161228
US2017196921 AA	20170713	US20170400436	20170106
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US2017342457 AA	20171130	US20160349829	20161111
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WO17120495 A1	20170713	WO2017US12573	20170106
WO18126026 A1	20180705	WO2017US68740	20171228
WO18126033 A1	20180705	WO2017US68753	20171228
WO18126036 A1	20180705	WO2017US68758	20171228

Priority:

US20150184650P	20150625	US20160276142P	20160107	US20160276531P	20160108
US20160334816P	20160511	WO2016US39221	20160624	US20160217575	20160722
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US20160439800P	20161228	US20160439804P	20161228	US20160439867P	20161228
US20170400484	20170106	US20170400436	20170106	WO2017US12573	20170106
US20170560174P	20170918	US20170791391	20171023	US20180948965	20180409



Probable Assignee: ASCUS BIOSCIENCES INC**Assignee(s):** (std): ASCUS BIOSCIENCES INC**Assignee(s):** EMBREE MALLORY ; GOGUL GRANT ; PICKING LUKE ; ZENGLER KARSTEN ; TARASOVA JANNA**Inventor(s):** (std): GOGUL GRANT ; GRANT GOGUL ; JANNA TARASOVA ; LUKE PICKING ; PICKING LUKE ; TARASOVA JANNA ; ZENGLER KARSTEN ; MARTINO CAMERON JOSEPH ; GAFFNEY JAMES RUSSELL ; EMBREE MALLORY ; MALLORY EMBREE ; KARSTEN ZENGLER**Agent(s):** PIZZEYS PATENT AND TRADE MARK ATTORNEYS PTY LTD; SMART AND BIGGAR; ESTUDIO CLARKE MODET AND CO CHILE LIMITADA; COOLEY UK LLP; COOLEY LLP; NATHAN W; JEFFREY R; NGUYEN THU ET AL; BOLLAND JEFFREY R ET AL; POULSEN NATHAN W ET AL**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ 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 IR IS IT JO JP KE KG KH KM KN KP KR KW 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 PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW**Legal status (INPADOC)**[View legal status timeline](#)

Patent	Date recorded	Event group	Code	Event	Details
AR105178 AA	20170913	LSPB	+	published / reissued	
AR108031 AA	20180711	LSPB	+	published / reissued	
AU2016282996 AA	20180118	LSPB	+	published / reissued	
AU2017206051 AA	20180802	LSPB	+	published / reissued	
CA2989889 AA	20171215	LSPB	+	published / reissued	
CA3010505 AA	20180703	LSPB	+	published / reissued	
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CN107849597 A	20180327	LSPB	PB01	PUBLICATION	
CN109757107 A	20190514	LSPB	+	published / reissued	
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JP2018519822 T2	20180726	LSPB	+	published / reissued	
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MX2017016924 A1	20180815	LSPB	+	published / reissued	
MX2018008492 A1	20180823	LSPB	+	published / reissued	
TW201713775 A	20170416	LSPB	+	published / reissued	
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US2017196921 AA	20190319	LSSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US2017196921 AA	20190328	LSFE	+PPR1	Publications -- Issue Fee Payment Received	
US2017196921 AA	20190401	LSFE	+PPV1	Publications -- Issue Fee Payment	

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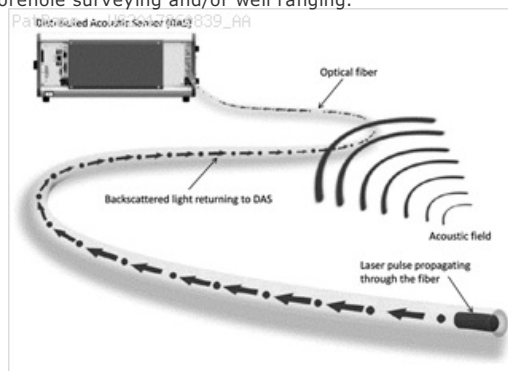
Title: DAS FOR WELL RANGING

Abstract: Using distributed acoustic sensing (DAS) fiber optic cable for borehole surveying and/or well ranging.

Classifications:

International (IPC 8-9): C09K8/00 E21B41/00 E21B43/01 E21B43/16 E21B43/17 E21B43/20 E21B43/24 E21B43/26 E21B44/00 E21B47/00 E21B47/02 E21B47/022 E21B47/0228 E21B47/06 E21B47/10 E21B47/12 E21B49/00 G01B11/16 G01F1/66 G01H9/00 G01K11/32 G01N29/24 G01V1/22 G01V1/28 G01V1/30 G01V1/40 G01V1/48 G06F19/00 G06T17/05 (Advanced/Invention); G01V1/40 (Advanced/Non-invention)

CPC: E21B47/02208 E21B47/02216 G01H9/004 G01V1/308 G01V1/42 G01V2210/1429 G01V2210/624 E21B43/17 G01V1/48 G01V1/30 G01V1/226 G06T17/05 G01V1/40 G01F1/66 G06F19/00 E21B47/02 E21B47/102 E21B43/26 G01K11/32 E21B47/123 E21B47/101



Family:

Publication number	Publication date	Application number	Application date
AU2017229850 AA	20180816	AU20170229850	20170309
AU2017230716 AA	20180809	AU20170230716	20170309
AU2017230724 AA	20180816	AU20170230724	20170309
AU2017230728 AA	20180816	AU20170230728	20170309
AU2017230729 AA	20180816	AU20170230729	20170309
AU2017230729 AI	20181213	AU20170230729	20170309
CA3012706 AA	20180725	CA20173012706	20170309
CA3012708 AA	20180725	CA20173012708	20170309
CA3012856 AA	20180726	CA20173012856	20170309
CA3012872 AA	20180726	CA20173012872	20170309
CA3016470 AA	20180831	CA20173016470	20170309
CL2018002553 A1	20181207	CL20180002553	20180906
CL2018002554 A1	20181221	CL20180002554	20180906
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EP3427017 A1	20190116	EP20170764143	20170309
EP3427017 A4	20190403	EP20170764143	20170309
EP3427018 A1	20190116	EP20170764146	20170309
EP3427018 A4	20190417	EP20170764146	20170309
EP3427045 A1	20190116	EP20170764137	20170309
EP3427045 A4	20190403	EP20170764137	20170309
EP3427083 A1	20190116	EP20170764150	20170309
EP3427083 A4	20190403	EP20170764150	20170309
EP3427084 A1	20190116	EP20170764151	20170309
EP3427084 A4	20190403	EP20170764151	20170309
US2017260839 AA	20170914	US20170453517	20170308
US2017260842 AA	20170914	US20170453434	20170308
US2017260846 AA	20170914	US20170453216	20170308
US2017260849 AA	20170914	US20170453044	20170308
US2017260854 AA	20170914	US20170453650	20170308
US2017342814 AA	20171130	US20170453584	20170308
US2018045040 AA	20180215	US20170453730	20170308
US10095828 BB	20181009	US20170453730	20170308
US10287874 BB	20190514	US20170453650	20170308
WO17156323 A1	20170914	WO2017US21659	20170309
WO17156328 A1	20170914	WO2017US21667	20170309
WO17156331 A1	20170914	WO2017US21670	20170309
WO17156334 A1	20170914	WO2017US21674	20170309
WO17156337 A1	20170914	WO2017US21678	20170309
WO17156338 A1	20170914	WO2017US21679	20170309
WO17156339 A1	20170914	WO2017US21681	20170309
WO17156339 A9	20180802	WO2017US21681	20170309

Priority:

US20160305758P	20160309	US20160305777P	20160309	US20170453517	20170308
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WO2017US21679	20170309	WO2017US21670	20170309		

Probable Assignee: CONOCO PHILLIPS CO

Assignee(s): (std): ATA ELIAS Z ; BEARDMORE DAVID HALE ; CONOCO PHILLIPS CO ; CONOCOPHILLIPS CO ; GIBSON MARK

R ; FRIEHAUF KYLE ; JIN GE ; ROY BAISHALI ; KRUEGER KYLE R ; FILICE FRANK P ; MOSHER CHARLES C ; JURICK DANA M ; SWAN HERBERT W ; SMITH BRUCE E ; TURA ALI

Inventor(s): (std): GIBSON MARK R ; FRIEHAUF KYLE ; SWAN HERBERT W ; ROY BAISHALI ; JURICK DANA M ; TURA ALI ; JIN GE ; KRUEGER KYLE R ; SMITH BRUCE E ; BEARDMORE DAVID HALE ; ATA ELIAS Z ; MOSHER CHARLES C ; FILICE FRANK P

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Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ 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 IR IS IT JP KE KG KH KM KN KP KR KW 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 PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AU2017229850 AA	20180816	LSPB	+	published / reissued	
AU2017230716 AA	20180809	LSPB	+	published / reissued	
AU2017230724 AA	20180816	LSPB	+	published / reissued	
AU2017230728 AA	20180816	LSPB	+	published / reissued	
AU2017230729 AA	20180816	LSPB	+	published / reissued	
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CA3012706 AA	20180725	LSPB	+	published / reissued	
CA3012708 AA	20180725	LSPB	+	published / reissued	
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EP3427017 A1	20190116	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20180803
EP3427017 A4	20190403	LSES	+A4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED	EFFECTIVE DATE : 20190304
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US10095828 BB	20181009	LSGT	+	granted / extensions (spc, cpc, pte)	
US10095828 BB	20180919	LSGT	PAT1	Patented Case	
US10095828 BB	20370308	PEXP		Calculated Patent Term Expiry	
US10287874 BB	20190514	LSGT	+	granted / extensions (spc, cpc, pte)	
US10287874 BB	20370818	PEXP		Calculated Patent Term Expiry (PTA 163 days)	
US2017260839 AA	20170914	LSPB	+	published / reissued	
US2017260839 AA	20180821	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : CONOCOPHILLIPS COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:BEARDMORE, DAVID HALE; MOSHER, CHARLES C.; SMITH, BRUCE E.; AND OTHERS; SIGNING DATES FROM 20170825 TO 20180726; REEL/FRAME:046642/0950

US2017260839 AA	20181228	LSES	NFA1	Non Final Action Mailed	
US2017260842 AA	20170914	LSPB	+	published / reissued	
US2017260842 AA	20170308	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : CONOCOPHILLIPS COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:JIN, GE; MOSHER, CHARLES C.; FILICE, FRANK P.; AND OTHERS; SIGNING DATES FROM 20170221 TO 20170302; REEL/FRAAME:041508/0129
US2017260842 AA	20190325	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US2017260846 AA	20170914	LSPB	+	published / reissued	
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US2017260846 AA	20181120	LSES	NFA1	Non Final Action Mailed	
US2017260846 AA	20190318	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
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US2017260849 AA	20170620	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : CONOCOPHILLIPS COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FRIEHAUF, KYLE; GIBSON, MARK R.; SIGNING DATES FROM 20170612 TO 20170619; REEL/FRAAME:042754/0876
US2017260849 AA	20190131	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US2017260849 AA	20190425	LSFE	+PPR1	Publications -- Issue Fee Payment Received	
US2017260849 AA	20190426	LSFE	+PPV1	Publications -- Issue Fee Payment Verified	
US2017260854 AA	20170914	LSPB	+	published / reissued	
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US2017260854 AA	20190116	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in	

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US2017342814 AA	20171130	LSPB	+	published / reissued	
US2017342814 AA	20170913	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : CONOCOPHILLIPS COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:KRUEGER, KYLE R.; JIN, GE; MOSHER, CHARLES C.; AND OTHERS; SIGNING DATES FROM 20170609 TO 20170825; REEL/FRAME:043575/0451
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US2018045040 AA	20180105	LSES	NFA1	Non Final Action Mailed	
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WO17156323 A1	20170914	LSPB	+	published / reissued	
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WO17156339 A9	20181012	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2017764151 COUNTRY OF REF DOCUMENT : EP EFFECTIVE DATE : 20181009

Title: ANHYDROUS PROCESSING OF METHANE INTO METHANE-SULFONIC ACID, METHANOL, AND OTHER COMPOUNDS

Abstract: Anhydrous processing to convert methane into oxygenates (such as methanol), liquid fuels, or olefins uses an initiator to create methyl radicals. These radicals combine with sulfur trioxide to form methyl-sulfonate radicals. These radicals attack fresh methane, forming stable methane-sulfonic acid (MSA) while creating new methyl radicals to sustain a chain reaction. This system avoids the use or creation of water, and liquid MSA is an amphoteric solvent that increasing the solubility and reactivity of methane and SO₃. MSA from this process can be sold or used as a valuable chemical with no mercaptan or halogen impurities, or it can be heated and cracked to release methanol (a clean fuel, gasoline additive, and chemical feedstock) and sulfur dioxide (which can be oxidized to SO₃ and recycled back into the reactor). MSA also can be converted into gasoline, olefins, or other valuable chemicals.

Classifications:

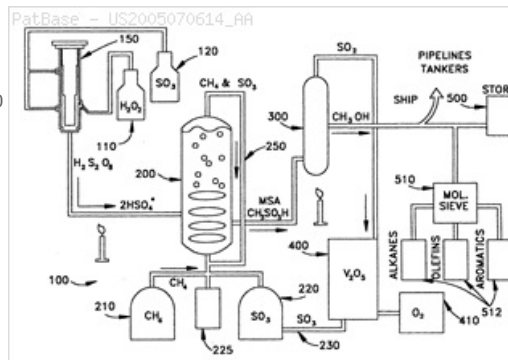
International (IPC 8-9): B01J19/24 C01B3/34 C07B41/02 C07C1/00 C07C1/32 C07C2/86 C07C27/10 C07C29/00 C07C29/09 C07C29/12 C07C303/02 C07C303/06 C07C309/00 C07C309/02 C07C309/04 C07C31/04 C07C315/00 C07C319/00 C07C381/00 C07C4/02 C07C41/00 C07C5/31 C10G3/00 (Advanced/Invention); C07C309/04 (Advanced/Non-invention); B01J19/24 C07B41/00 C07C1/00 C07C27/00 C07C29/00 C07C303/00 C07C309/00 C07C315/00 C07C319/00 C07C381/00 C07C4/00 C07C5/00 (Core/Invention); C07C309/00 (Core/Non-invention)

International (IPC 1-7): B01D B01D1/00 C07B41/02 C07C1/00 C07C27/00 C07C27/10 C07C315/00 C07C319/00 C07C4/02 C07C5/31 C07C29/00 C07C303/06 C12C11/02 C07C2601/02

CPC: C10G2400/20 C10G2400/22 C07C2/868 C07C1/322 C07C29/09 C07C381/00 C10G3/00 C01B15/08 Y02P30/20 Y02P30/40 Y02P20/582 C01B3/34 C07C29/00 C07C303/06 C12C11/02 C07C2601/02

European: C01B15/08 C01B3/34 C07C1/32B2 C07C2/86F C07C29/00 C07C29/09 C07C303/06 C07C381/00 C10G3/00 C12C11/02 M07C101/02

US: 422/149 422/149S 518/700 518/700P 518/709 518/709S 558/44 558/44P 562/123 568/698



Family:

Publication number	Publication date	Application number	Application date
AU2003286923 AA	20040607	AU20030286923	20031105
AU2004287874 AA	20050519	AU20040287874	20041105
CA2504707 AA	20050502	CA20032504707	20031105
CA2586326 AA	20070503	CA20042586326	20041105
CN1318361 C	20070530	CN200380107955	20031105
CN1732141 A	20060208	CN200380107955	20031105
CN1926099 A	20070307	CN200480039150	20041105
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EP1558353 A2	20050803	EP20030778140	20031105
EP1558353 A4	20100310	EP20030778140	20031105
EP1558353 B1	20160615	EP20030778140	20031105
EP1720831 A1	20061115	EP20040810350	20041105
EP1720831 A4	20100407	EP20040810350	20041105
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IN02578DN2006 A	20070817	IN2006DN02578	20060508
MXPA05004957 A1	20060130	MX2005PA04957	20031105
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NO20060301 A	20060308	NO20060000301	20060120
NO20060301 L	20060308	NO20060000301	20060120
NO20062578 A	20060602	NO20060002578	20060602
NO20062578 L	20060602	NO20060002578	20060602
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OA13283 A	20070131	OA20061000148	20041105
US2005070614 AA	20050331	US20040873361	20040621
US2008161591 AA	20080703	US20070873402	20071016
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US7282603 C1	20180627	US20040873361	20040621
WO04041399 A2	20040521	WO2003US35396	20031105
WO04041399 A3	20040902	WO2003US35396	20031105
WO05044789 A1	20050519	WO2004US36831	20041105
WO05069751 A2	20050804	WO2004US19977	20040621
WO05069751 A3	20060921	WO2004US19977	20040621

Priority:

US20020424091P 20021105	US20030480183P 20030621	EP20030778140 20031105
WO2003US35396 20031105	US20040562675P 20040415	US20040873361 20040621
WO2004US19977 20040621	WO2004US36831 20041105	US20070873402 20071016

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Assignee(s): (std): METHION LTD ; RICHARDS ALAN ; RICHARDS ALAN K ; ALAN RICHARDS

Assignee(s): METHINO LTD ; ALAN K RICHARDS ; VEOLIA NORTH AMERICA REGENERATION SERVICES LLC

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Inventor(s): RICHARDS ALAN ; MR RICHARDS ALAN K

Agent(s): DAVIES COLLISON CAVE; DAVIES COLLISON CAVE PTY LTD; SMART AND BIGGAR; ETTMAYR ANDREAS; CURELL MIREIA; PATRICK D KELLY; PATRICK D

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG 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 NA NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AU2003286923 AA	20040607	LSPB	+	published / reissued	
AU2003286923 AA	20090528	LSLE	-MK4	APPLICATION LAPSED SECTION 142(2)(D) - NO CONTINUATION FEE PAID FOR THE APPLICATION	
AU2004287874 AA	20050519	LSPB	+	published / reissued	
AU2004287874 AA	20100603	LSLE	-MK4	APPLICATION LAPSED SECTION 142(2)(D) - NO CONTINUATION FEE PAID FOR THE APPLICATION	
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CA2504707 AA	20081105	LSSES	+EEER	EXAMINATION REQUEST	
CA2586326 AA	20070503	LSPB	+	published / reissued	
CA2586326 AA	20101027	LSSES	+EEER	EXAMINATION REQUEST	
CA2586326 AA	20131107	LSLE	-FZDE	DEAD	EFFECTIVE DATE : 20130912
CN1318361 C	20070530	LSGT	+	granted / extensions (spc, cpc, pte)	
CN1318361 C	20070530	LSGT	+C14	GRANT OF PATENT OR UTILITY MODEL	
CN1318361 C	20130102	LSLE	-C17	CESSATION OF PATENT RIGHT	
CN1318361 C	20231105	PEXP		Calculated Patent Term Expiry	
CN1732141 A	20060208	LSPB	+	published / reissued	
CN1732141 A	20060208	LSPB	+C06	PUBLICATION	
CN1926099 A	20070307	LSPB	+	published / reissued	
CN1926099 A	20070307	LSPB	+C06	PUBLICATION	
CN1926099 A	20110323	LSDW	-C02	DEEMED WITHDRAWAL OF PATENT APPLICATION AFTER PUBLICATION (PATENT LAW 2001)	
EA200500779 A1	20060224	LSPB	+	published / reissued	
EP1558353 A2	20050803	LSPB	+	published / reissued	
EP1558353 A2	20050803	LSSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20050518
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EP1558353 A4	20151118	LSAS	RAP1	RIGHTS OF AN APPLICATION TRANSFERRED	PARTYTYPE : OWNER OWNER : RICHARDS, ALAN K.
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BEFORE GRANT					
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EP1558353 B1	20190312	LSAS	REG	REFERENCE TO A NATIONAL CODE	PARTYTYPE : OWNER REF COUNTRY CODE : DE OWNER : VEOLIA NORTH AMERICA REGENERATION SERVICES, LL, US REF LEGAL EVENT CODE : R081 REF DOCUMENT NUMBER : 60349051 COUNTRY OF REF DOCUMENT : DE OLDPARTY : FORMER OWNER: RICHARDS, ALAN K., PALM CITY, FLA., US
EP1558353 B1	20190320	LSAS	RAP2	RIGHTS OF A PATENT TRANSFERRED	PARTYTYPE : OWNER OWNER : VEOLIA NORTH AMERICA REGENERATION SERVICES, LLC
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EP1558353 B1	20231105	PEXP		Calculated Patent Term Expiry	
EP1720831 A1	20061115	LSPB	+	published / reissued	
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EP1720831 A4	20100407	LSSES	+A4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED	EFFECTIVE DATE : 20100305
EP1720831 A4	20120215	LSSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20120117
EP1720831 A4	20130123	LSDW	-18D	APPLICATION DEEMED TO BE WITHDRAWN	EFFECTIVE DATE : 20120728
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ES2591253 T3	20231105	PEXP		Calculated Patent Term Expiry	
IN02578DN2006 A	20070817	LSPB	+	published / reissued	
MXPA05004957 A1	20060130	LSPB	+	published / reissued	
MXPA05004957 A1	20090910	LSGT	+FG	GRANT OR REGISTRATION	
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OA13283 A	20070131	LSGT	+	granted / extensions (spc, cpc, pte)	
OA13283 A	20241105	PEXP		Calculated Patent Term Expiry	
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US7282603 BB	20171114	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : VEOLIA NORTH AMERICA REGENERATION SERVICES , LLC, OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:ALAN RICHARDS; REEL/FRAME:044750/0998 EFFECTIVE DATE : 20171114
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WO05069751 A2	20060120	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 371/DELNP/2006 COUNTRY OF REF DOCUMENT : IN
WO05069751 A3	20060927	LSNE	-122	EP: PCT APPLICATION NON- ENTRY IN EUROPEAN PHASE	REF COUNTRY CODE : WO

Title: METHOD AND APPARATUS FOR CONTROLLING A VEHICULAR COMPONENT

Abstract: Control system and method for controlling a part of the vehicle in which sensor systems are mounted at different locations on the vehicle, each sensor system providing a measurement related to a state of the sensor system or a measurement related to a state of the mounting location. A processor coupled to the sensor systems diagnoses the state of the vehicle based on the measurements of the sensor system, e.g., by the application of a pattern recognition technique. The processor controls the part based at least in part on the diagnosed state of the vehicle. At least one of the sensor systems may be a high dynamic range accelerometer or a sensor selected from a group consisting of a single axis acceleration sensor, a double axis acceleration sensor, a triaxial acceleration sensor and a gyroscope, and may optionally include an RFID response unit.

Classifications:

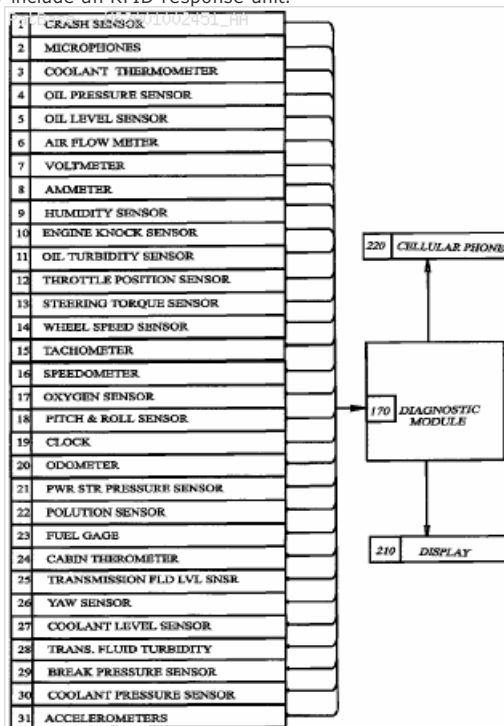
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European: B60C11/24 B60C19/00 B60J7/057B B60N2/00C B60N2/015 B60N2/02B4 B60N2/02B6 B60N2/02B6C B60N2/02B6W B60N2/06S B60N2/28 B60N2/28B2 B60N2/28P4 B60N2/48C2C B60N2/48C3C B60N2/48W B60N2/66 B60Q1/14C1B B60R16/02B8 B60R16/037 B60R21/013 B60R21/0136 B60R21/015 B60R22/20 B60R25/25 B60R25/25B B60R25/25D B60R25/25F E05F15/00B6B E05F15/00B6B2 G01F23/00G1A G01F23/20 G01F23/296D G01G19/414A G01N35/00G3L G01S15/04 G01S15/42 G01S15/87 G01S15/88 G01S17/02D G01S17/88 G01S7/41D G01S7/48A G01S7/539 G06F3/023A5 G06F3/023M G06F3/023M8 G06F3/023P G06F3/02A5 G06K9/00H G06K9/00V G06K9/00V7 G07C5/00T G07C5/08D G08B13/14D G08B13/24B5T G08B13/24B7D G08B21/02A26 G08B29/18A G08G1/20B H01Q1/32L10 L60G400/62 L60G401/12 L60N2/02B6S L60Q300/410 L60Q300/420 L60R1/12C L60R1/12G L60R21/00C L60R21/0132 L60R21/0134 L60R21/013R L60R21/015G2 L60R21/015G6 L60R21/015G6B L60R21/015G6D L60R21/015G6F L60R21/015G6H L60R21/015G7 L60R21/015G8 L60R21/015G8C L60R21/015G8E L60R21/015G9 L60R21/0151 L60R21/01H3Y L60R21/01L6A L60R21/203 L60R21/2165S L60R21/231M L60R21/26V L60R21/276 L60R21/276L L60R22/20B L60R22/20R L60R22/28L L60R22/46L L60R22/48B2 P05F15/00B6B5R P05Y900/516 P05Y900/542 P05Y900/550 S01N291/028F S01N291/028H S01N291/028T S01S13/04 S01S15/04 S01S15/06 S01S15/88 S01S17/89 S07B15/06B S07C5/08R2 S10K210/1282 S10K210/3219

US: 180/197 280/735 280/735S 307/9.1 340/12.25 340/13.31 340/13.310P 340/5.61 340/5.64 340/5.7 340/5.71 340/5.710S 340/7.29 340/825.22 340/825.37 340/825.69 340/825.72 455/42 455/420 455/420S 455/556.2 701/1 701/29 701/29.7 701/30.6 701/31.4 701/32.1 701/32.3 701/32.4 701/33.1 701/34 701/34.4 701/36 701/36P 701/39 701/468 701/500 73/53.01 73/53.010S 73/61.41 73/61.410P 73/625 73/625S



Family:

Publication number	Publication date	Application number	Application date
US2001002451 AA	20010531	US20010753186	20010102
US2003176959 AA	20030918	US20020330938	20021227
US2005046584 AA	20050303	US20040940881	20040913
US2006180371 AA	20060817	US20060278188	20060331
US2008047329 AA	20080228	US20070924197	20071025
US6484080 BB	20021119	US20010753186	20010102
US6484080 C1	20080819	US20010753186	20010102
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US7663502 BB	20100216	US20040940881	20040913

Priority:

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Probable Assignee: AMERICAN VEHICULAR SCIENCES LLC

Assignee(s): (std): AUTOMOTIVE TECH INT ; BREED DAVID S ; INTELLIGENT TECH INT INC

Assignee(s): AMERICAN VEHICULAR SCIENCES LLC ; INTELLIGENT TECHNOLOGIES INTERNATIONAL INC ; INTELLIGENT TECHNOLOGIES INT INC ; INTELLIGENT TECHNOLOGIES INT ; AUTOMOTIVE TECHNOLOGIES INT ; AUTOMOTIVE TECHNOLOGIES INT INC ; AUTOMOTIVE TECHNOLOGIES INTERNATIONAL INC ; AUTOMOTIVE TECHNOLOGIES INTIONAL

Inventor(s): (std): BREED DAVID S ; DUVALL WILBUR E ; JOHNSON WENDELL C

Inventor(s): BREED DAVID ; JOHNSON WENDELL ; DUVALL WILBUR

Agent(s): BRIAN ROFFE ESQ; BRIAN

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2001002451 AA	20010531	LSPB	+	published / reissued	
US2003176959 AA	20030918	LSPB	+	published / reissued	
US2005046584 AA	20050303	LSPB	+	published / reissued	
US2006180371 AA	20060817	LSPB	+	published / reissued	
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US6484080 BB	20010102	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BREED, DAVID S.; REEL/FRAME:011380/0340 EFFECTIVE DATE : 20001228
US6484080 BB	20010406	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BREED, DAVID S.; REEL/FRAME:011681/0778 EFFECTIVE DATE : 20001228
US6484080 BB	20060518	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6484080 BB	20070327	LSRX	+RR	REQUEST FOR REEXAMINATION FILED	EFFECTIVE DATE : 20071127
US6484080 BB	20080819	LSRX	+B1	REEXAMINATION CERTIFICATE FIRST REEXAMINATION	TEXT : THE PATENTABILITY OF CLAIMS 19, 20, 22, 24-29, 31, 33-35, 39-42, 44, 47-49, 53-56 AND 59 IS CONFIRMED. CLAIMS 1, 4, 7, 10-15, 18, 36-38, 46, 52, AND 60 ARE DETERMINED TO BE PATENTABLE AS AMENDED. CLAIMS 2, 6, 8, 9, 61 AND 62, DEPENDENT ON AN AMENDED CLAIM, ARE DETERMINED TO BE PATENTABLE. NEW CLAIMS 63-75 ARE ADDED AND DETERMINED TO BE PATENTABLE. CLAIMS 3, 5, 16, 17, 21, 23, 30, 32, 43, 45, 50, 51, 57 AND 58 WERE NOT REEXAMINED.
US6484080 BB	20100505	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US6484080 BB	20141119	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US6484080 BB	20141215	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US6484080 BB	20141215	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US6484080 BB	20150106	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20141119
US6484080 BB	20210216	PEXP		Calculated Patent Term Expiry (PTA 45 days and a terminal disclaimer has been filed)	
US6823244 BB	20041123	LSGT	+	granted / extensions (spc, cpc, pte)	
US6823244 BB	20021227	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:BREED, DAVID S.; REEL/FRAME:013642/0188 EFFECTIVE DATE : 20021226
US6823244 BB	20041104	LSGT	PAT1	Patented Case	
US6823244 BB	20080714	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6823244 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER

OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS
 OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST;
 ASSIGNOR: AUTOMOTIVE TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME: 028023/0087
 EFFECTIVE DATE : 20120405

US6823244 BB	20120516	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US6823244 BB	20161123	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US6823244 BB	20161219	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US6823244 BB	20161219	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US6823244 BB	20170110	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20161123
US6823244 BB	20230121	PEXP		Calculated Patent Term Expiry (PTA 25 days)	
US7663502 BB	20100216	LSGT	+	granted / extensions (spc, cpc, pte)	
US7663502 BB	20040913	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INTELLIGENT TECHNOLOGIES INTERNATIONAL INC., NEW J OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR: BREED, DAVID S.; REEL/FRAME: 015803/0486 EFFECTIVE DATE : 20040913
US7663502 BB	20040913	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INTELLIGENT TECHNOLOGIES INTERNATIONAL INC., NEW JE OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR: BREED, DAVID S.; REEL/FRAME: 015803/0486 EFFECTIVE DATE : 20040913
US7663502 BB	20101228	LSRE	CC	CERTIFICATE OF CORRECTION	
US7663502 BB	20120410	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AMERICAN VEHICULAR SCIENCES LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR: INTELLIGENT TECHNOLOGIES INTERNATIONAL, INC.; REEL/FRAME: 028022/0285 EFFECTIVE DATE : 20120405
US7663502 BB	20140216	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US7663502 BB	20140317	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7663502 BB	20140317	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7663502 BB	20140408	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20140216
US7663502 BB	20260204	PEXP		Calculated Patent Term Expiry (PTA 509 days)	

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);

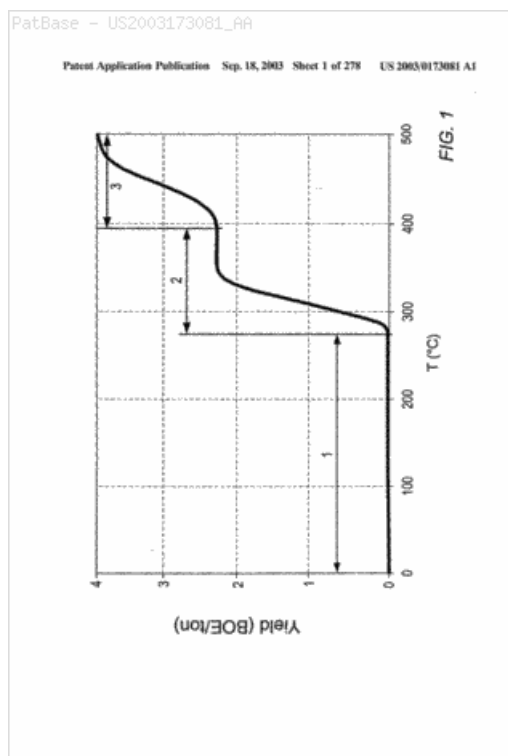
E21B43/16 E21B43/34 E21B47/00 (Core/Invention)

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



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

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2003173081 AA	20030918	LSPB	+	published / reissued	
US7077199 BB	20060718	LSGT	+	granted / extensions (spc, cpc, pte)	
US7077199 BB	20030317	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VINEGAR, HAROLD J.; WELLINGTON, SCOTT LEE; DE ROUFFIGNAC, ERIC PIERRE; AND OTHERS; REEL/FRAME:013866/0881; SIGNING DATES FROM 20030128 TO 20030203
US7077199 BB	20060628	LSGT	PAT1	Patented Case	

US7077199 BB	20091216	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7077199 BB	20131218	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7077199 BB	20180226	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7077199 BB	20180813	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US7077199 BB	20180813	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7077199 BB	20180813	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7077199 BB	20180904	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180718
US7077199 BB	20231225	PEXP		Calculated Patent Term Expiry (PTA 427 days and a terminal disclaimer has been filed)	

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);

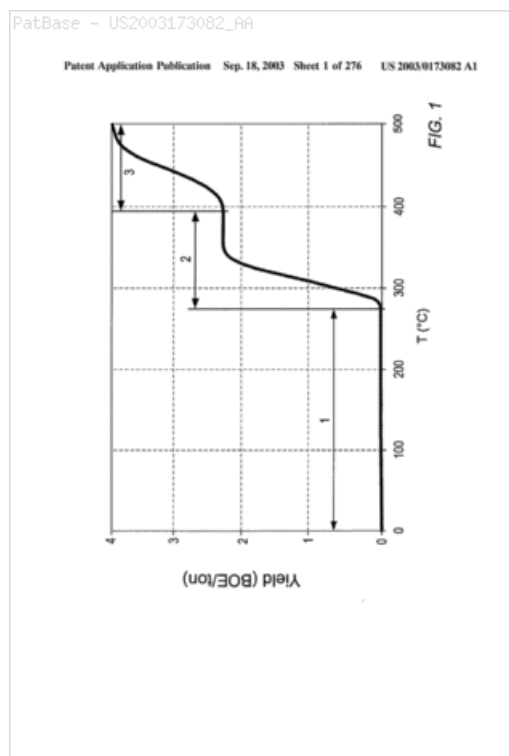
E21B43/00 E21B43/16 E21B47/00 (Core/Invention)

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



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

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2003173082 AA	20030918	LSPB	+	published / reissued	
US7104319 BB	20060912	LSGT	+	granted / extensions (spc, cpc, pte)	
US7104319 BB	20030324	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VINEGAR, HAROLD J.; SHAHIN, GORDON THOMAS JR.; WELLINGTON, SCOTT LEE; AND OTHERS; REEL/FRAME:013910/0656 EFFECTIVE DATE : 20030220

US7104319 BB	20060823	LSGT	PAT1	Patented Case	
US7104319 BB	20091216	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7104319 BB	20140212	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7104319 BB	20180423	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7104319 BB	20181015	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7104319 BB	20181015	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7104319 BB	20181106	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180912
US7104319 BB	20231028	PEXP		Calculated Patent Term Expiry (PTA 369 days)	

Title: UPGRADING AND MINING OF COAL

Abstract: A method for treating a coal formation to alter properties of coal in the 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 part of the formation. In certain embodiments, the heat from the one or more heaters may pyrolyze at least some hydrocarbons within the part of the formation. The method may include producing a fluid from the formation. In some embodiments, the produced fluid may include at least some pyrolyzed hydrocarbons from the formation. In an embodiment, after at least some coal has been treated at least a portion of such coal may be produced from the formation.

Classifications:

International (IPC 8-9): E21B36/00 E21B43/00 E21B43/24 E21F7/00 (Advanced/Invention);

E21B36/00 E21B43/00 E21B43/16 E21F7/00 (Core/Invention)

International (IPC 1-7): E21B36/00 E21B43/24 E21C37/16 E21C37/20 E21C41/00

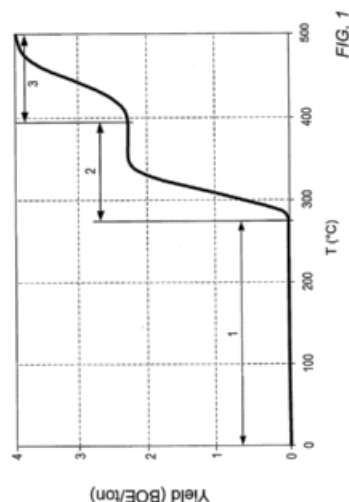
CPC: E21B43/006 E21B43/295 E21F7/00

European: E21B43/00M E21B43/295 E21F7/00

US: 166/302 299/14 299/14S 299/3

PatBase - US2003173085_RH

Patent Application Publication Sep. 18, 2003 Sheet 1 of 305 US 2003/0173085 A1

**Family:**

Publication number	Publication date	Application number	Application date
US2003173085 AA	20030918	US20020279286	20021024
US6969123 BB	20051129	US20020279286	20021024

Priority:

US20010337137P 20011024 US20010338648P 20011024 US20020375000P 20020424
 US20020374996P 20020424 US20020279286 20021024

Probable Assignee: SHELL OIL CO

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

Assignee(s): SHELL OIL COMPANY ; VINEGAR HAROLD J ; WELLINGTON SCOTT LEE ; MAHER KEVIN ALBERT

Inventor(s): (std): MAHER KEVIN ALBERT ; VINEGAR HAROLD J ; WELLINGTON SCOTT LEE

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2003173085 AA	20030918	LSPB	+	published / reissued	
US6969123 BB	20051129	LSGT	+	granted / extensions (spc, cpc, pte)	
US6969123 BB	20030310	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VINEGAR, HAROLD J.; MAHER, KEVIN ALBERT; WELLINGTON, SCOTT LEE; REEL/FRAME:013850/0903; SIGNING DATES FROM 20030203 TO 20030303
US6969123 BB	20090430	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4

US6969123 BB	20131129	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US6969123 BB	20131230	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US6969123 BB	20131230	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US6969123 BB	20140121	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20131129
US6969123 BB	20230315	PEXP		Calculated Patent Term Expiry (PTA 142 days)	

Title: METHODS FOR DATA COLLECTION AND DISTRIBUTION

Abstract: Provided are methods of performing research in which participation is incentivized by early access to the data and samples collected. Also provided are methods for distributing research data.

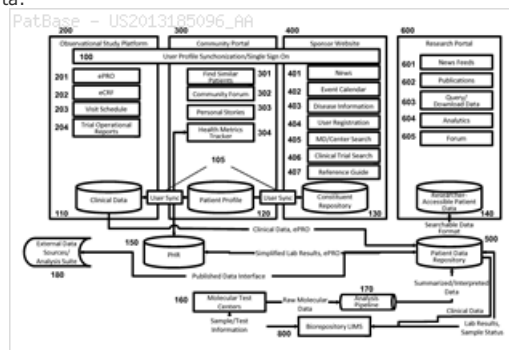
Classifications:

International (ipc 8-9): A61B5/00 G06F19/00 G06Q50/00 G06Q50/22 G06Q50/24 G16H10/00 G16H10/20 G16H10/40 G16H10/60 G16H30/40 G16H50/20 (Advanced/Invention)

CPC: G06Q10/10 G06Q10/101 G16H10/40 Y02A90/22 Y02A90/26

G06Q50/24 G16H10/20 G06Q50/22 G16H10/60 G16H30/40 G16H50/20

US: 705/3



Family:

Publication number	Publication date	Application number	Application date
AU2012281152 AA	20140206	AU20120281152	20120711
AU2012281152 BB	20170907	AU20120281152	20120711
CA2841808 AA	20140113	CA20122841808	20120711
CN104126191 A	20141029	CN201280044704	20120711
EP2732423 A2	20140521	EP20120810899	20120711
EP2732423 A4	20141126	EP20120810899	20120711
IN00600DN2014 A	20160513	IN2014DN00600	20140124
JP2014523589 T2	20140911	JP20140520281T	20120711
JP2017194986 A2	20171026	JP20170112581	20170607
JP2018129065 A2	20180816	JP20180047737	20180315
KR20140054037 A	20140508	KR20147003378	20120711
KR20190012269 A	20190208	KR20197001870	20120711
MX2014000412 A1	20140611	MX20140000412	20120711
MX341922 B	20160907	MX20140000412	20120711
US2013185096 AA	20130718	US20120546780	20120711
WO13009890 A2	20130117	WO2012US46281	20120711
WO13009890 A3	20130307	WO2012US46281	20120711

Priority:

US20110507531P	20110713	US20120610807P	20120314	JP20140520281T	20120711
JP20170112581	20120711	US20120546780	20120711	WO2012US46281	20120711
JP20170112581	20170607	JP20180047737	20180315		

Probable Assignee: MULTIPLE MYELOMA RESEARCH FOUNDATION INC

Assignee(s): (std): CAPONE WALTER ; CAPONE WALTER M ; GIUSTI KATHRYN E ; GIUSTI KATHRYN E ; MULTIPLE MYELOMA RES FOUND INC ; MULTIPLE MYELOMA RESEARCH FOUNDATION INC ; PERKINS LOUISE ; MULTIPLE MYELOMA RES FOUNDATION INC

Assignee(s): THE MULTIPLE MYELOMA RESEARCH FOUNDATION INC

Inventor(s): (std): CAPONE WALTER ; CAPONE WALTER M ; GIUSTI KATHRYN E ; GIUSTI KATHRYN E ; PERKINS LOUISE ; WALTER CAPONE ; LOUISE PERKINS ; KATHRYN E GIUSTI

Agent(s): PIZZEYS; PIZZEYS PATENT AND TRADE MARK ATTORNEYS PTY LTD; BORDEN LADNER GERVAIS LLP; WILKINSON MARC GEORGE; VAN GOOR DAVID W ET AL

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 CL 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 PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AU2012281152 AA	20140206	LSPB	+	published / reissued	
AU2012281152 BB	20170907	LSGT	+	granted / extensions (spc, cpc, pte)	
AU2012281152 BB	20180118	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	

AU2012281152 BB	20320711	PEXP		Calculated Patent Term Expiry	
CA2841808 AA	20140113	LSPB	+	published / reissued	
CA2841808 AA	20170123	LSSES	+EEER	EXAMINATION REQUEST	EFFECTIVE DATE : 20170113
CN104126191 A	20141029	LSPB	+	published / reissued	
CN104126191 A	20141029	LSPB	+C06	PUBLICATION	
EP2732423 A2	20140521	LSPB	+	published / reissued	
EP2732423 A2	20140521	LSSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20140124
EP2732423 A4	20141126	LSSES	+A4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED	EFFECTIVE DATE : 20141027
EP2732423 A4	20141126	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : G06Q 50/00 20120101AFI20141021BHEP
EP2732423 A4	20180228	LSSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20180124
IN00600DN2014 A	20160513	LSPB	+	published / reissued	
JP2014523589 T2	20140911	LSPB	+	published / reissued	
JP2014523589 T2	20150710	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20150710
JP2014523589 T2	20150710	LSSES	+A621	WRITTEN REQUEST FOR APPLICATION EXAMINATION	TEXT : JAPANESE INTERMEDIATE CODE: A621 EFFECTIVE DATE : 20150710
JP2014523589 T2	20160712	LSSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20160712
JP2014523589 T2	20161012	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20161012
JP2014523589 T2	20170308	LSSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20170308
JP2014523589 T2	20170607	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20170607
JP2014523589 T2	20171030	LSRV	-A02	DECISION OF REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A02 EFFECTIVE DATE : 20171030
JP2017194986 A2	20171026	LSPB	+	published / reissued	
JP2017194986 A2	20180315	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20180315
JP2017194986 A2	20180827	LSSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20180827
JP2017194986 A2	20181127	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20181127
JP2018129065 A2	20180816	LSPB	+	published / reissued	
KR20140054037 A	20140508	LSPB	+	published /	

reissued					
KR20140054037 A	20161026	LSES	A201	REQUEST FOR EXAMINATION	
KR20140054037 A	20171215	LSES	-E902	NOTIFICATION OF REASON FOR REFUSAL	
KR20140054037 A	20181024	LSRV	-E601	DECISION TO REFUSE APPLICATION	
KR20140054037 A	20181220	LSRV	-E601	DECISION TO REFUSE APPLICATION	
KR20190012269 A	20190208	LSPB	+	published / reissued	
KR20190012269 A	20190213	LSES	A201	REQUEST FOR EXAMINATION	
MX2014000412 A1	20140611	LSPB	+	published / reissued	
MX2014000412 A1	20160907	LSGT	+FG	GRANT OR REGISTRATION	
MX341922 B	20160907	LSGT	+	granted / extensions (spc, cpc, pte)	
MX341922 B	20320711	PEXP		Calculated Patent Term Expiry	
US2013185096 AA	20130718	LSPB	+	published / reissued	
US2013185096 AA	20130502	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : THE MULTIPLE MYELOMA RESEARCH FOUNDATION, INC., CO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:GIUSTI, KATHRYN E.; CAPONE, WALTER M.; PERKINS, LOUISE; REEL/FRAME:030336/0960 EFFECTIVE DATE : 20121017
US2013185096 AA	20170330	LSES	NFA1	Non Final Action Mailed	
US2013185096 AA	20181211	LSES	NFA1	Non Final Action Mailed	
WO13009890 A2	20130117	LSPB	+	published / reissued	
WO13009890 A3	20140110	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2014520281 COUNTRY OF REF DOCUMENT : JP KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :
WO13009890 A3	20140110	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : MX/A/2014/000412 COUNTRY OF REF DOCUMENT : MX
WO13009890 A3	20140113	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2841808 COUNTRY OF REF DOCUMENT : CA
WO13009890 A3	20140113	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO13009890 A3	20140124	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2012810899 COUNTRY OF REF DOCUMENT : EP
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WO13009890 A3	20140210	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 20147003378 COUNTRY OF REF DOCUMENT : KR KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :

Title: SUBMERSIBLE ROBOTICALLY OPERABLE VEHICLE SYSTEM FOR INFRASTRUCTURE MAINTENANCE AND **INSPECTION**

Abstract: A configurable robotic apparatus and system is disclosed that is remotely operable in difficult, hazardous, subterranean, or submerged environs. The apparatus merges diverse disciplines to effect **inspecting**, cleaning, treating, repairing or otherwise maintaining a wide variety of materials and conditions. Deployment environments include power, municipal water and wastewater plants, surface and submerged infrastructures (pipes, lines, conduits), and like industrial applications. Extensible and articulating modules, configurable through standardized and interchangeable connectors, provide unique flexibility, scalability and versatility to accommodate a wide range of shapes, surfaces, and obstacles. In-module intelligence and instrumentation eliminates the need for constant manual control through autonomous operation capable of simultaneous optimization and synchronization of multiple work processes, but manual override and remote control is provided to overcome unanticipated limitations. Benefits include improved efficiency, cost, and safety over prior art. High-performance, one-pass operation reduces facility downtime while incorporating environmentally responsible debris recovery.

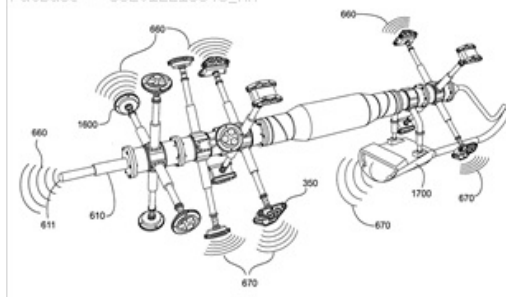
Classifications:

International (IPC 8-9): B08B9/049 B25J11/00 B25J13/00 B25J19/00 B25J3/00 B25J9/00 B25J9/08 B25J9/16 B63B59/10 F16L55/34 G05B19/19 G05D1/00 (Advanced/Invention)

CPC: B25J11/0085 B25J11/008 B25J3/00 B08B9/049 B25J9/163 B25J9/1661 B25J9/1676 B25J9/1689 B25J9/0084 Y10S901/05 B25J9/08

US: 1/1 134/18 700/245 700/245P 700/255 701/2 701/2S 901/5

PatBase - US2012215348_AA



Family:

Publication number	Publication date	Application number	Application date
US2012215348 AA	20120823	US20110932171	20110219
US2014350722 AA	20141127	US20140120610	20140609
US2016082589 AA	20160324	US20150961169	20151207
US2017217018 AA	20170803	US20170492517	20170420
US8805579 BB	20140812	US20110932171	20110219
US9233466 BB	20160112	US20140120610	20140609
US9656389 BB	20170523	US20150961169	20151207
US10265851 BB	20190423	US20170492517	20170420
WO12112835 A1	20120823	WO2012US25557	20120217

Priority:

US20110932171 20110218 US20110932171 20110219 US20140120610 20140609
US20150961169 20151207 US20170492517 20170420

Probable Assignee: SKRINDE RICHARD A

Assignee(s): (std): SKRINDE RICHARD A ; SKRINDE RICHARD ARTHUR

Inventor(s): (std): SKRINDE RICHARD A ; SKRINDE RICHARD ARTHUR

Agent(s): OSHA LIANG LLP; FOX ROTHSCHILD LLP; CAROL E; THORSTAD FORSYTH CAROL E; PEARSON LOREN DONALD

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 CL 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 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 PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US10265851 BB	20190423	LSGT	+	granted / extensions (spc, cpc, pte)	
US10265851 BB	20190403	LSGT	PAT1	Patented Case	
US10265851 BB	20370703	PEXP		Calculated Patent Term Expiry (PTA 74 days)	
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US2014350722 AA	20141127	LSPB	+	published / reissued	
US2016082589 AA	20160324	LSPB	+	published / reissued	
US2017217018 AA	20170803	LSPB	+	published / reissued	

US2017217018 AA	20190204	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US2017217018 AA	20190307	LSFE	+PPR1	Publications -- Issue Fee Payment Received	
US2017217018 AA	20190312	LSFE	+PPV1	Publications -- Issue Fee Payment Verified	
US8805579 BB	20140812	LSGT	+	granted / extensions (spc, cpc, pte)	
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US9233466 BB	20151029	LSFE	-AWA4	Awaiting TC Resp., Issue Fee Not Paid	
US9233466 BB	20151208	LSFE	+PPR1	Publications -- Issue Fee Payment Received	
US9233466 BB	20151214	LSFE	+PPV1	Publications -- Issue Fee Payment Verified	
US9233466 BB	20151222	LSGT	PAT1	Patented Case	
US9233466 BB	20340609	PEXP		Calculated Patent Term Expiry (a terminal disclaimer has been filed)	
US9656389 BB	20170523	LSGT	+	granted / extensions (spc, cpc, pte)	
US9656389 BB	20170424	LSFE	+PPV1	Publications -- Issue Fee Payment Verified	
US9656389 BB	20170503	LSGT	PAT1	Patented Case	
US9656389 BB	20351207	PEXP		Calculated Patent Term Expiry	
WO12112835 A1	20120823	LSPB	+	published / reissued	
WO12112835 A1	20130819	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO12112835 A1	20140312	LSNE	-122	EP: PCT APPLICATION NON-ENTRY IN EUROPEAN PHASE	REF DOCUMENT NUMBER : 12746668 COUNTRY OF REF DOCUMENT : EP KIND CODE OF REF DOCUMENT : A1 DESIGNATED STATE(S) :

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

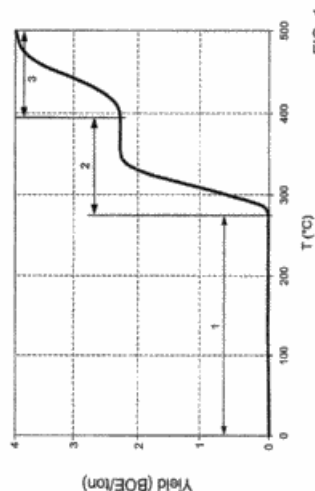
PatBase - US2003080604_AA

U.S. Patent

Apr. 25, 2006

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
US2003111223 AA	20030619	US20020128700	20020424
US2003131993 AA	20030717	US20020131122	20020424
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US2003173078 AA	20030918	US20020131235	20020424
US2003209348 AA	20031113	US20020131154	20020424
US2004211554 AA	20041028	US20020128698	20020424
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US6929067 BB	20050816	US20020128698	20020424
US6951247 BB	20051004	US20020128700	20020424
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US6994169 BB	20060207	US20020131122	20020424
US6997518 BB	20060214	US20020131350	20020424
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US7013972 BB	20060321	US20020131050	20020424
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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

Assignee(s): ROBERTS BRUCE ; VAN HARDEVELD MARTIJN ; WELLINGTON SCOTT L ; RYAN ROBERT C ; STEGEMEIER GEORGE L ; SUMNU DINDORUK MELIHA D ; WARD JOHN M ; SCHOELING LANNY ; WATKINS WADE ; SHAHIN GORDON T ; PRATT KIP ; VEENSTRA PETER ; SHELL INT RESEARCH MIJ BV ; WATKINS RONNIE WADE ; PALFREYMAN BRUCE DONALD ; SCHOELING LANNY GENE ; STEGEMEIER GEORGE LEO ; VAN HARDEVELD ROBERT MARTIJN ; RYAN ROBERT CHARLES ; SHAHIN GORDON THOMAS ; ZHANG ETUAN ; VINEGAR HAROLD J ; WELLINGTON SCOTT LEE ; ROUFFIGNAC ERIC PIERRE DE ; PIERRE DE ROUFFIGNAC ERIC ; WARD JOHN MICHAEL ; VINEGAR HOROLD J ; PLAFREYMAN BRUCE DONALD ; PRATT CHRISTOPHER ARNOLD ; SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B V ; SHELL CANADA LIMITED ; AYMOND DANNIE ANTOINE ; BASS RONALD ; BASS RONALD MARSHALL ; BAXLEY PHILIP T ; BERCHENKO ILYA E ; COLES JOHN MATTHEW ; CARL FREDRICK GORDON ; BERCHENKO ILYA EMIL ; BIELAMOWICZ LAWRENCE JAMES ; COLE ANTHONY THOMAS ; COLES JOHN M ; BIELAMOWICZ LAWRENCE J ; DE ROUFFIGNAC ERIC ; CARL FRED G ; CRANE STEVE ; MCKINZIE BILLY JOHN ; HUNSUCKER BRUCE GERARD ; MENOTTI JAMES LOUIS ; MAHER KEVIN ALBERT ; FOWLER THOMAS DAVID ; KARANIKAS JOHN MICHAEL ; DE ROUFFIGNAC ERIC PIERRE ; KEEDY CHARLES ROBERT ; MADGAVKAR AJAY MADHAV ; MAHER KEVIN A ; GLANDT CARLOS ; MESSIER MARGARET ; KARANIKAS JOHN M ; HUNSUCKER BRUCE G ; MENOTTI JAMES L ; FOWLER THOMAS D ; LEPPER BRUCE ; MIKUS TOM ; KEEDY CHARLIE R ; MADGAVKAR AJAY M ; SHELL OIL COMPANY

Inventor(s): (std): AYMOND DANNIE ANTOINE ; AYMOND JR DANNIE ANTOINE ; BASS RONALD ; BASS RONALD MARSHALL ; BAXLEY PHILIP T ; BERCHENKO ILYA E ; BERCHENKO ILYA EMIL ; BIELAMOWICZ LAWRENCE J ; BIELAMOWICZ LAWRENCE JAMES ; CARL FRED G ; CARL FREDRICK GORDON ; CARL JR FREDRICK GORDON ; COLE ANTHONY THOMAS ; COLES JOHN M ; COLES JOHN MATTHEW ; CRANE STEVE ; DE ROUFFIGNAC ERIC ; DE ROUFFIGNAC ERIC PIERRE ; FOWLER THOMAS D ; FOWLER THOMAS DAVID ; GLANDT CARLOS ; HUNSUCKER BRUCE G ; HUNSUCKER BRUCE GERARD ; KARANIKAS JOHN M ; KARANIKAS JOHN MICHAEL ; KEEDY CHARLES ROBERT ; KEEDY CHARLIE R ; LEPPER BRUCE ; MADGAVKAR AJAY M ; MADGAVKAR AJAY MADHAV ; MAHER KEVIN A ; MAHER KEVIN ALBERT ; MCKINZIE BILLY JOHN ; MCKINZIE II BILLY JOHN ; MENOTTI JAMES L ; MENOTTI JAMES LOUIS ; MESSIER MARGARET ; MIKUS TOM ; PALFREYMAN BRUCE DONALD ; PIERRE DE ROUFFIGNAC ERIC ; PLAFREYMAN BRUCE DONALD ; PRATT CHRISTOPHER ARNOLD ; PRATT KIP ; ROBERTS BRUCE ; ROUFFIGNAC ERIC PIERRE DE ; RYAN R BERT C ; RYAN ROBERT C ; RYAN ROBERT CHARLES ; SCHOELING LANNY ; SCHOELING LANNY GENE ; SHAHIN GORDON T ; SHAHIN GORDON THOMAS ; SHAHIN JR GORDON THOMAS ; STEGEMEIER GEORGE L ; STEGEMEIER GEORGE LEO ; SUMNU DINDORUK MELIHA D ; VAN HARDEVELD MARTIJN ; VAN HARDEVELD ROBERT MARTIJN ; VEENSTRA PETER ; VINEGAR HAROLD J ; VINEGAR HOROLD J ; WARD JOHN M ; WARD JOHN MICHAEL ; WATKINS RONNIE WADE ; WATKINS WADE ; WELLINGTON SCOTT L ; WELLINGTON SCOTT LEE ; ZHANG ETUAN

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

Legal status (INPADOC)

[View legal status timeline](#)

Patent	Date recorded	Event group	Code	Event	Details
CA2445415 AA	20031023	LSPB	+	published / reissued	
CA2445415 AA	20070320	LSSES	+EEEE	EXAMINATION REQUEST	
CA2445415 C	20110830	LSGT	+	granted / extensions (spc, cpc, pte)	
CA2445415 C	20220424	PEXP		Calculated Patent Term Expiry	
US2003080604 AA	20030501	LSPB	+	published / reissued	
US2003111223 AA	20030619	LSPB	+	published / reissued	
US2003131993 AA	20030717	LSPB	+	published / reissued	
US2003131994 AA	20030717	LSPB	+	published /	

US2003131996 AA	20030717	LSPB	+	reissued published / reissued	
US2003131996 AA	20050622	LSGT	PAT1	Patented Case	
US2003136558 AA	20030724	LSPB	+	published / reissued	
US2003136558 AA	20170515	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US2003136559 AA	20030724	LSPB	+	published / reissued	
US2003137181 AA	20030724	LSPB	+	published / reissued	
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US2003141066 AA	20030731	LSPB	+	published / reissued	
US2003141066 AA	20170508	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US2003141067 AA	20030731	LSPB	+	published / reissued	
US2003141068 AA	20030731	LSPB	+	published / reissued	
US2003142964 AA	20030731	LSPB	+	published / reissued	
US2003146002 AA	20030807	LSPB	+	published / reissued	
US2003146002 AA	20021028	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VINEGAR, HAROLD J.; GORDON, JR., FREDRICK CARL; COLES, JOHN MATTHEW; AND OTHERS; REEL/FRAME:013481/0389 EFFECTIVE DATE : 20020924
US2003146002 AA	20050208	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
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US2003148894 AA	20030807	LSPB	+	published / reissued	
US2003164239 AA	20030904	LSPB	+	published / reissued	
US2003164239 AA	20050629	LSGT	PAT1	Patented Case	
US2003173078 AA	20030918	LSPB	+	published / reissued	
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US2003209348 AA	20031113	LSPB	+	published / reissued	
US2004211554 AA	20041028	LSPB	+	published / reissued	
US2004211554 AA	20050727	LSGT	PAT1	Patented Case	
US2004211557 AA	20041028	LSPB	+	published / reissued	
US6877555 BB	20050412	LSGT	+	granted / extensions (spc, cpc, pte)	
US6877555 BB	20021028	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:KARANIKAS, JOHN MICHAEL; DE ROUFFIGNAC, ERIC PIERRE; VINEGAR, HAROLD J.; AND OTHERS; REEL/FRAME:013448/0967; SIGNING DATES FROM 20020923 TO

US6877555 BB	20050323	LSGT	PAT1	Patented Case	
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US6877555 BB	20121001	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
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US6915850 BB	20021031	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VINEGAR, HAROLD J.; DE ROUFFIGNAC, ERIC PIERRE; WELLINGTON, SCOTT LEE; REEL/FRAME:013459/0721 EFFECTIVE DATE : 20020924
US6915850 BB	20090105	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6915850 BB	20121204	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US6915850 BB	20170712	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US6915850 BB	20170807	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	

US6915850 BB	20170807	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US6915850 BB	20170829	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20170712
US6915850 BB	20220816	PEXP		Calculated Patent Term Expiry (PTA 114 days)	
US6918442 BB	20050719	LSGT	+	granted / extensions (spc, cpc, pte)	
US6918442 BB	20021007	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:WELLINGTON, SCOTT LEE; BERCHENKO, ILYA EMIL; DE ROUFFIGNAC, ERIC PIERRE; AND OTHERS; REEL/FRAME:013376/0055; SIGNING DATES FROM 20020916 TO 20020926
US6918442 BB	20090105	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6918442 BB	20121204	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US6918442 BB	20170719	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US6918442 BB	20170814	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US6918442 BB	20170814	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US6918442 BB	20170905	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20170719
US6918442 BB	20221015	PEXP		Calculated Patent Term Expiry (PTA 174 days and a terminal disclaimer has been filed)	
US6918443 BB	20050719	LSGT	+	granted / extensions (spc, cpc, pte)	
US6918443 BB	20021008	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:WELLINGTON, SCOTT LEE; BERCHENKO, ILYA EMIL; DE ROUFFIGNAC, ERIC PIERRE; AND OTHERS; REEL/FRAME:013405/0741 EFFECTIVE DATE : 20020926
US6918443 BB	20090105	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6918443 BB	20121204	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US6918443 BB	20170719	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US6918443 BB	20170814	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US6918443 BB	20170814	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US6918443 BB	20170905	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20170719
US6918443 BB	20230203	PEXP		Calculated Patent Term Expiry (PTA	

					285 days and a terminal disclaimer has been filed)
US6923257 BB	20050802	LSGT	+	granted / extensions (spc, cpc, pte)	
US6923257 BB	20021007	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:WELLINGTON, SCOTT LEE; ZHANG, ETUAN; VINEGAR, HAROLD J.; AND OTHERS; REEL/FRAME:013377/0500; SIGNING DATES FROM 20020916 TO 20020927
US6923257 BB	20090129	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6923257 BB	20121204	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US6923257 BB	20170828	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US6923257 BB	20170828	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US6923257 BB	20170828	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US6923257 BB	20170919	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20170802
US6923257 BB	20230323	PEXP		Calculated Patent Term Expiry (PTA 333 days and a terminal disclaimer has been filed)	
US6929067 BB	20050816	LSGT	+	granted / extensions (spc, cpc, pte)	
US6929067 BB	20021021	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VINEGAR, HAROLD J.; BASS, RONALD MARSHALL; HUNSUCKER, BRUCE GERARD; REEL/FRAME:013421/0900; SIGNING DATES FROM 20020918 TO 20020927
US6929067 BB	20090205	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6929067 BB	20121204	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US6929067 BB	20170911	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US6929067 BB	20170911	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US6929067 BB	20170911	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US6929067 BB	20171003	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20170816
US6929067 BB	20220709	PEXP		Calculated Patent Term Expiry (PTA 76 days)	
US6951247 BB	20051004	LSGT	+	granted / extensions (spc, cpc, pte)	
US6951247 BB	20021007	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS

					OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:DE ROUFFIGNAC, ERIC PIERRE; BERCHENKO, ILYA EMIL; FOWLER, THOMAS DAVID; AND OTHERS; REEL/FRAME:013377/0193 EFFECTIVE DATE : 20020927
US6951247 BB	20050914	LSGT	PAT1	Patented Case	
US6951247 BB	20090402	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6951247 BB	20130308	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US6951247 BB	20171030	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US6951247 BB	20171030	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US6951247 BB	20171030	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US6951247 BB	20171121	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20171004
US6951247 BB	20220714	PEXP		Calculated Patent Term Expiry (PTA 81 days and a terminal disclaimer has been filed)	
US6991033 BB	20060131	LSGT	+	granted / extensions (spc, cpc, pte)	
US6991033 BB	20021022	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:WELLINGTON, SCOTT LEE; BERCHENKO, ILYA EMIL; DE ROUFFIGNAC, ERIC PIERRE; AND OTHERS; REEL/FRAME:013457/0490; SIGNING DATES FROM 20020924 TO 20020926
US6991033 BB	20060111	LSGT	PAT1	Patented Case	
US6991033 BB	20090630	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6991033 BB	20130703	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US6991033 BB	20170911	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US6991033 BB	20180226	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US6991033 BB	20180226	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US6991033 BB	20180226	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US6991033 BB	20180320	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180131
US6991033 BB	20230624	PEXP		Calculated Patent Term Expiry (PTA 426 days and a terminal disclaimer has been filed)	
US6994169 BB	20060207	LSGT	+	granted / extensions (spc, cpc, pte)	

US6994169 BB	20021015	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:ZHANG, ETUAN; BERCHENKO, ILYA EMIL; DE ROUFFIGNAC, ERIC PIERRE; AND OTHERS; REEL/FRAME:013406/0795 EFFECTIVE DATE : 20020926
US6994169 BB	20060118	LSGT	PAT1	Patented Case	
US6994169 BB	20090630	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6994169 BB	20130710	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US6994169 BB	20170918	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US6994169 BB	20180305	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US6994169 BB	20180305	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US6994169 BB	20180305	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US6994169 BB	20180327	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180207
US6994169 BB	20230709	PEXP		Calculated Patent Term Expiry (PTA 441 days and a terminal disclaimer has been filed)	
US6997518 BB	20060214	LSGT	+	granted / extensions (spc, cpc, pte)	
US6997518 BB	20021021	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VINEGAR, HAROLD J.; DE ROUFFIGNAC, ERIC PIERRE; MAHER, KEVIN ALBERT; AND OTHERS; REEL/FRAME:013408/0946 EFFECTIVE DATE : 20020924
US6997518 BB	20060125	LSGT	PAT1	Patented Case	
US6997518 BB	20090630	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6997518 BB	20130717	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US6997518 BB	20170925	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US6997518 BB	20180312	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US6997518 BB	20180312	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US6997518 BB	20180312	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US6997518 BB	20180403	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180214
US6997518 BB	20230610	PEXP		Calculated Patent Term Expiry (PTA 412 days)	

US7004247 BB	20060228	LSGT	+	granted / extensions (spc, cpc, pte)	
US7004247 BB	20021104	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:COLE, ANTHONY THOMAS; BIELAMOWICZ, LAWRENCE JAMES; CARL, FREDRICK GORDON JR.; AND OTHERS; REEL/FRAME:013477/0942; SIGNING DATES FROM 20020916 TO 20020927
US7004247 BB	20060208	LSGT	PAT1	Patented Case	
US7004247 BB	20090630	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7004247 BB	20130731	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7004247 BB	20171009	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7004247 BB	20180326	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US7004247 BB	20180326	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7004247 BB	20180326	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7004247 BB	20180417	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180228
US7004247 BB	20230819	PEXP		Calculated Patent Term Expiry (PTA 482 days and a terminal disclaimer has been filed)	
US7004251 BB	20060228	LSGT	+	granted / extensions (spc, cpc, pte)	
US7004251 BB	20021104	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:WARD, JOHN MICHAEL; DE ROUFFIGNAC, ERIC PIERRE; MADGAVKAR, AJAY MADHAV; AND OTHERS; REEL/FRAME:013478/0410 EFFECTIVE DATE : 20020924
US7004251 BB	20090630	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7004251 BB	20140228	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US7004251 BB	20140331	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7004251 BB	20140331	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7004251 BB	20140422	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20140228
US7004251 BB	20230329	PEXP		Calculated Patent Term Expiry (PTA 339 days)	
US7013972 BB	20060321	LSGT	+	granted / extensions (spc, cpc, pte)	

US7013972 BB	20021007	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VINEGAR, HAROLD J.; COLES, JOHN MATTHEW; DE ROUFFIGNAC, ERIC PIERRE; AND OTHERS; REEL/FRAME:013379/0325; SIGNING DATES FROM 20020916 TO 20020927
US7013972 BB	20090810	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7013972 BB	20140321	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US7013972 BB	20140421	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7013972 BB	20140421	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7013972 BB	20140513	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20140321
US7013972 BB	20231007	PEXP		Calculated Patent Term Expiry (PTA 531 days and a terminal disclaimer has been filed)	
US7032660 BB	20060425	LSGT	+	granted / extensions (spc, cpc, pte)	
US7032660 BB	20021015	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VINEGAR, HAROLD J.; AYMOND, JR., DANNIE ANTOINE; MAHER, KEVIN ALBERT; AND OTHERS; REEL/FRAME:013395/0168 EFFECTIVE DATE : 20020930
US7032660 BB	20060405	LSGT	PAT1	Patented Case	
US7032660 BB	20090810	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7032660 BB	20130925	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7032660 BB	20171204	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7032660 BB	20180521	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US7032660 BB	20180521	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7032660 BB	20180521	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7032660 BB	20180612	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180425
US7032660 BB	20240127	PEXP		Calculated Patent Term Expiry (PTA 643 days and a terminal disclaimer has been filed)	
US7040397 BB	20060509	LSGT	+	granted / extensions (spc, cpc, pte)	
US7040397 BB	20021007	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST;

ASSIGNORS:DE ROUFFIGNAC, ERIC
PIERRE; BERCHENKO, ILYA EMIL;
FOWLER, THOMAS DAVID; AND
OTHERS; REEL/FRAME:013383/0950
EFFECTIVE DATE : 20020926

US7040397 BB	20060419	LSGT	PAT1	Patented Case	
US7040397 BB	20091007	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7040397 BB	20131009	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7040397 BB	20171218	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7040397 BB	20180604	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US7040397 BB	20180604	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7040397 BB	20180604	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7040397 BB	20180626	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180509
US7040397 BB	20220615	PEXP		Calculated Patent Term Expiry (PTA 52 days and a terminal disclaimer has been filed)	
US7040399 BB	20060509	LSGT	+	granted / extensions (spc, cpc, pte)	
US7040399 BB	20021022	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:WELLINGTON, SCOTT LEE; BERCHENKO, ILYA EMIL; DE ROUFFIGNAC, ERIC PIERRE; AND OTHERS; REEL/FRAME:013423/0733 EFFECTIVE DATE : 20020926
US7040399 BB	20060419	LSGT	PAT1	Patented Case	
US7040399 BB	20091007	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7040399 BB	20131009	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7040399 BB	20171218	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7040399 BB	20180604	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US7040399 BB	20180604	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7040399 BB	20180604	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7040399 BB	20180626	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180509
US7040399 BB	20231204	PEXP		Calculated Patent Term Expiry (PTA 589 days and a terminal disclaimer has been filed)	
US7051811 BB	20060530	LSGT	+	granted /	

					extensions (spc, cpc, pte)
US7051811 BB	20021007	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:DE ROUFFIGNAC, ERIC PIERRE; BERCHENKO, ILYA EMIL; FOWLER, THOMAS DAVID; AND OTHERS; REEL/FRA:013370/0657 EFFECTIVE DATE : 20020924
US7051811 BB	20060510	LSGT	PAT1	Patented Case	
US7051811 BB	20091007	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7051811 BB	20131030	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7051811 BB	20180108	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7051811 BB	20180625	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US7051811 BB	20180625	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7051811 BB	20180625	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7051811 BB	20180717	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180530
US7051811 BB	20230130	PEXP		Calculated Patent Term Expiry (PTA 281 days and a terminal disclaimer has been filed)	
WO02086018 A2	20021031	LSPB	+	published / reissued	
WO02086018 A2	20031023	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2445415 COUNTRY OF REF DOCUMENT : CA
WO02086018 A2	20031031	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2002257221 COUNTRY OF REF DOCUMENT : AU
WO02086018 A3	20040311	LSWD	REG	REFERENCE TO NATIONAL CODE	REF COUNTRY CODE : DE REF LEGAL EVENT CODE : 8642
WO02086018 A3	20040707	LSNE	-122	EP: PCT APPLICATION NON- ENTRY IN EUROPEAN PHASE	REF COUNTRY CODE : WO
WO02086018 A3	20060414	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : JP
WO02086018 A3	20060414	LSWD	-WWW	WIPO INFORMATION: WITHDRAWN IN NATIONAL OFFICE	TEXT : JP

Title: SEED-ORIGIN ENDOPHYTE POPULATIONS, COMPOSITIONS, AND METHODS OF USE

Abstract: This application relates to methods and materials for providing a benefit to a seed or seedling of an agricultural plant (e.g., an agricultural grass plant), or the agricultural plant derived from the seed or seedling. For example, this application provides purified bacterial populations that include novel seed-origin bacterial endophytes, and synthetic combinations of seeds and/or seedlings (e.g., cereal seeds and/or seedlings) with heterologous seed-derived bacterial endophytes.

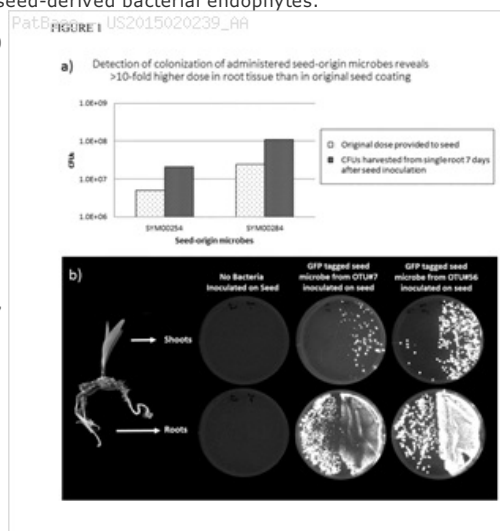
Classifications:

International (IPC 8-9): A01C A01C1/00 A01C1/06 A01G1/00 A01G22/40 A01G7/00 A01G7/06 A01H1/04 A01H17/00 A01H3/00 A01H5/00 A01H5/10 A01N A01N25/00 A01N25/26 A01N37/46 A01N63/00 A01N63/02 A01N63/04 A01N65/42 A01P21/00 A1N63/02 A1N63/04 C05F11/08 C12N C12N1/04 C12N1/14 C12N1/20 C12N15/00 C12N15/82 C12N5/04 C12Q1/00 C12Q1/68 C40B30/06 G01N33/00 G01N33/50 (Advanced/Invention); A01C1/00 C12N1/14 C12N1/20 (Advanced/Non-invention); A01C A01N G01N (Subclass/Invention)

International (IPC 1-7): A01C1/06 C12N1/20 C12N15/00

CPC: A01H17/00 A01N25/00 C12N1/20 G01N33/0098 Y02W30/47 A01H5/00 A01N37/46 C05F11/08 A01N63/04 A01C1/00 A01C1/06 G01N33/5097 A01N63/02 A01N63/00

US: 1/1 426/615 426/635 435/252.1 435/254.1 504/100 504/101 504/117 71/11 71/6 71/7 800/298 800/300 800/300.1 800/301 800/312 800/314 800/317.1 800/317.4 800/320 800/320.1 800/320.2 800/320.3



Family:

Publication number	Publication date	Application number	Application date
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Inventor(s): CHZHAN SYUECHEN ; VAJSMAN DAVID R ; TOLEDO ZHERARDO V ; SADOVSKI KREJG ; MILLET IV ALEN ; MARKEZ LUIS MIGEL ; LAJFORD DZHEFFRI ; LIVA STEFANI M ; LEFF DZHONATAN V ; DZHONSTON DEVID MORRIS ; GULIK TRUDI A ; FLAVELL RICHARD BEJLI ; DZHONOVICH SLAVITSA ; BILLINGS NATAN A ; AMBROUZ KAREN V ; FON MALTZAN DZHOFFRI ; SAMAJOA FILLIP ; VON MALTZAHN ; GEOFFREY ; FLAVELL ; RICHARD ; TOLEDO ; GERARDO V ; DJONOVIC ; SLAVICA ; MARQUEZ ; LUIS MIGUEL ; JOHNSTON ; DAVID MORRIS ; MILLET ; YVES ALAIN ; LYFORD ; JEFFREY ; NAYDICH ; ALEXANDER ; SADOWSKI ; CRAIG ; ALLISON JACK

Agent(s): PIZZEYS ; PIZZEYS PATENT AND TRADE MARK ATTORNEYS PTY LTD ; GOWLING LAFLEUR HENDERSON LLP ; GOWLING WLG CANADA LLP ; BRASNETT ADRIAN HUGH ; WALTON SEAN MALCOLM ; REINHOLD COHN AND PARTNERS ; GOULING VLG INTERNESHNL INK KANADA G MOSKVA UGRYUMOV VLADISLAV MIKHAILOVICH ; FENWICK AND WEST LLP ; MCCORMICK GRAHAM MONICA ET AL ; SHUSTER MICHAEL J ET AL ; HUBL SUSAN T ET AL ; HUBL SUSAN T

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL 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 IR IS IT JP KE KG KM KN KP KR KZ LA LC LI 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 PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

View legal status timeline

Patent	Date recorded	Event group	Code	Event	Details
AR096756 AA	20160203	LSPB	+	published / reissued	
AR101166 AA	20161130	LSPB	+	published /	

AU2014302296 AA	20160121	LSPB	+	reissued
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EP3013134 A1	20160504	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20160122
EP3013134 A1	20170823	LSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20170719
EP3013134 A1	20181219	LSAS	RAP1	RIGHTS OF AN APPLICATION TRANSFERRED	PARTYTYPE : OWNER OWNER : INDIGO AG, INC.
EP3041338 A1	20160713	LSPB	+	published / reissued	
EP3041338 A1	20160713	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20160401
EP3041338 A1	20171122	LSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20171020
EP3086646 A2	20161102	LSPB	+	published / reissued	
EP3086646 A2	20161102	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20160721
EP3086646 A4	20170809	LSES	+A4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED	EFFECTIVE DATE : 20170711

EP3086646 A4	20170809	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : A01N 63/00 20060101AFI20170706BHEP
EP3086646 A4	20170809	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : A01N 63/02 20060101ALI20170706BHEP
EP3086646 A4	20181121	LSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20181019
EP3161124 A2	20170503	LSPB	+	published / reissued	
EP3161124 A2	20170503	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20170123
EP3161124 A2	20171220	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : A01N 63/04 20060101ALI20171113BHEP
EP3161124 A2	20171220	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : A01N 63/00 20060101AFI20171113BHEP
EP3161124 A2	20171220	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : C05F 11/08 20060101ALI20171113BHEP
EP3161124 A4	20180328	LSES	+A4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED	EFFECTIVE DATE : 20180228
EP3161124 A4	20180328	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : A01N 63/04 20060101ALI20180219BHEP
EP3161124 A4	20180328	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : A01N 63/00 20060101AFI20180219BHEP
EP3161124 A4	20180328	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : C05F 11/08 20060101ALI20180219BHEP
EP3161124 A4	20181205	LSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20181106
EP3161135 A2	20170503	LSPB	+	published / reissued	
EP3161135 A2	20170503	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20170123
EP3161135 A2	20171129	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : A01N 63/02 20060101ALI20171025BHEP
EP3161135 A2	20171129	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : A01N 63/00 20060101AFI20171025BHEP
EP3161135 A2	20171129	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : C12N 1/20 20060101ALI20171025BHEP
EP3161135 A4	20180321	LSES	+A4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED	EFFECTIVE DATE : 20180221

EP3161135 A4	20180321	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : A01N 63/00 20060101AFI20180215BHEP
EP3161135 A4	20180321	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : C12N 1/20 20060101ALI20180215BHEP
EP3161135 A4	20180321	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : A01N 63/02 20060101ALI20180215BHEP
EP3240391 A2	20171108	LSPB	+	published / reissued	
EP3240391 A2	20171108	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20170727
EP3240391 A4	20180711	LSES	+A4	SUPPLEMENTARY SEARCH REPORT DRAWN UP AND DESPATCHED	EFFECTIVE DATE : 20180612
EP3240391 A4	20180711	LSRE	RIC1	INFORMATION PROVIDED ON IPC CODE ASSIGNED BEFORE GRANT	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : A01C 1/06 20060101AFI20180606BHEP
IL243336 A1	20170330	LSPB	+	published / reissued	
IL250471 A1	20171130	LSPB	+	published / reissued	
IL250471 A1	20180329	LSGT	+FF	PATENT GRANTED	
IL250471 A1	20180430	LSFE	+KB	PATENT RENEWED	
IL255682 A1	20181129	LSPB	+	published / reissued	
IL255682 A1	20190331	LSGT	+FF	PATENT GRANTED	
IL255682 A1	20190331	LSFE	+KB	PATENT RENEWED	
IL255684 A1	20181129	LSPB	+	published / reissued	
IL255684 A1	20190331	LSGT	+FF	PATENT GRANTED	
IL255684 A1	20190331	LSFE	+KB	PATENT RENEWED	
IL255685 A0	20190131	LSGT	+FF	PATENT GRANTED	
IL255685 A0	20190131	LSFE	+KB	PATENT RENEWED	
IL255685 A1	20180920	LSPB	+	published / reissued	
IL255688 A0	20190131	LSGT	+FF	PATENT GRANTED	
IL255688 A0	20190131	LSFE	+KB	PATENT RENEWED	
IL255688 A1	20180920	LSPB	+	published / reissued	
IN201717026952 A	20171201	LSPB	+	published / reissued	
MX2016000193 A1	20160614	LSPB	+	published / reissued	
MX2016017357 A1	20171023	LSPB	+	published / reissued	
MX2017008676 A1	20180528	LSPB	+	published / reissued	
NZ715728 A	20170428	LSPB	+	published / reissued	
NZ715728 A	20170825	LSGT	+PSEA	PATENT SEALED	

NZ715728 A	20180525	LSFE	+RENEW	RENEWAL (RENEWAL FEES ACCEPTED)	TEXT : PATENT RENEWED FOR 1 YEAR UNTIL 26 JUN 2019 BY CPA GLOBAL EFFECTIVE DATE : 20180510
NZ726116 A	20180727	LSPB	+	published / reissued	
RU2017127214 A	20190201	LSPB	+	published / reissued	
US10058101 BB	20180828	LSGT	+	granted / extensions (spc, cpc, pte)	
US10058101 BB	20170606	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SYMBIOTA, INC., MASSACHUSETTS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VON MALTZAHN, GEOFFREY; FLAVELL, RICHARD; TOLEDO, GERARDO V.; AND OTHERS; SIGNING DATES FROM 20140625 TO 20140626; REEL/FRAME:042619/0807
US10058101 BB	20170606	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INDIGO AG, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA, INC.; REEL/FRAME:042704/0078 EFFECTIVE DATE : 20160224
US10058101 BB	20180808	LSGT	PAT1	Patented Case	
US10058101 BB	20181205	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : ENTITY STATUS SET TO UNDISCOUNTED (ORIGINAL EVENT CODE: BIG.); ENTITY STATUS OF PATENT OWNER: LARGE ENTITY
US10058101 BB	20190115	LSRE	CC	CERTIFICATE OF CORRECTION	
US10058101 BB	20370217	PEXP		Calculated Patent Term Expiry (a terminal disclaimer has been filed)	
US10076120 BB	20180918	LSGT	+	granted / extensions (spc, cpc, pte)	
US10076120 BB	20170606	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SYMBIOTA, INC., MASSACHUSETTS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VON MALTZAHN, GEOFFREY; FLAVELL, RICHARD; TOLEDO, GERARDO V.; AND OTHERS; SIGNING DATES FROM 20140625 TO 20140626; REEL/FRAME:042619/0850
US10076120 BB	20170606	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INDIGO AG, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA, INC.; REEL/FRAME:042704/0158 EFFECTIVE DATE : 20160224
US10076120 BB	20180829	LSGT	PAT1	Patented Case	
US10076120 BB	20181205	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : ENTITY STATUS SET TO UNDISCOUNTED (ORIGINAL EVENT CODE: BIG.); ENTITY STATUS OF PATENT OWNER: LARGE ENTITY
US10076120 BB	20370217	PEXP		Calculated Patent Term Expiry (a terminal disclaimer has been filed)	
US10136646 BB	20181127	LSGT	+	granted / extensions (spc, cpc, pte)	
US10136646 BB	20160303	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INDIGO AG, INC., MASSACHUSETTS

					OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA, INC.; REEL/FRAME:037994/0734 EFFECTIVE DATE : 20160224
US10136646 BB	20160303	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INDIGO AG, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA, INC.; REEL/FRAME:037995/0711 EFFECTIVE DATE : 20160224
US10136646 BB	20160303	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SYMBIOTA, INC., MASSACHUSETTS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VON MALTZAHN, GEOFFREY; FLAVELL, RICHARD BAILEY; TOLEDO, GERARDO V.; AND OTHERS; SIGNING DATES FROM 20160120 TO 20160127; REEL/FRAME:037887/0814
US10136646 BB	20181107	LSGT	PAT1	Patented Case	
US10136646 BB	20340904	PEXP		Calculated Patent Term Expiry	
US10212911 BB	20190226	LSGT	+	granted / extensions (spc, cpc, pte)	
US10212911 BB	20190206	LSGT	PAT1	Patented Case	
US10212911 BB	20370107	PEXP		Calculated Patent Term Expiry (PTA 561 days and a terminal disclaimer has been filed)	
US10271554 BB	20190430	LSGT	+	granted / extensions (spc, cpc, pte)	
US10271554 BB	20160628	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SYMBIOTA, INC., MASSACHUSETTS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VON MALTZHAN, GEOFFREY; FLAVELL, RICHARD BAILEY; TOLEDO, GERARDO V.; AND OTHERS; SIGNING DATES FROM 20160126 TO 20160129; REEL/FRAME:039029/0453
US10271554 BB	20160628	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH, AUSTRIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:MITTER, BIRGIT; NAVEED, MUHAMMAD; BERNINGER, TERESA; AND OTHERS; SIGNING DATES FROM 20160127 TO 20160302; REEL/FRAME:039194/0970
US10271554 BB	20160628	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INDIGO AG, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA, INC.; REEL/FRAME:039194/0967 EFFECTIVE DATE : 20160224
US10271554 BB	20190410	LSGT	PAT1	Patented Case	
US10271554 BB	20341224	PEXP		Calculated Patent Term Expiry	
US2015020239 AA	20150115	LSPB	+	published / reissued	
US2015320050 AA	20151112	LSPB	+	published / reissued	
US2015320050 AA	20151217	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SYMBIOTA, INC., MASSACHUSETTS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VON MALTZHAN, GEOFFREY; FLAVELL,

					RICHARD; TOLEDO, GERARDO V.; AND OTHERS; SIGNING DATES FROM 20140625 TO 20140626; REEL/FRAME:037327/0312
US2015342196 AA	20151203	LSPB	+	published / reissued	
US2015342196 AA	20151217	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SYMBIOTA, INC., MASSACHUSETTS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VON MALTZHAN, GEOFFREY; FLAVELL, RICHARD; TOLEDO, GERARDO V.; AND OTHERS; SIGNING DATES FROM 20140625 TO 20140626; REEL/FRAME:037327/0312
US2015373992 AA	20151231	LSPB	+	published / reissued	
US2015373993 AA	20151231	LSPB	+	published / reissued	
US2015373993 AA	20160129	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SYMBIOTA, LLC, MASSACHUSETTS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VON MALTZAHN, GEOFFREY; FLAVELL, RICHARD BAILEY; TOLEDO, GERARDO V.; AND OTHERS; SIGNING DATES FROM 20160120 TO 20160127; REEL/FRAME:037626/0001
US2015373993 AA	20160510	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INDIGO AGRICULTURE, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA HOLDINGS, INC.; REEL/FRAME:038665/0280 EFFECTIVE DATE : 20160224
US2015373993 AA	20160510	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SYMBIOTA HOLDINGS, INC., MASSACHUSETTS OLDPARTY : CERTIFICATE OF CONVERSION; ASSIGNOR:SYMBIOTA, LLC.; REEL/FRAME:038665/0277 EFFECTIVE DATE : 20150818
US2015373993 AA	20170920	LSES	NFA1	Non Final Action Mailed	
US2015373993 AA	20180322	LSES	-NFA2	Non Final Action Counted, Not Yet Mailed	
US2015373993 AA	20180327	LSES	NFA1	Non Final Action Mailed	
US2015373993 AA	20181120	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : ENTITY STATUS SET TO UNDISCOUNTED (ORIGINAL EVENT CODE: BIG.); ENTITY STATUS OF PATENT OWNER: LARGE ENTITY
US2015373993 AA	20190110	LSFE	+PPV1	Publications -- Issue Fee Payment Verified	
US2016021891 AA	20160128	LSPB	+	published / reissued	
US2016021891 AA	20160202	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SYMBIOTA, LLC, MASSACHUSETTS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VON MALTZAHN, GEOFFREY; FLAVELL, RICHARD BAILEY; TOLEDO, GERARDO V.; AND OTHERS; SIGNING DATES FROM 20160120 TO 20160127; REEL/FRAME:037644/0102
US2016021891 AA	20160510	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INDIGO AGRICULTURE, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA HOLDINGS, INC.; REEL/FRAME:038665/0280 EFFECTIVE DATE : 20160224

US2016021891 AA	20160510	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SYMBIOTA HOLDINGS, INC., MASSACHUSETTS OLDPARTY : CERTIFICATE OF CONVERSION; ASSIGNOR:SYMBIOTA, LLC.; REEL/FRAME:038665/0277 EFFECTIVE DATE : 20150818
US2016150794 AA	20160602	LSPB	+	published / reissued	
US2016150794 AA	20160728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INDIGO AG, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA, INC.; REEL/FRAME:039504/0087 EFFECTIVE DATE : 20160224
US2016150796 AA	20160602	LSPB	+	published / reissued	
US2016150796 AA	20160728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INDIGO AG, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA, INC.; REEL/FRAME:039504/0103 EFFECTIVE DATE : 20160224
US2016235074 AA	20160818	LSPB	+	published / reissued	
US2016255844 AA	20160908	LSPB	+	published / reissued	
US2016255844 AA	20160526	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH, AUSTRIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:MITTER, BIRGIT; PASTAR, MILICA; SESSITSCH, ANGELA; SIGNING DATES FROM 20150619 TO 20150626; REEL/FRAME:038732/0282
US2016255844 AA	20170926	LSES	NFA1	Non Final Action Mailed	
US2016255844 AA	20180205	LSES	NFA1	Non Final Action Mailed	
US2016255844 AA	20190117	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US2016255844 AA	20190419	LSFE	+PPV1	Publications -- Issue Fee Payment Verified	
US2016330976 AA	20161117	LSPB	+	published / reissued	
US2016330976 AA	20160628	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INDIGO AG, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA, INC.; REEL/FRAME:039195/0440 EFFECTIVE DATE : 20160224
US2016330976 AA	20160628	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH, AUSTRIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:MITTER, BIRGIT; NAVEED, MUHAMMAD; BERNINGER, TERESA; AND OTHERS; SIGNING DATES FROM 20160127 TO 20160302; REEL/FRAME:039029/0587
US2016330976 AA	20160628	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SYMBIOTA, INC., MASSACHUSETTS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VON MALTZHAN, GEOFFREY; FLAVELL, RICHARD BAILEY; TOLEDO, GERARDO V.; AND OTHERS; SIGNING DATES FROM

					20160126 TO 20160129; REEL/FRAME:039029/0597
US2016330976 AA	20170626	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INDIGO AG, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA, INC.; REEL/FRAME:043006/0142 EFFECTIVE DATE : 20160224
US2016330976 AA	20171028	LSES	-NFA2	Non Final Action Counted, Not Yet Mailed	
US2016330976 AA	20171031	LSES	NFA1	Non Final Action Mailed	
US2016330976 AA	20180619	LSES	NFA1	Non Final Action Mailed	
US2016330976 AA	20190321	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US2016330976 AA	20190425	LSFE	-AWA4	Awaiting TC Resp., Issue Fee Not Paid	
US2016330976 AA	20190429	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US2016338360 AA	20161124	LSPB	+	published / reissued	
US2016338360 AA	20170406	LSES	NFA1	Non Final Action Mailed	
US2016338360 AA	20170626	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INDIGO AG, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA, INC.; REEL/FRAME:043006/0173 EFFECTIVE DATE : 20160224
US2016338360 AA	20180706	LSES	-NFA2	Non Final Action Counted, Not Yet Mailed	
US2016338360 AA	20181203	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US2016338360 AA	20190301	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : ENTITY STATUS SET TO UNDISCOUNTED (ORIGINAL EVENT CODE: BIG.); ENTITY STATUS OF PATENT OWNER: LARGE ENTITY
US2016338360 AA	20190304	LSFE	+PPV1	Publications -- Issue Fee Payment Verified	
US2017020138 AA	20170126	LSPB	+	published / reissued	
US2017020138 AA	20170316	LSES	NFA1	Non Final Action Mailed	
US2017020138 AA	20170918	LSES	NFA1	Non Final Action Mailed	
US2017020138 AA	20180813	LSES	+ALW2	Allowed -- Notice of Allowance Not Yet Mailed	
US2017020138 AA	20180910	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : ENTITY STATUS SET TO UNDISCOUNTED (ORIGINAL EVENT CODE: BIG.); ENTITY STATUS OF PATENT OWNER: LARGE ENTITY
US2017164619 AA	20170615	LSPB	+	published /	

reissued				
US2017164619 AA	20170823	LSES	-NFA2	Non Final Action Counted, Not Yet Mailed
US2017164619 AA	20170828	LSES	NFA1	Non Final Action Mailed
US2017164619 AA	20180511	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications
US2017164619 AA	20180609	LSFE	-AWA4	Awaiting TC Resp., Issue Fee Not Paid
US2017164619 AA	20180614	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications
US2017164619 AA	20180709	LSFE	+PPR1	Publications -- Issue Fee Payment Received
US2017164619 AA	20180710	LSFE	+PPV1	Publications -- Issue Fee Payment Verified
US2017164619 AA	20180724	LSFE	+AWA3	Awaiting TC Resp, Issue Fee Payment Verified
US2017164619 AA	20180725	LSFE	+PPV1	Publications -- Issue Fee Payment Verified
US2017164620 AA	20170615	LSPB	+	published / reissued
US2017164620 AA	20170823	LSES	-NFA2	Non Final Action Counted, Not Yet Mailed
US2017164620 AA	20170828	LSES	NFA1	Non Final Action Mailed
US2017164620 AA	20180602	LSFE	-AWA4	Awaiting TC Resp., Issue Fee Not Paid
US2017164620 AA	20180614	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications
US2017164620 AA	20180709	LSFE	+PPR1	Publications -- Issue Fee Payment Received
US2017164620 AA	20180720	LSFE	+AWA3	Awaiting TC Resp, Issue Fee Payment Verified
US2017164620 AA	20180725	LSFE	+PPV1	Publications -- Issue Fee Payment Verified
US2017223967 AA	20170810	LSPB	+	published / reissued
US2017223967 AA	20170609	LSAS	AS	ASSIGNMENT PARTYTYPE : OWNER OWNER : SYMBIOTA HOLDINGS, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA, LLC; REEL/FRAME:042762/0928 EFFECTIVE DATE : 20150818
US2017223967 AA	20170609	LSAS	AS	ASSIGNMENT PARTYTYPE : OWNER OWNER : SYMBIOTA, LLC, MASSACHUSETTS

					OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:AMBROSE, KAREN V.; ZHANG, XUECHENG; REEL/FRAME:042665/0970 EFFECTIVE DATE : 20160127
US2017223967 AA	20170609	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INDIGO AGRICULTURE, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA HOLDINGS, INC.; REEL/FRAME:042762/0996 EFFECTIVE DATE : 20160204
US2017223967 AA	20170609	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH, AUSTRIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:MITTER, BIRGIT; PASTAR, MILICA; SESSITSCH, ANGELA; AND OTHERS; REEL/FRAME:042762/0910 EFFECTIVE DATE : 20160127
US2017223967 AA	20170621	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INDIGO AGRICULTURE, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA HOLDINGS, INC.; REEL/FRAME:042931/0819 EFFECTIVE DATE : 20160224
US2017223967 AA	20170621	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SYMBIOTA HOLDINGS, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA, LLC; REEL/FRAME:042931/0959 EFFECTIVE DATE : 20150818
US2017223967 AA	20180417	LSES	NFA1	Non Final Action Mailed	
US2017223967 AA	20180731	LSES	-NFA2	Non Final Action Counted, Not Yet Mailed	
US2017223967 AA	20180807	LSES	NFA1	Non Final Action Mailed	
US2017223967 AA	20190212	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2018020677 AA	20180125	LSPB	+	published / reissued	
US2018020677 AA	20170621	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INDIGO AGRICULTURE, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA HOLDINGS, INC.; REEL/FRAME:042931/0956 EFFECTIVE DATE : 20160224
US2018020677 AA	20170621	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SYMBIOTA HOLDINGS, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA, LLC; REEL/FRAME:042931/0953 EFFECTIVE DATE : 20150818
US2018020677 AA	20180710	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SYMBIOTA, LLC, MASSACHUSETTS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:AMBROSE, KAREN V.; BILLINGS, NATHAN A.; DJONOVIC, SLAVICA; AND OTHERS; SIGNING DATES FROM 20160120 TO 20160127; REEL/FRAME:046312/0341
US2018020677 AA	20190104	LSES	NFA1	Non Final Action Mailed	
US2018020677 AA	20190128	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SYMBIOTA, LLC, MASSACHUSETTS OLDPARTY : CORRECTIVE ASSIGNMENT

					TO CORRECT THE 6TH ASSIGNOR NAME PREVIOUSLY RECORDED AT REEL: 046312 FRAME: 0341. ASSIGNOR(S) HEREBY CONFIRMS THE ASSIGNMENT; ASSIGNORS:AMBROSE, KAREN V.; BILLINGS, NATHAN A.; DJONOVIC, SLAVICA; AND OTHERS; SIGNING DATES FROM 20160120 TO 20160127; REEL/FRAME:048155/0305
US2018368418 AA	20181227	LSPB	+	published / reissued	
US2018368418 AA	20180712	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SYMBIOTA, INC., MASSACHUSETTS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VON MALTZAHN, GEOFFREY; FLAVELL, RICHARD; TOLEDO, GERARDO V.; AND OTHERS; SIGNING DATES FROM 20140625 TO 20140626; REEL/FRAME:046338/0223
US2018368418 AA	20180712	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INDIGO AG, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA, INC.; REEL/FRAME:046540/0331 EFFECTIVE DATE : 20160224
US2018368419 AA	20181227	LSPB	+	published / reissued	
US2018368419 AA	20180712	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SYMBIOTA, INC., MASSACHUSETTS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VON MALTZAHN, GEOFFREY; FLAVELL, RICHARD; TOLEDO, GERARDO V.; AND OTHERS; SIGNING DATES FROM 20140625 TO 20140626; REEL/FRAME:046338/0280
US2018368419 AA	20180712	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INDIGO AG, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA, INC.; REEL/FRAME:046574/0165 EFFECTIVE DATE : 20160224
US2018368420 AA	20181227	LSPB	+	published / reissued	
US2018368420 AA	20180712	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INDIGO AG, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA, INC.; REEL/FRAME:046540/0372 EFFECTIVE DATE : 20160224
US2018368420 AA	20180712	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SYMBIOTA, INC., MASSACHUSETTS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VON MALTZAHN, GEOFFREY; FLAVELL, RICHARD; TOLEDO, GERARDO V.; AND OTHERS; SIGNING DATES FROM 20140625 TO 20140626; REEL/FRAME:046338/0186
US2018368421 AA	20181227	LSPB	+	published / reissued	
US2018368421 AA	20180712	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SYMBIOTA, INC., MASSACHUSETTS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VON MALTZAHN, GEOFFREY; FLAVELL, RICHARD; TOLEDO, GERARDO V.; AND OTHERS; SIGNING DATES FROM 20140625 TO 20140626; REEL/FRAME:046338/0319
US2018368421 AA	20180712	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INDIGO AG, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME;

					ASSIGNOR:SYMBIOTA, INC.; REEL/FRAME:046574/0162 EFFECTIVE DATE : 20160224
US2019021337 AA	20190124	LSPB	+	published / reissued	
US9113636 BB	20150825	LSGT	+	granted / extensions (spc, cpc, pte)	
US9113636 BB	20140709	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SYMBIOTA, INC., MASSACHUSETTS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:MALTZAHN, GEOFFREY VON; FLAVELL, RICHARD; TOLEDO, GERARDO V; AND OTHERS; SIGNING DATES FROM 20140625 TO 20140626; REEL/FRAME:033269/0675
US9113636 BB	20150805	LSGT	PAT1	Patented Case	
US9113636 BB	20160805	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INDIGO AG, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA, INC.; REEL/FRAME:039600/0612 EFFECTIVE DATE : 20160224
US9113636 BB	20181204	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : ENTITY STATUS SET TO UNDISCOUNTED (ORIGINAL EVENT CODE: BIG.); ENTITY STATUS OF PATENT OWNER: LARGE ENTITY
US9113636 BB	20190214	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US9113636 BB	20340626	PEXP		Calculated Patent Term Expiry	
US9288995 BB	20160322	LSGT	+	granted / extensions (spc, cpc, pte)	
US9288995 BB	20160302	LSGT	PAT1	Patented Case	
US9288995 BB	20160805	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INDIGO AG, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA, INC.; REEL/FRAME:039600/0612 EFFECTIVE DATE : 20160224
US9288995 BB	20181205	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : ENTITY STATUS SET TO UNDISCOUNTED (ORIGINAL EVENT CODE: BIG.); ENTITY STATUS OF PATENT OWNER: LARGE ENTITY
US9288995 BB	20350505	PEXP		Calculated Patent Term Expiry (a terminal disclaimer has been filed)	
US9295263 BB	20160329	LSGT	+	granted / extensions (spc, cpc, pte)	
US9295263 BB	20160309	LSGT	PAT1	Patented Case	
US9295263 BB	20160805	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INDIGO AG, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA, INC.; REEL/FRAME:039600/0612 EFFECTIVE DATE : 20160224
US9295263 BB	20171121	LSRE	CC	CERTIFICATE OF CORRECTION	
US9295263 BB	20181205	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : ENTITY STATUS SET TO UNDISCOUNTED (ORIGINAL EVENT CODE: BIG.); ENTITY STATUS OF PATENT OWNER: LARGE ENTITY
US9295263 BB	20350813	PEXP		Calculated Patent Term	

				Expiry (a terminal disclaimer has been filed)	
US9364005 BB	20160614	LSGT	+	granted / extensions (spc, cpc, pte)	
US9364005 BB	20150626	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH, AUSTRIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:SESSITSCH, ANGELA; PASTAR, MILICA; MITTER, BIRGIT; SIGNING DATES FROM 20150619 TO 20150626; REEL/FRAME:035914/0472
US9364005 BB	20160525	LSGT	PAT1	Patented Case	
US9364005 BB	20181205	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : ENTITY STATUS SET TO UNDISCOUNTED (ORIGINAL EVENT CODE: BIG.); ENTITY STATUS OF PATENT OWNER: LARGE ENTITY
US9364005 BB	20340626	PEXP		Calculated Patent Term Expiry	
US9408394 BB	20160809	LSGT	+	granted / extensions (spc, cpc, pte)	
US9408394 BB	20160720	LSGT	PAT1	Patented Case	
US9408394 BB	20171205	LSRE	CC	CERTIFICATE OF CORRECTION	
US9408394 BB	20181205	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : ENTITY STATUS SET TO UNDISCOUNTED (ORIGINAL EVENT CODE: BIG.); ENTITY STATUS OF PATENT OWNER: LARGE ENTITY
US9408394 BB	20351009	PEXP		Calculated Patent Term Expiry	
US9532572 BB	20170103	LSGT	+	granted / extensions (spc, cpc, pte)	
US9532572 BB	20160218	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SYMBIOTA, INC., MASSACHUSETTS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VON MALTZHAN, GEOFFREY; FLAVELL, RICHARD; TOLEDO, GERARDO V.; AND OTHERS; SIGNING DATES FROM 20140625 TO 20140626; REEL/FRAME:037764/0866
US9532572 BB	20161214	LSGT	PAT1	Patented Case	
US9532572 BB	20181205	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : ENTITY STATUS SET TO UNDISCOUNTED (ORIGINAL EVENT CODE: BIG.); ENTITY STATUS OF PATENT OWNER: LARGE ENTITY
US9532572 BB	20360227	PEXP		Calculated Patent Term Expiry (PTA 22 days and a terminal disclaimer has been filed)	
US9532573 BB	20170103	LSGT	+	granted / extensions (spc, cpc, pte)	
US9532573 BB	20160218	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SYMBIOTA, INC., MASSACHUSETTS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VON MALTZHAN, GEOFFREY; FLAVELL, RICHARD; TOLEDO, GERARDO V.; AND OTHERS; SIGNING DATES FROM 20140625 TO 20140626; REEL/FRAME:037764/0866
US9532573 BB	20161214	LSGT	PAT1	Patented Case	
US9532573 BB	20171205	LSRE	CC	CERTIFICATE OF	

US9532573 BB	20181205	LSFE	FEPP	CORRECTION FEE PAYMENT PROCEDURE	TEXT : ENTITY STATUS SET TO UNDISCOUNTED (ORIGINAL EVENT CODE: BIG.); ENTITY STATUS OF PATENT OWNER: LARGE ENTITY
US9532573 BB	20360313	PEXP		Calculated Patent Term Expiry (PTA 37 days and a terminal disclaimer has been filed)	
US9622485 BB	20170418	LSGT	+	granted / extensions (spc, cpc, pte)	
US9622485 BB	20160503	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : INDIGO AG, INC., MASSACHUSETTS OLDPARTY : CHANGE OF NAME; ASSIGNOR:SYMBIOTA, INC.; REEL/FRAME:038600/0029 EFFECTIVE DATE : 20160224
US9622485 BB	20160503	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SYMBIOTA, INC., MASSACHUSETTS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VON MALTZHAN, GEOFFREY; FLAVELL, RICHARD; TOLEDO, GERARDO V.; AND OTHERS; SIGNING DATES FROM 20140625 TO 20140626; REEL/FRAME:038449/0633
US9622485 BB	20170329	LSGT	PAT1	Patented Case	
US9622485 BB	20170905	LSRE	CC	CERTIFICATE OF CORRECTION	
US9622485 BB	20181205	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : ENTITY STATUS SET TO UNDISCOUNTED (ORIGINAL EVENT CODE: BIG.); ENTITY STATUS OF PATENT OWNER: LARGE ENTITY
US9622485 BB	20360503	PEXP		Calculated Patent Term Expiry	
WO14210372 A1	20141231	LSPB	+	published / reissued	
WO14210372 A1	20151222	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2916678 COUNTRY OF REF DOCUMENT : CA
WO14210372 A1	20151224	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 243336 COUNTRY OF REF DOCUMENT : IL
WO14210372 A1	20151228	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO14210372 A1	20160107	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : MX/A/2016/000193 COUNTRY OF REF DOCUMENT : MX
WO14210372 A1	20160121	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2014302296 COUNTRY OF REF DOCUMENT : AU DATE OF REF DOCUMENT : 20140626 KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :
WO14210372 A1	20160122	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2014748326 COUNTRY OF REF DOCUMENT : EP
WO14210372 A1	20170206	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 250471 COUNTRY OF REF DOCUMENT : IL
WO14210372 A1	20171107	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 112015032423 COUNTRY OF REF DOCUMENT : BR

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WO15035099 A1	20150312	LSPB	+	published / reissued	
WO15035099 A1	20160303	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 14916514 COUNTRY OF REF DOCUMENT : US
WO15035099 A1	20160304	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO15035099 A1	20160401	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2014777213 COUNTRY OF REF DOCUMENT : EP
WO15035099 A1	20160421	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2014315191 COUNTRY OF REF DOCUMENT : AU DATE OF REF DOCUMENT : 20140904 KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :
WO15035099 A1	20170302	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2960032 COUNTRY OF REF DOCUMENT : CA
WO15035099 A1	20170905	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 112016004794 COUNTRY OF REF DOCUMENT : BR KIND CODE OF REF DOCUMENT : A2 DESIGNATED STATE(S) : EFFECTIVE DATE : 20160303
WO15100431 A2	20150702	LSPB	+	published / reissued	
WO15100431 A3	20160624	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO15100431 A3	20160624	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 15107973 COUNTRY OF REF DOCUMENT : US
WO15100431 A3	20160627	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2935218 COUNTRY OF REF DOCUMENT : CA
WO15100431 A3	20160721	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2014874589 COUNTRY OF REF DOCUMENT : EP
WO15100432 A2	20150702	LSPB	+	published / reissued	
WO15100432 A2	20160624	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO15100432 A2	20160624	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 15107965 COUNTRY OF REF DOCUMENT : US
WO15100432 A2	20170118	LSNE	-122	EP: PCT APPLICATION NON-ENTRY IN EUROPEAN PHASE	REF DOCUMENT NUMBER : 14874736 COUNTRY OF REF DOCUMENT : EP KIND CODE OF REF DOCUMENT : A2 DESIGNATED STATE(S) :
WO15200852 A2	20151230	LSPB	+	published / reissued	
WO15200852 A3	20161220	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : MX/A/2016/017357 COUNTRY OF REF DOCUMENT : MX
WO15200852 A3	20161221	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2953466 COUNTRY OF REF DOCUMENT : CA
WO15200852 A3	20161227	LSNE	NENP	NON-ENTRY	REF COUNTRY CODE : DE

				INTO THE NATIONAL PHASE IN:	
WO15200852 A3	20170123	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2015812324 COUNTRY OF REF DOCUMENT : EP
WO15200852 A3	20170216	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2015279600 COUNTRY OF REF DOCUMENT : AU DATE OF REF DOCUMENT : 20150626 KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :
WO15200852 A3	20171031	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 112016030458 COUNTRY OF REF DOCUMENT : BR KIND CODE OF REF DOCUMENT : A2 DESIGNATED STATE(S) : EFFECTIVE DATE : 20161223
WO15200902 A2	20151230	LSPB	+	published / reissued	
WO15200902 A9	20161219	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 249639 COUNTRY OF REF DOCUMENT : IL
WO15200902 A9	20161223	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2953697 COUNTRY OF REF DOCUMENT : CA
WO15200902 A9	20161227	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO15200902 A9	20170123	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2015810847 COUNTRY OF REF DOCUMENT : EP
WO15200902 A9	20170216	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2015279557 COUNTRY OF REF DOCUMENT : AU DATE OF REF DOCUMENT : 20150626 KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :
WO15200902 A9	20171031	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 112016030493 COUNTRY OF REF DOCUMENT : BR KIND CODE OF REF DOCUMENT : A2 DESIGNATED STATE(S) : EFFECTIVE DATE : 20161223
WO16109758 A2	20160707	LSPB	+	published / reissued	
WO16109758 A3	20170627	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 253200 COUNTRY OF REF DOCUMENT : IL
WO16109758 A3	20170628	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : MX/A/2017/008676 COUNTRY OF REF DOCUMENT : MX
WO16109758 A3	20170630	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2972904 COUNTRY OF REF DOCUMENT : CA
WO16109758 A3	20170701	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO16109758 A3	20170731	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2017127214 COUNTRY OF REF DOCUMENT : RU KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :
WO16109758 A3	20170817	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2015373978 COUNTRY OF REF DOCUMENT : AU DATE OF REF DOCUMENT : 20151230 KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :
WO16109758 A8	20180306	LSNP	ENP	ENTRY INTO THE	REF DOCUMENT NUMBER :

				NATIONAL PHASE IN:	112017014230 COUNTRY OF REF DOCUMENT : BR KIND CODE OF REF DOCUMENT : A2 DESIGNATED STATE(S) : EFFECTIVE DATE : 20170629
ZA201600240 A	20171220	LSGT	+	granted / extensions (spc, cpc, pte)	
ZA201600240 A	20340625	PEXP		Calculated Patent Term Expiry	

Title: SYSTEM AND METHOD FOR USING GLOBAL LOCATION INFORMATION, 2D AND 3D MAPPING, SOCIAL MEDIA, AND USER BEHAVIOR AND INFORMATION FOR A CONSUMER FEEDBACK SOCIAL MEDIA ANALYTICS PLATFORM FOR PROVIDING ANALYTIC MEASUREMENTS DATA OF ONLINE CONSUMER FEEDBACK FOR GLOBAL BRAND PRODUCTS OR SERVICES OF PAST, PRESENT, OR FUTURE CUSTOMERS, USERS OR TARGET MARKETS

Abstract: A method, apparatus, non-transitory computer readable storage medium, computer system, network, or system, is provided for using location information, 2D and 3D mapping, social media, and user behavior and information to provide alternative a consumer feedback social media analytics platforms for providing analytic measurements data of online consumer feedback for global brand products or services of past, present or future customers, users, and/or target markets, for companies, organizations, government agencies, and the like, by electronically collecting and analyzing, on a networked computer system using a processor, qualitative or quantitative online social media online communications, activity, and online communications and activity relevant to consumer products or services, or promotions thereof, of interest, in order to provide targeted, location based, 2D or 3D mapped, or impressions to generate online location information data or promotions to provide improved or desired customer perception or sentiment regarding a company's products, services or promotions thereof

Classifications:

International (IPC 8-9): G06F15/16 G06F15/173 G06F17/00 G06F17/30 G06F3/01 G06Q10/10 G06Q20/00 G06Q30/00 G06Q30/02 G06Q30/06 G06Q30/08 G06Q50/00 G06Q99/00 H04L12/26

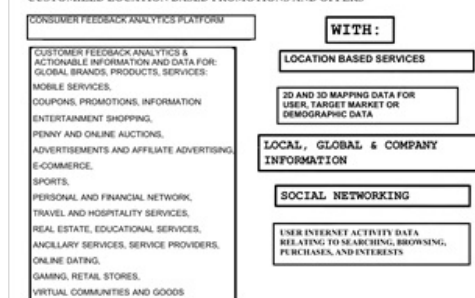
H04L29/06 (Advanced/Invention)

CPC: H04L63/00 G06Q30/0224 G06Q30/0239 G06Q30/0253 G06Q30/0267 G06Q30/0271 G06Q30/0222 G06Q30/0259 H04L43/0811 G06Q30/0261 G06Q30/02 G06Q10/10 G06F16/29 G06F16/9537 G06Q30/0201 G06Q30/0207 G06Q30/0241 G06Q30/06 G06Q30/08 G06Q50/01

US: 705/14 705/14.23 705/14.25 705/14.39 705/14.53 705/14.54 705/14.73 705/26 705/319 705/39 705/7.29 709/204 709/220 709/224 709/227 709/228 715/738 726/26

PatBase - US2013073336_A0

SOCIAL EARTH MOBILE AND ONLINE PRODUCT AND SERVICE ONLINE USER CUSTOMIZED LOCATION BASED PROMOTIONS AND OFFERS



Family:

Publication number	Publication date	Application number	Application date
US2013073336 AA	20130321	US20120594842	20120826
US2013073366 AA	20130321	US20120359498	20120127
US2013073374 AA	20130321	US20110233352	20110915
US2013073376 AA	20130321	US20110337271	20111226
US2013073377 AA	20130321	US20110337275	20111226
US2013073387 AA	20130321	US20120439761	20120404
US2013073388 AA	20130321	US20120543871	20120708
US2013073389 AA	20130321	US20120439735	20120404
US2013073400 AA	20130321	US20120430600	20120326
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US8745245 BA	20140603	US20110233552	20110915
US8909771 BB	20141209	US20120594842	20120826
US9710821 BB	20170718	US20120551556	20120717
US10096033 BB	20181009	US20120439761	20120404
US10102546 BB	20181016	US20120359498	20120127
US10120877 BB	20181106	US20120430600	20120326
US10127563 BB	20181113	US20120439735	20120404
US10127564 BB	20181113	US20120543871	20120708
US10129211 BB	20181113	US20120712919	20121212
US10140620 BB	20181127	US20110337275	20111226
US10152722 BB	20181211	US20110337271	20111226
US10217117 BB	20190226	US20120369244	20120208
WO13039573 A2	20130321	WO2012US36896	20120508
WO13039573 A3	20140508	WO2012US36896	20120508

Priority:

US20110233352	20110915	US20110233552	20110915	US20110337271	20111226
US20110337275	20111226	US20110377275	20111226	US20120359498	20120127
US20120369244	20120208	US20120430600	20120326	US20120439761	20120404
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US20120543871	20120708	US20120551556	20120717	US20120594842	20120826
US20120712919	20121212				

Probable Assignee: GOOGLE INC

Assignee(s): (std): BULLOCK NATHAN ; GOOGLE INC ; HEATH STEPHAN

Assignee(s): GOOGLE LLC

Inventor(s): (std): HEATH STEPHAN ; BULLOCK NATHAN

Agent(s): MCDONNELL BOEHNEN HULBERT AND BERGHOFF LLP; PETER B; HAMILTON DESANCTIS AND CHA LLP; SCULL PETER B; SCHULL PETER B

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 CL 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 LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US10096033 BB	20181009	LSGT	+	granted / extensions (spc, cpc, pte)	
US10096033 BB	20180919	LSGT	PAT1	Patented Case	
US10096033 BB	20370425	PEXP		Calculated Patent Term Expiry (PTA 1847 days)	
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US10127563 BB	20181024	LSGT	PAT1	Patented Case	
US10127563 BB	20361110	PEXP		Calculated Patent Term Expiry (PTA 1681 days)	
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US2013073366 AA	20180523	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	

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US2013073374 AA	20151109	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action
US2013073376 AA	20130321	LSPB	+	published / reissued
US2013073376 AA	20180721	LSES	+ALW2	Allowed -- Notice of Allowance Not Yet Mailed
US2013073376 AA	20180723	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications
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US2013073377 AA	20160122	LSAL	NAF1	Notice of Appeal Filed
US2013073377 AA	20180710	LSES	+ALW2	Allowed -- Notice of Allowance Not Yet Mailed
US2013073377 AA	20180710	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications
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US2013073387 AA	20180525	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications
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US2013073388 AA	20180605	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications
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US2013073389 AA	20180627	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications
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US2013073400 AA	20180607	LSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications
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US2013268357 AA	20131010	LSPB	+	published / reissued
US2013268357 AA	20161214	LSES	-NFA2	Non Final Action Counted, Not Yet Mailed
US2013268357 AA	20171018	LSES	NFA1	Non Final Action Mailed
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US2013268357 AA	20180612	LSES	+NAM1	Notice of Allowance

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US2014006129 AA	20140102	LSPB	+	published / reissued	
US2014006129 AA	20170313	LSSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US2014006129 AA	20170615	LSFE	+PPV1	Publications -- Issue Fee Payment Verified	
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US8745245 BA	20140514	LSGT	PAT1	Patented Case	
US8745245 BA	20171002	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GOOGLE LLC, CALIFORNIA OLDPARTY : CHANGE OF NAME; ASSIGNOR:GOOGLE INC.; REEL/FRAME:044277/0001 EFFECTIVE DATE : 20170929
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US8909771 BB	20321124	PEXP		Calculated Patent Term Expiry (PTA 90 days)	
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US9710821 BB	20170628	LSGT	PAT1	Patented Case	
US9710821 BB	20360308	PEXP		Calculated Patent Term Expiry (PTA 1330 days)	
WO13039573 A2	20130321	LSPB	+	published / reissued	
WO13039573 A3	20141008	LSNE	-122	EP: PCT APPLICATION NON-ENTRY IN EUROPEAN PHASE	REF DOCUMENT NUMBER : 12831666 COUNTRY OF REF DOCUMENT : EP KIND CODE OF REF DOCUMENT : A2 DESIGNATED STATE(S) :

Title: IN SITU THERMAL PROCESSING OF AN OIL SHALE FORMATION

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.

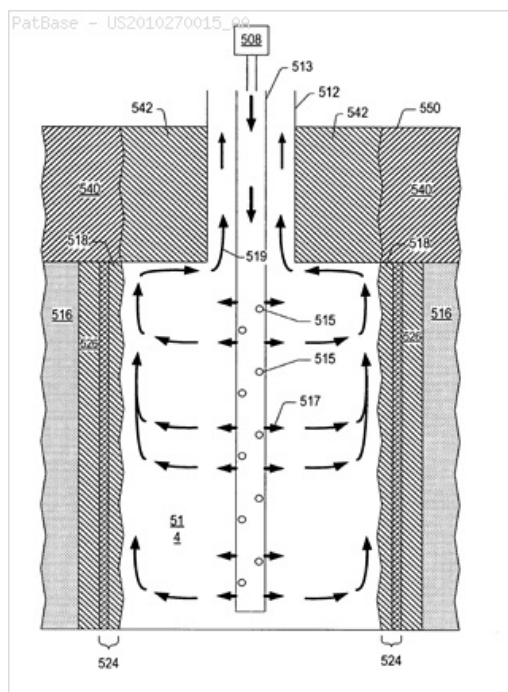
Classifications:

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

European: E21B43/243 E21B43/247 E21B43/30

US: 166/272.1 166/272.100P 166/302 299/3



Family:

Publication number	Publication date	Application number	Application date
US2010270015 AA	20101028	US20100767572	20100426
US8608249 BB	20131217	US20100767572	20100426

Priority:

US20010286062P 20010424	US20010337249P 20011024	US20020131286 20020424
US20060343913 20060131	US20070809889 20070601	US20100767572 20100426

Probable Assignee: SHELL OIL CO

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

Assignee(s): SHELL OIL COMPANY

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

Agent(s): DEL CHRISTENSEN, SHELL OIL COMPANY; DEL CHRISTENSEN SHELL OIL CO

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2010270015 AA	20101028	LSPB	+	published / reissued	
US8608249 BB	20131217	LSGT	+	granted / extensions (spc, cpc, pte)	
US8608249 BB	20131126	LSGT	PAT1	Patented Case	
US8608249 BB	20180115	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US8608249 BB	20180119	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US8608249 BB	20180206	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20171217

US8608249 BB	20300426	PEXP	Calculated Patent Term Expiry
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Title: IN SITU RECOVERY FROM A KEROGEN AND LIQUID HYDROCARBON CONTAINING FORMATION

Abstract: In an embodiment, a method of treating a kerogen and liquid hydrocarbon containing formation in situ may include providing heat from one or more heat sources to at least a portion of the formation. Heat may be allowed to transfer from the one or more heat sources to a part of the formation. In some embodiments, at least a portion of liquid hydrocarbons in the part may be mobilized. At least a portion of kerogen in the part may be pyrolyzed. In certain embodiments, a pressure within at least a part of the formation may be controlled. The pressure may be controlled to be at least about 2.0 bars absolute. A mixture may be produced from the formation.

Classifications:

International (IPC 8-9): C09K8/592 E21B36/00 E21B36/04 E21B41/00 E21B43/24 E21B43/243 E21B43/247 E21B43/26

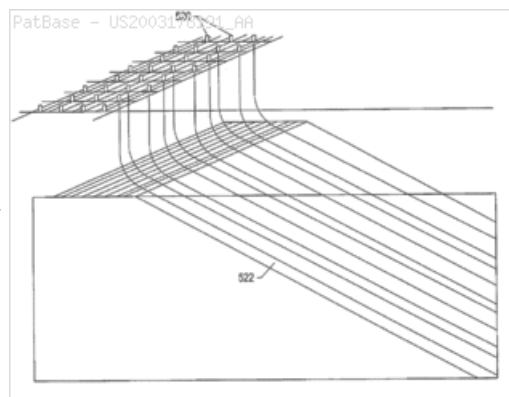
E21B43/30 (Advanced/Invention);
C09K8/58 E21B36/00 E21B41/00 E21B43/00 E21B43/16
E21B43/25 (Core/Invention)

International (IPC 1-7): E21B36/04

CPC: C09K8/592 E21B36/001 E21B36/04 E21B41/0057 E21B43/24 E21B43/2401 E21B43/243 E21B43/247 E21B43/30 Y02C10/14

European: C09K8/592 E21B36/00B E21B36/04 E21B41/00M2 E21B43/24 E21B43/243 E21B43/247 E21B43/24B E21B43/30 Y02C10/14

US: 166/245 166/257 166/272.1 166/272.2 166/272.7 166/302 166/308 166/50 166/65.1



Family:

Publication number	Publication date	Application number	Application date
US2003178191 AA	20030925	US20020279287	20021024
US7011154 BB	20060314	US20020279287	20021024

Priority:

US20000199213P 20000424	US20000199214P 20000424	US20000199215P 20000424
US20010337427P 20011024	US20010337405P 20011024	US20020375043P 20020424
US20020374999P 20020424	US20020279287 20021024	

Probable Assignee: SHELL OIL CO

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

Assignee(s): SHELL OIL COMPANY ; ZHANG ETUAN ; VINEGAR HAROLD J ; WELLINGTON SCOTT LEE ; BERCHENKO ILYA EMIL ; KARANIKAS JOHN MICHAEL ; MAHER KEVIN ALBERT ; ROUFFIGNAC ERIC PIERRE DE

Inventor(s): (std): BERCHENKO ILYA EMIL ; DE ROUFFIGNAC ERIC PIERRE ; KARANIKAS JOHN MICHAEL ; MAHER KEVIN ALBERT ; ROUFFIGNAC ERIC PIERRE DE ; VINEGAR HAROLD J ; WELLINGTON SCOTT LEE ; ZHANG ETUAN

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2003178191 AA	20030925	LSPB	+	published / reissued	
US7011154 BB	20060314	LSGT	+	granted / extensions (spc, cpc, pte)	
US7011154 BB	20030303	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:MAHER, KEVIN ALBERT; VINEGAR, HAROLD J.; WELLINGTON, SCOTT LEE; AND OTHERS; REEL/FRAME:013814/0345 EFFECTIVE DATE : 20030203
US7011154 BB	20060222	LSGT	PAT1	Patented Case	
US7011154 BB	20090810	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7011154 BB	20130814	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7011154 BB	20171023	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7011154 BB	20180409	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)

US7011154 BB	20180409	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7011154 BB	20180409	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7011154 BB	20180501	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180314
US7011154 BB	20230728	PEXP		Calculated Patent Term Expiry (PTA 277 days and a terminal disclaimer has been filed)	

Title: IDENTIFICATION OF POLYNUCLEOTIDES ASSOCIATED WITH A SAMPLE

Abstract: Disclosed herein are compositions and methods for sequencing, analyzing, and utilizing samples such as single samples. Also disclosed herein are compositions and methods for matching together two or more sequences from a sample. Also disclosed herein are compositions and methods for expressing and screening molecules of interest.

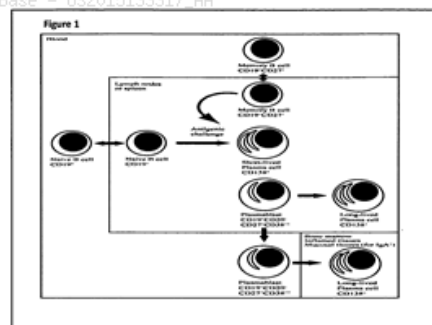
Classifications:

International (IPC 8-9): C07K14/725 C07K16/00 C07K16/12 C07K19/00 C12N C12N15/09 C12N15/10 C12N15/11 C12N15/12 C12N15/13 C12N15/62 C12N5/10 C12Q1/68 C12Q1/6844 C12Q1/6869 C40B30/04 C40B40/06 C40B40/08 C40B50/06 C40B70/00 G01N33/68 G06F19/10 (Advanced/Invention); C12N15/00 (Core/Invention); C07K16/00 (Core/Non-invention); C12N (Subclass/Invention)

CPC: C07K16/1242 C07K16/1271 C07K2317/21 C07K2317/76 G01N33/6854 G01N2458/10 G01N2500/00 C12N15/1065 C07K16/00 C12N15/11 C12Q1/68 C40B40/08

US: 435/320.1 435/354 435/358 435/69.6 435/91.5 506/17 506/23 506/26 506/4 530/387.1 536/23.53 536/24.2 536/24.33 536/25.3

PatBase - US2015133317 AA

**Family:**

Publication number	Publication date	Application number	Application date
AU2012249158 AA	20121101	AU20120249158	20120427
AU2012249158 BB	20170629	AU20120249158	20120427
AU2017232235 AA	20171012	AU20170232235	20170925
AU2018286622 AA	20190124	AU20180286622	20181231
AU2018286623 AA	20190124	AU20180286623	20181231
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BR112013027540 A2	20160920	BR20131127540	20120427
CA2833917 AA	20131022	CA20122833917	20120427
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DK2702146 T3	20190311	DK20120775920T	20120427
EP2702146 A2	20140305	EP20120775920	20120427
EP2702146 A4	20150121	EP20120775920	20120427
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EP3415619 A2	20181219	EP20180180597	20120427
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EP3418380 A1	20181226	EP20180180599	20120427
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IL264056 A0	20190131	IL20120264056	20120427
IN09445CN2013 A	20160624	IN2013CN09445	20131125
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JP2018193389 A2	20181206	JP20180139977	20180726
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RU2644681 C2	20180213	RU20130150707	20120427
SG10201603460Y A1	20160629	SG20161003460	20120427
SG194233 A1	20131230	SG20130080106	20120427
US2015133317 AA	20150514	US20120261763	20120427
WO12148497 A2	20121101	WO2012US00221	20120427
WO12148497 A3	20130221	WO2012US00221	20120427

Priority:

US20110517976P	20110428	US20110575652P	20110824	US20120599870P	20120216
US20120559870P	20120216	US20120608571P	20120308	AU20120249158	20120427
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AU20180286625	20181231				

Probable Assignee: BOARD OF TRUSTEES OF LELAND STANFORD JUNIOR UNIV

Assignee(s): (std):	BOARD OF TRUSTEES OF LELAND STANFORD JUNIOR UNIV ; US DEPT VETERANS AFFAIRS ; ROBINSON WILLIAM H ; UNIV LELAND STANFORD JUNIOR ; SOKOLOVE JEREMY ; TAN YANN CHONG ; US GOV ; US GOVERNMENT ; ZE BOARD OF TRASTIZ OF ZE LELAND STENFORD DZHUNIOR YUNIVERSITI
Assignee(s):	DEPARTMENT OF VETERANS AFFEJRS ; USA GOVERNMENT ; THE BOARD OF TRUSTEES OF THE LELAND STANFORD JUNIOR UNIVERSITY ; US DEPARTMENT OF VETERANS AFFAIRS ; BOARD OF TRUSTEES OF LELAND STANFORD JUNIOR UNIVERSITY ; BOARD OF TRUSTEES OF THE LELAND STANFORD JUNIOR UNIV ; DEPARTMENT OF VETERANS AFFAIRS
Inventor(s): (std):	ROBINSON WILLIAM H ; SOKOLOVE JEREMY ; TAN YANN CHONG ; JEREMY SOKOLOVE ; YANN CHONG TAN ; WILLIAM H ROBINSON
Agent(s):	SPRUSON AND FERGUSON; GOWLING LAFLEUR HENDERSON LLP; GOODFELLOW HUGH ROBIN; TRUSCOTT GLYN JOHN; ELKINGTON AND FIFE LLP; RUI ZHI CO; LUZZATTO AND LUZZATTO; KAWAMOTO KAZUYA; SHIMIZU HATSUSHI; OSAKABE SUGURU; TN LYU; SPRUSON AND FERGUSON ASIA PTE LTD; SHERWOOD PAMELA J
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 CL 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 PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AU2012249158 AA	20121101	LSPB	+	published / reissued	
AU2012249158 BB	20170629	LSGT	+	granted / extensions (spc, cpc, pte)	
AU2012249158 BB	20171026	LSGT	+FGA	LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)	
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AU2017232235 AA	20171012	LSPB	+	published / reissued	
AU2018286622 AA	20190124	LSPB	+	published / reissued	
AU2018286623 AA	20190124	LSPB	+	published / reissued	
AU2018286624 AA	20190124	LSPB	+	published / reissued	
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CA2833917 AA	20131022	LSPB	+	published / reissued	
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CN103732738 A	20140416	LSPB	+	published / reissued	
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DK2702146 T3	20190311	LSGT	+	granted / extensions (spc, cpc, pte)	
DK2702146 T3	20320427	PEXP		Calculated Patent Term Expiry	
EP2702146 A2	20140305	LSPB	+	published / reissued	
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EP2702146 A4	20180815	LSGT	+INTG	INTENTION TO GRANT ANNOUNCED	EFFECTIVE DATE : 20180719
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EP2702146 B1	20181215	LSNP	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : AT REF LEGAL EVENT CODE : REF REF DOCUMENT NUMBER : 1070237 COUNTRY OF REF DOCUMENT : AT KIND CODE OF REF DOCUMENT : T DESIGNATED STATE(S) : EFFECTIVE DATE : 20181215
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EP2702146 B1	20320427	PEXP		Calculated Patent Term Expiry	
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EP3415619 A2	20181219	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20180628
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EP3418380 A1	20181226	LSPB	+	published / reissued	
EP3421591 A1	20190102	LSPB	+	published / reissued	
EP3421592 A1	20190102	LSPB	+	published / reissued	
HK1195339 A1	20141107	LSPB	+	published / reissued	
IL229122 A1	20190131	LSPB	+	published / reissued	
IN09445CN2013 A	20160624	LSPB	+	published / reissued	
IN201948004494 A	20190412	LSPB	+	published / reissued	
IN201948004694 A	20190412	LSPB	+	published / reissued	
IN201948004842 A	20190222	LSPB	+	published / reissued	
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KR101776192 B1	20320427	PEXP		Calculated Patent Term Expiry
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KR20140057692 A	20170901	LSGT	+GRNT	WRITTEN DECISION TO GRANT
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KR20190012281 A	20190401	LSES	-E902	NOTIFICATION OF REASON FOR REFUSAL
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KR20190014574 A	20190227	LSES	A201	REQUEST FOR EXAMINATION
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SG10201603460Y A1	20160629	LSPB	+	published / reissued	
SG194233 A1	20131230	LSPB	+	published / reissued	
US2015133317 AA	20150514	LSPB	+	published / reissued	
US2015133317 AA	20140519	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : THE BOARD OF TRUSTEES OF THE LELAND STANFORD JUNIO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:ROBINSON, WILLIAM H.; REEL/FRAME:032926/0116 EFFECTIVE DATE : 20121130
US2015133317 AA	20140519	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : THE BOARD OF TRUSTEES OF THE LELAND STANFORD JUNIO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:TAN, YANN CHONG; SOKOLOVE, JEREMY; SIGNING DATES FROM 20121205 TO 20121207; REEL/FRAME:032926/0119
US2015133317 AA	20140519	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : DEPARTMENT OF VETERANS AFFAIRS, DISTRICT OF COLUMB OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:ROBINSON, WILLIAM H.; REEL/FRAME:032926/0116 EFFECTIVE DATE : 20121130
US2015133317 AA	20170922	LSES	NFA1	Non Final Action Mailed	
US2015133317 AA	20190227	LSAL	NAF1	Notice of Appeal Filed	
WO12148497 A2	20121101	LSPB	+	published / reissued	
WO12148497 A3	20131022	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2833917 COUNTRY OF REF DOCUMENT : CA
WO12148497 A3	20131024	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2014508340 COUNTRY OF REF DOCUMENT : JP KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :
WO12148497 A3	20131025	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : MX/A/2013/012493 COUNTRY OF REF DOCUMENT : MX
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ZA201308027 A	20150429	LSGT	+	granted / extensions (spc, cpc, pte)	
ZA201308027 A	20331021	PEXP		Calculated Patent Term Expiry	

Title: ENERGY AND CHEMICAL SPECIES UTILITY MANAGEMENT SYSTEM

Abstract: A method for energy and chemical species utility management having an integrated software system and infrastructure arrangements configured to manage one or more levels of utilities operation, arranged in co-operative fashion to achieve collective goals.

Classifications:

International (IPC 8-9): A01D46/00 G06F17/00 G06F17/30 G06F17/50

G06F7/00 G06F9/44 (Advanced/Invention);

A01D46/00 G06F17/00 G06F17/30 G06F17/50 G06F7/00

G06F9/44 (Core/Invention)

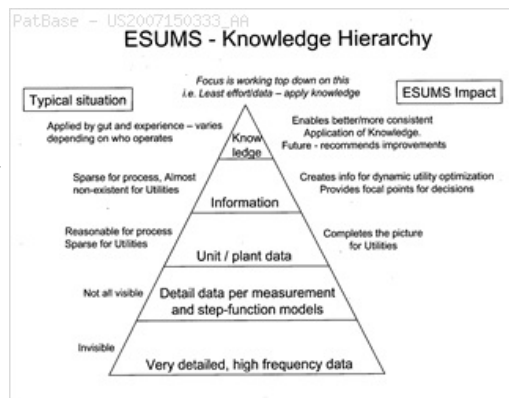
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G06Q30/0205 G06Q50/04 G06Q50/06

European: G06F17/50 G06Q10/04 G06Q10/06 G06Q30/0205 G06Q50/04

G06Q50/06 S06F217/78

US: 705/10 705/10P 705/7 705/7.34 705/7.340P 705/7S



Family:

Publication number	Publication date	Application number	Application date
US2007150333 AA	20070628	US20060515957	20060905
WO07028158 A2	20070308	WO2006US34565	20060905
WO07028158 A3	20070927	WO2006US34565	20060905

Priority:

US20050714038P 20050902 US20060515957 20060905

Probable Assignee: SUPPORT TECHNICAL SERVICE INC

Assignee(s): (std): ALLAN PETER ; ELLISON BRENT ; HURST ROGER ; KHATER AJAY ; KRITZINGER JOHAN A ; LIGHTRIDGE RESOURCES LLC

Assignee(s): SUPPORT TECHNICAL SERVICE INC

Inventor(s): (std): ALLAN PETER ; ELLISON BRENT ; HURST ROGER ; KHATER AJAY ; KRITZINGER JOHAN A

Inventor(s): KRITZINGER JOHAN

Agent(s): ARNOLD AND FERRERA LLP

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD MG MK ML MN MR 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 SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

[View legal status timeline](#)

Patent	Date recorded	Event group	Code	Event	Details
US2007150333 AA	20070628	LSPB	+	published / reissued	
US2007150333 AA	20101120	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US2007150333 AA	20101120	LSWD	-STCB	INFORMATION ON STATUS: APPLICATION DISCONTINUATION	TEXT : ABANDONED -- FAILURE TO RESPOND TO AN OFFICE ACTION
US2007150333 AA	20141029	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTRIDGE RESOURCES, LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:SAHIB, ASHUTOSH; REEL/FRAME:034086/0871 EFFECTIVE DATE : 20060516
US2007150333 AA	20141029	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SUPPORT TECHNICAL SERVICE, INC., TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:LIGHTRIDGE RESOURCES, LLC; LIGHTSOURCE, LP; HURST, ROGER; REEL/FRAME:034062/0399

EFFECTIVE DATE : 20140930

US2007150333 AA	20141029	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTRIDGE RESOURCES, LLC, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:HURST, ROGER; KRITZINGER, JOHAN; ALLEN, PETER; AND OTHERS; SIGNING DATES FROM 20060515 TO 20060519; REEL/FRAME:034086/0843
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WO07028158 A2	20070308	LSPB	+	published / reissued
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WO07028158 A3	20080304	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
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WO07028158 A3	20081008	LSNE	-122	EP: PCT APPLICATION NON- ENTRY IN EUROPEAN PHASE	REF DOCUMENT NUMBER : 06802983 COUNTRY OF REF DOCUMENT : EP KIND CODE OF REF DOCUMENT : A2 DESIGNATED STATE(S) :
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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.

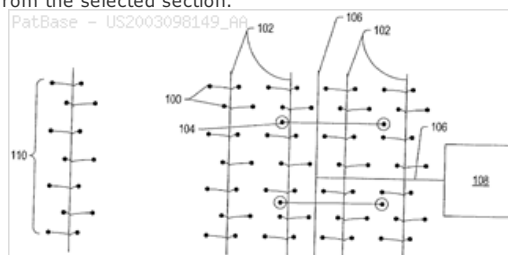
Classifications:

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 **CPC:** E21B43/14 E21B43/2406 E21B43/2408 Y10T137/0391 E21B47/065 E21B7/04 E21B17/10 E21B36/00 E21B36/02 E21B36/025 E21B36/04 E21B43/166 E21B43/24 E21B43/243 E21B43/247 E21B43/281 E21B43/30 E21B43/305 Y02C10/14

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
AU2002256340 AA	20021105	AU20020256340	20020424
AU2002304692 AA	20021105	AU20020304692	20020424
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EA200301150 A1	20040429	EA20030001150	20020424
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IN01747DN2003 A	20051014	IN2003DN01747	20031024
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PE11222002 A1	20030203	PE20020000345	20020424
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WO02085821 A2	20021031	WO2002US12941	20020424
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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

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

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

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AT384852 E	20080215	LSGT	+	granted / extensions (spc, cpc, pte)	
AT384852 E	20080715	LSLE	-RER	CEASED AS TO PARAGRAPH 5 LIT. 3 LAW INTRODUCING PATENT TREATIES	
AT384852 E	20220424	PEXP		Calculated Patent Term Expiry	
AU2002256340 AA	20021105	LSPB	+	published / reissued	
AU2002304692 AA	20021105	LSPB	+	published / reissued	
AU2002304692 BB	20081211	LSGT	+	granted / extensions (spc, cpc, pte)	
AU2002304692 BB	20090205	LSRE	DA2	APPLICATIONS FOR AMENDMENT SECTION 104	TEXT : THE NATURE OF THE AMENDMENT IS AS SHOWN IN THE STATEMENT(S) FILED 22 DEC 2008.
AU2002304692 BB	20220424	PEXP		Calculated Patent	

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AU2002304692 CA	20171116	LSLE	-MK14	PATENT CEASED SECTION 143(A) (ANNUAL FEES NOT PAID) OR EXPIRED		
CA2445173 AA	20031023	LSPB	+	published / reissued		
CA2445173 AA	20070329	LSSES	+EEER	EXAMINATION REQUEST		
CA2445173 C	20110315	LSGT	+	granted / extensions (spc, cpc, pte)		
CA2445173 C	20180605	LSLE	-MKLA	LAPSED	EFFECTIVE DATE : 20180424	
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CA2668385 AA	20021031	LSPB	+	published / reissued		
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CA2668385 C	20120522	LSGT	+	granted / extensions (spc, cpc, pte)		
CA2668385 C	20180605	LSLE	-MKLA	LAPSED	EFFECTIVE DATE : 20180424	
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CA2668387 C	20120522	LSGT	+	granted / extensions (spc, cpc, pte)		
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extensions (spc, cpc, pte)					
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CN1639443 A	20050713	LSPB	+C06	PUBLICATION	
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DE60224793 T2	20220424	PEXP		Calculated Patent Term Expiry	
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EP1381749 A2	20040121	LSPB	+	published / reissued	
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EP1381749 A2	20041103	LSES	+17Q	FIRST EXAMINATION REPORT DESPATCHED	EFFECTIVE DATE : 20040920
EP1381749 A2	20160729	LSFE	+PGFP	ANNUAL FEE PAID TO NATIONAL OFFICE [ANNOUNCED FROM NATIONAL OFFICE TO EPO]	COUNTRY OF REF DOCUMENT : DE PAYMENT DATE : 20160419 YEAR OF FEE PAYMENT : 15
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EP1381749 B1	20080215	LSNP	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : CH REF LEGAL EVENT CODE : EP
EP1381749 B1	20080305	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : IE REF LEGAL EVENT CODE : FG4D
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NZ529140 A	20051125	LSGT	+PSEA	PATENT SEALED	
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US2003098605 AA	20030529	LSPB	+	published / reissued	
US2003100451 AA	20030529	LSPB	+	published / reissued	
US2003102124 AA	20030605	LSPB	+	published / reissued	
US2003102125 AA	20030605	LSPB	+	published / reissued	
US2003102126 AA	20030605	LSPB	+	published /	

US2003102130 AA	20030605	LSPB	+	reissued published / reissued	
US2003116315 AA	20030626	LSPB	+	published / reissued	
US2003155111 AA	20030821	LSPB	+	published / reissued	
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US6948562 BB	20021017	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:WELLINGTON, SCOTT LEE; DE ROUFFIGNAC, ERIC PIERRE; KARANIKAS, JOHN MICHAEL; AND OTHERS; REEL/FRAME:013407/0957 EFFECTIVE DATE : 20020930
US6948562 BB	20050907	LSGT	PAT1	Patented Case	
US6948562 BB	20090302	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6948562 BB	20121204	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
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US6948562 BB	20220717	PEXP		Calculated Patent Term Expiry (PTA 84 days and a terminal disclaimer has been filed)	
US6964300 BB	20051115	LSGT	+	granted / extensions (spc, cpc, pte)	
US6964300 BB	20021022	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VINEGAR, HAROLD J.; DE ROUFFIGNAC, ERIC PIERRE; KARANIKAS, JOHN MICHAEL; AND OTHERS; REEL/FRAME:013421/0581 EFFECTIVE DATE : 20020927
US6964300 BB	20051026	LSGT	PAT1	Patented Case	
US6964300 BB	20090430	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6964300 BB	20130311	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US6964300 BB	20171211	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US6964300 BB	20171211	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US6964300 BB	20171211	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US6964300 BB	20180102	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY	EFFECTIVE DATE : 20171115

MAINTENANCE FEE						
US6964300 BB	20221121	PEXP		Calculated Patent Term Expiry (PTA 211 days)		
US6966374 BB	20051122	LSGT	+	granted / extensions (spc, cpc, pte)		
US6966374 BB	20021023	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VINEGAR, HAROLD J; SUMNU-DINDORUK, MELIHA DENİZ; WELLINGTON, SCOTT LEE; REEL/FRAME:013421/0128 EFFECTIVE DATE : 20020924	
US6966374 BB	20051102	LSGT	PAT1	Patented Case		
US6966374 BB	20090430	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4	
US6966374 BB	20130311	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8	
US6966374 BB	20171218	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)	
US6966374 BB	20171218	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362		
US6966374 BB	20171218	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362	
US6966374 BB	20180109	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20171122	
US6966374 BB	20221021	PEXP		Calculated Patent Term Expiry (PTA 180 days)		
US6981548 BB	20060103	LSGT	+	granted / extensions (spc, cpc, pte)		
US6981548 BB	20021028	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:WELLINGTON, SCOTT LEE; CRANE, STEVEN DEXTER; DE ROUFFIGNAC, ERIC PIERRE; AND OTHERS; REEL/FRAME:013449/0050 EFFECTIVE DATE : 20020930	
US6981548 BB	20051214	LSGT	PAT1	Patented Case		
US6981548 BB	20090630	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4	
US6981548 BB	20130612	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8	
US6981548 BB	20180129	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)	
US6981548 BB	20180129	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362		
US6981548 BB	20180129	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362	
US6981548 BB	20180220	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180103	
US6981548 BB	20220424	PEXP		Calculated Patent Term Expiry (a terminal disclaimer		

US6991036 BB	20060131	LSGT	+	has been filed) granted / extensions (spc, cpc, pte)	
US6991036 BB	20021104	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:SUMNU-DINDORUK, MELIHA; DE ROUFFIGNAC, ERIC PIERRE; KARANIKAS, JOHN MICHAEL; AND OTHERS; REEL/FRAME:013478/0446; SIGNING DATES FROM 20020923 TO 20020927
US6991036 BB	20060111	LSGT	PAT1	Patented Case	
US6991036 BB	20090630	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6991036 BB	20130703	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US6991036 BB	20170911	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US6991036 BB	20180226	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US6991036 BB	20180226	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US6991036 BB	20180226	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US6991036 BB	20180320	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180131
US6991036 BB	20230506	PEXP		Calculated Patent Term Expiry (PTA 377 days)	
US7040398 BB	20060509	LSGT	+	granted / extensions (spc, cpc, pte)	
US7040398 BB	20021104	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:WELLINGTON, SCOTT LEE; BERCHENKO, ILYA EMIL; DE ROUFFIGNAC, ERIC PIERRE; AND OTHERS; REEL/FRAME:013477/0897 EFFECTIVE DATE : 20020926
US7040398 BB	20060419	LSGT	PAT1	Patented Case	
US7040398 BB	20091007	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7040398 BB	20131009	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7040398 BB	20171218	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7040398 BB	20180604	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US7040398 BB	20180604	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7040398 BB	20180604	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362

US7040398 BB	20180626	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180509
US7040398 BB	20220602	PEXP		Calculated Patent Term Expiry (PTA 39 days)	
US7051807 BB	20060530	LSGT	+	granted / extensions (spc, cpc, pte)	
US7051807 BB	20021015	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VINEGAR, HAROLD J.; DE ROUFFIGNAC, ERIC PIERRE; KARANIKAS, JOHN MICHAEL; AND OTHERS; REEL/FRAME:013409/0808 EFFECTIVE DATE : 20020927
US7051807 BB	20060510	LSGT	PAT1	Patented Case	
US7051807 BB	20091007	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7051807 BB	20131030	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7051807 BB	20180108	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7051807 BB	20180625	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US7051807 BB	20180625	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7051807 BB	20180625	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7051807 BB	20180717	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180530
US7051807 BB	20240331	PEXP		Calculated Patent Term Expiry (PTA 707 days)	
US7055600 BB	20060606	LSGT	+	granted / extensions (spc, cpc, pte)	
US7055600 BB	20021104	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:MESSIER, MARGARET ANN; CRANE, STEVEN DEXTER; DE ROUFFIGNAC, ERIC PIERRE; AND OTHERS; REEL/FRAME:013477/0905 EFFECTIVE DATE : 20020930
US7055600 BB	20060517	LSGT	PAT1	Patented Case	
US7055600 BB	20091007	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7055600 BB	20131106	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7055600 BB	20180115	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7055600 BB	20180702	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US7055600 BB	20180702	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7055600 BB	20180702	LSLE	-STCH	INFORMATION ON	TEXT : PATENT EXPIRED DUE TO

				STATUS: PATENT DISCONTINUATION	NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7055600 BB	20180724	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180606
US7055600 BB	20240821	PEXP		Calculated Patent Term Expiry (PTA 850 days)	
US7066254 BB	20060627	LSGT	+	granted / extensions (spc, cpc, pte)	
US7066254 BB	20030224	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:VINEGAR, HAROLD J.; SUMNU-DINDORUK, MELIHA DENIZ; WELLINGTON, SCOTT LEE; AND OTHERS; REEL/FRAME:013796/0055; SIGNING DATES FROM 20030128 TO 20030207
US7066254 BB	20060607	LSGT	PAT1	Patented Case	
US7066254 BB	20091007	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7066254 BB	20131127	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7066254 BB	20180205	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7066254 BB	20180723	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US7066254 BB	20180723	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7066254 BB	20180723	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7066254 BB	20180814	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180627
US7066254 BB	20230914	PEXP		Calculated Patent Term Expiry (PTA 325 days and a terminal disclaimer has been filed)	
US7096942 BA	20060829	LSGT	+	granted / extensions (spc, cpc, pte)	
US7096942 BA	20021022	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:DE ROUFFIGNAC, ERIC PIERRE; BERCHENKO, ILYA EMIL; FOWLER, THOMAS DAVID; AND OTHERS; REEL/FRAME:013423/0749; SIGNING DATES FROM 20020916 TO 20020926
US7096942 BA	20060809	LSGT	PAT1	Patented Case	
US7096942 BA	20091216	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7096942 BA	20140129	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7096942 BA	20180409	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7096942 BA	20181001	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.); ENTITY STATUS OF PATENT OWNER :

LARGE ENTITY					
US7096942 BA	20181001	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7096942 BA	20181001	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7096942 BA	20181023	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180829
US7096942 BA	20230517	PEXP		Calculated Patent Term Expiry (PTA 388 days and a terminal disclaimer has been filed)	
WO02085821 A2	20021031	LSPB	+	published / reissued	
WO02085821 A2	20040311	LSWD	REG	REFERENCE TO NATIONAL CODE	REF COUNTRY CODE : DE REF LEGAL EVENT CODE : 8642
WO02085821 A2	20040623	LSNE	-122	EP: PCT APPLICATION NON-ENTRY IN EUROPEAN PHASE	REF COUNTRY CODE : WO
WO02085821 A2	20060414	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : JP
WO02085821 A2	20060414	LSWD	-WWW	WIPO INFORMATION: WITHDRAWN IN NATIONAL OFFICE	TEXT : JP
WO02086276 A2	20021031	LSPB	+	published / reissued	
WO02086276 A3	20031023	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2445173 COUNTRY OF REF DOCUMENT : CA
WO02086276 A3	20031024	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 1747/DELNP/2003 COUNTRY OF REF DOCUMENT : IN
WO02086276 A3	20031024	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 529140 COUNTRY OF REF DOCUMENT : NZ
WO02086276 A3	20031027	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2002732664 COUNTRY OF REF DOCUMENT : EP
WO02086276 A3	20031031	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2002304692 COUNTRY OF REF DOCUMENT : AU
WO02086276 A3	20031121	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 200301150 COUNTRY OF REF DOCUMENT : EA
WO02086276 A3	20031128	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 028108639 COUNTRY OF REF DOCUMENT : CN
WO02086276 A3	20040121	LSPB	+WWP	WIPO INFORMATION: PUBLISHED IN NATIONAL OFFICE	REF DOCUMENT NUMBER : 2002732664 COUNTRY OF REF DOCUMENT : EP
WO02086276 A3	20040311	LSWD	REG	REFERENCE TO NATIONAL CODE	REF COUNTRY CODE : DE REF LEGAL EVENT CODE : 8642
WO02086276 A3	20050729	LSPB	+WWP	WIPO INFORMATION: PUBLISHED IN NATIONAL OFFICE	REF DOCUMENT NUMBER : 529140 COUNTRY OF REF DOCUMENT : NZ
WO02086276 A3	20051110	LSGT	+WWG	WIPO INFORMATION: GRANT IN NATIONAL OFFICE	REF DOCUMENT NUMBER : 529140 COUNTRY OF REF DOCUMENT : NZ

WO02086276 A3	20060414	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : JP
WO02086276 A3	20060414	LSWD	-WWW	WIPO INFORMATION: WITHDRAWN IN NATIONAL OFFICE	TEXT : JP
WO02086276 A3	20080123	LSGT	+WWG	WIPO INFORMATION: GRANT IN NATIONAL OFFICE	REF DOCUMENT NUMBER : 2002732664 COUNTRY OF REF DOCUMENT : EP

Title: VOICE INTERACTION WITH AND CONTROL OF INSPECTION EQUIPMENT

Abstract: The non-destructive inspection equipment is provided with voice interaction to interface with the inspector and/or operator who preferably controls the inspection equipment and the inspection process, at least in part, through the use of voice control and by receiving audio and/or video feedback from the inspection equipment. The overall inspection quality is preferably substantially improved when the inspector and/or operator can focus entirely on the material under inspection while maintaining full control of the inspection equipment and the inspection process. The inspection equipment and its interfaces are adapted and fine-tuned for interaction with humans, particularly in a harsh noise industrial environment. Further, the voice interaction preferably allows the inspector and/or operator to operate the inspection equipment while wearing gloves or with dirty hands as he/she will not need to constantly physically manipulate the inspection equipment.

Classifications:

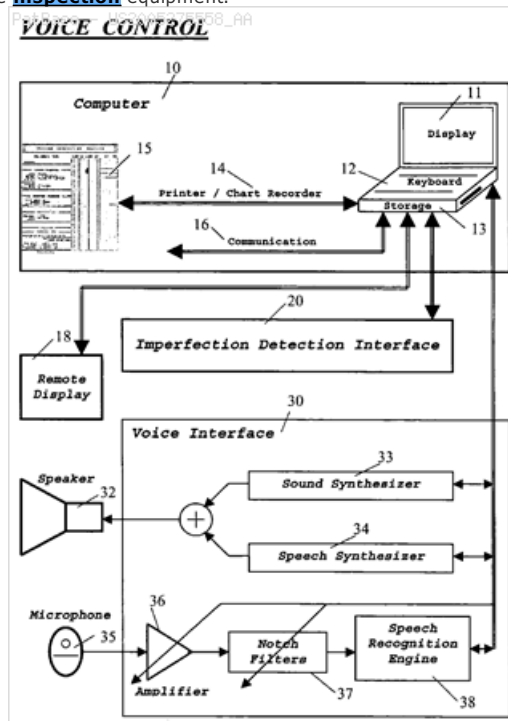
International (IPC 8-9): E21B17/01 E21B47/00 E21B47/007 E21B47/113 G01B3/44 G01B5/00 G01B5/14 G01B5/28 G01B5/30 G01D1/00 G01M5/00 G01M99/00 G01N19/00 G01N21/84 G01N21/952 G01N27/82 G01N29/00 G01N29/36 G01N37/00 G05B23/02 G06F11/30 G06F17/00 G06F17/40 G06F17/50 G06F19/00 G06F3/16 G06K9/00 G07C3/14 G08B25/08 G10L13/04 G10L15/00 G10L15/22 G10L17/00 G16C60/00 H04M11/00 (Advanced/Invention); A61B5/117 G01N27/00 G06F17/14 G06F17/40 G06F3/16 G07C1/00 G07C3/10 G10L13/00 G10L15/00 G10L15/22 H03G3/00 H03G3/12 H03H11/04 H03H17/02 H03H5/02 (Advanced/Non-invention); G01B5/28 G01B5/30 G01D1/00 G01N21/84 G01N27/82 G01N29/36 G01N37/00 G06F11/30 G06F17/00 G06F17/40 G06F19/00 G06F3/16 G06K9/00 G08B25/08 G10L13/00 G10L15/00 G10L17/00 H04M11/00 (Core/Invention); A61B5/117 G06F17/40 G06F3/16 G07C3/00 H03G3/04 H03H17/02 H03H5/00 (Core/Non-invention)

International (IPC 1-7): G08B25/08

CPC: G07C3/14 G10L17/00 Y02P90/22 G01R33/072 G01N27/9046 G05B19/41875 G05B2219/32196 G01M5/0033 G10L15/22 Y02P80/40 E21B47/0006 E21B17/01 E21B33/064 G06F17/5009 G10L15/26 G10L17/22 G06F3/167

European: G01N27/90C G01R33/07A G05B19/418Q G06F3/16 G10L17/00U S05B219/32196 S10L15/22

US: 1/1 324/228 340/692 379/100.06 382/115 382/115S 702/150 702/155 702/182 702/182P 702/183 702/185 702/185P 702/185S 702/189 702/189P 702/190 702/33 702/34 702/35 702/35P 702/35S 702/6 704/246 704/246S 704/272 704/275 704/275P 704/E15.04 704/E17.001 704/E17.001S 704/E17.003 704/E17.003S 707/104.1 707/999.104 707/999.104S 707/999.107 707/999.107S 707/E17.005 707/E17.005S 73/602 73/618

**Family:**

Publication number	Publication date	Application number	Application date
CA2587679 AA	20070515	CA20052587679	20051118
CA2587679 C	20140603	CA20052587679	20051118
CA2631884 AA	20090102	CA20082631884	20080522
CA2631884 C	20160112	CA20082631884	20080522
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CA2632490 C	20160126	CA20082632490	20080522
CA2910771 AA	20090102	CA20082910771	20080522
CA2912296 AA	20081227	CA20082912296	20080522
CA2964243 AA	20171022	CA20172964243	20170412
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US8831894 BB	20140909	US20110304136	20111123
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WO05124716 A3	20061214	WO2005US20279	20050609

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Priority:

US20040867004	20040614	US20040995692	20041122	US20050079745	20050314
WO2005US20279	20050609	WO2005US42035	20051118	US20070743550	20070502
US20070769216	20070627	US20070772357	20070702	CA20082631884	20080522
CA20082632490	20080522	US20110304061	20111123	US20110304136	20111123
US20130095085	20131203	CA20152631884	20151105	CA20152632490	20151127
US20160136282	20160422	US20170660038	20170726		

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Inventor(s): (std): PAPADIMITIROU WANDA ; PAPADIMITRIOU STYLIANOS ; PAPADIMITRIOU WANDA ; PAPADIMITRIOU WANDA G

Agent(s): DEETH WILLIAMS WALL LLP; THE MATTHEWS FIRM; MATTHEWS FIRM; KENNETH L NASH; KENNETH L; NASH KENNETH L

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

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
CA2587679 AA	20070515	LSPB	+	published / reissued	
CA2587679 AA	20091217	LSES	+EEER	EXAMINATION REQUEST	
CA2587679 C	20140603	LSGT	+	granted / extensions (spc, cpc, pte)	
CA2587679 C	20251118	PEXP		Calculated Patent Term Expiry	
CA2631884 AA	20090102	LSPB	+	published / reissued	
CA2631884 AA	20080522	LSES	+EEER	EXAMINATION REQUEST	
CA2631884 C	20160112	LSGT	+	granted / extensions (spc, cpc, pte)	
CA2631884 C	20280522	PEXP		Calculated Patent Term Expiry	
CA2632490 AA	20081227	LSPB	+	published / reissued	
CA2632490 AA	20080522	LSES	+EEER	EXAMINATION REQUEST	
CA2632490 C	20160126	LSGT	+	granted / extensions (spc, cpc, pte)	
CA2632490 C	20280522	PEXP		Calculated Patent Term Expiry	
CA2910771 AA	20090102	LSPB	+	published / reissued	
CA2910771 AA	20151124	LSES	+EEER	EXAMINATION REQUEST	EFFECTIVE DATE : 20151112
CA2912296 AA	20081227	LSPB	+	published / reissued	
CA2912296 AA	20151217	LSES	+EEER	EXAMINATION REQUEST	EFFECTIVE DATE : 20151210
CA2964243 AA	20171022	LSPB	+	published / reissued	
EP1766611 A2	20070328	LSPB	+	published / reissued	
EP1766611 A2	20070328	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20070115
EP1766611 A2	20070718	LSWD	-18W	APPLICATION WITHDRAWN	EFFECTIVE DATE : 20070525
US2005275558 AA	20051215	LSPB	+	published /	

reissued					
US2005275558 AA	20070613	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2006111852 AA	20060525	LSPB	+	published / reissued	
US2006111852 AA	20061206	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2006111872 AA	20060525	LSPB	+	published / reissued	
US2006111872 AA	20070523	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2007219757 AA	20070920	LSPB	+	published / reissued	
US2007219757 AA	20080702	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2008004839 AA	20080103	LSPB	+	published / reissued	
US2008004839 AA	20111012	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2008004882 AA	20080103	LSPB	+	published / reissued	
US2008004882 AA	20111207	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US2012130651 AA	20120524	LSPB	+	published / reissued	
US2013060487 AA	20130307	LSPB	+	published / reissued	
US2014107947 AA	20140417	LSPB	+	published / reissued	
US2016237804 AA	20160818	LSPB	+	published / reissued	
US2016237804 AA	20170922	LSES	NFA1	Non Final Action Mailed	
US2016237804 AA	20180813	LSES	NFA1	Non Final Action Mailed	
US2017372704 AA	20171228	LSPB	+	published / reissued	
US2017372704 AA	20190425	LSES	NFA1	Non Final Action Mailed	
US7155369 BB	20061226	LSGT	+	granted / extensions (spc, cpc, pte)	
US7155369 BB	20061206	LSGT	PAT1	Patented Case	
US7155369 BB	20100113	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7155369 BB	20131226	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7155369 BB	20180626	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 12
US7155369 BB	20250106	PEXP		Calculated Patent Term Expiry (PTA 45 days)	
US7231320 BB	20070612	LSGT	+	granted / extensions (spc, cpc, pte)	
US7231320 BB	20070523	LSGT	PAT1	Patented Case	
US7231320 BB	20101123	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7231320 BB	20140709	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
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US7231320 BB	20181213	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 12
US7231320 BB	20250314	PEXP		Calculated Patent Term Expiry	
US7240010 BB	20070703	LSGT	+	granted / extensions (spc, cpc, pte)	
US7240010 BB	20070613	LSGT	PAT1	Patented Case	
US7240010 BB	20101123	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7240010 BB	20140709	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7240010 BB	20190218	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.); ENTITY STATUS OF PATENT OWNER: SMALL ENTITY
US7240010 BB	20190312	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : 11.5 YR SURCHARGE- LATE PMT W/IN 6 MO, SMALL ENTITY (ORIGINAL EVENT CODE: M2556); ENTITY STATUS OF PATENT OWNER: SMALL ENTITY
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US7403871 BB	20080702	LSGT	PAT1	Patented Case	
US7403871 BB	20111018	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7403871 BB	20160119	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7403871 BB	20270502	PEXP		Calculated Patent Term Expiry	
US8050874 BB	20111101	LSGT	+	granted / extensions (spc, cpc, pte)	
US8050874 BB	20111012	LSGT	PAT1	Patented Case	
US8050874 BB	20141120	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
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US8050874 BB	20190501	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 8
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US8086425 BB	20111207	LSGT	PAT1	Patented Case	
US8086425 BB	20150402	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
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US8086425 BB	20190312	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US8086425 BB	20281218	PEXP		Calculated Patent Term Expiry (PTA 540 days and a terminal disclaimer has been filed)	
US8428910 BB	20130423	LSGT	+	granted / extensions (spc, cpc, pte)	
US8428910 BB	20130403	LSGT	PAT1	Patented Case	

US8428910 BB	20161024	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8428910 BB	20170328	LSRE	CC	CERTIFICATE OF CORRECTION	
US8428910 BB	20311123	PEXP		Calculated Patent Term Expiry (a terminal disclaimer has been filed)	
US8831894 BB	20140909	LSGT	+	granted / extensions (spc, cpc, pte)	
US8831894 BB	20140820	LSGT	PAT1	Patented Case	
US8831894 BB	20161129	LSRE	CC	CERTIFICATE OF CORRECTION	
US8831894 BB	20180306	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8831894 BB	20321110	PEXP		Calculated Patent Term Expiry (PTA 353 days)	
US9322763 BB	20160426	LSGT	+	granted / extensions (spc, cpc, pte)	
US9322763 BB	20160406	LSGT	PAT1	Patented Case	
US9322763 BB	20170404	LSRE	CC	CERTIFICATE OF CORRECTION	
US9322763 BB	20331203	PEXP		Calculated Patent Term Expiry	
WO05124716 A2	20051229	LSPB	+	published / reissued	
WO05124716 A3	20061215	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO05124716 A3	20061215	LSWD	-WWW	WIPO INFORMATION: WITHDRAWN IN NATIONAL OFFICE	TEXT : DE
WO05124716 A3	20070115	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2005759160 COUNTRY OF REF DOCUMENT : EP
WO05124716 A3	20070328	LSPB	+WWP	WIPO INFORMATION: PUBLISHED IN NATIONAL OFFICE	REF DOCUMENT NUMBER : 2005759160 COUNTRY OF REF DOCUMENT : EP
WO05124716 A3	20070525	LSWD	-WWW	WIPO INFORMATION: WITHDRAWN IN NATIONAL OFFICE	REF DOCUMENT NUMBER : 2005759160 COUNTRY OF REF DOCUMENT : EP
WO06057933 A2	20060601	LSPB	+	published / reissued	
WO06057933 A3	20070515	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2587679 COUNTRY OF REF DOCUMENT : CA
WO06057933 A3	20070523	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO06057933 A3	20071219	LSNE	-122	EP: PCT APPLICATION NON-ENTRY IN EUROPEAN PHASE	REF DOCUMENT NUMBER : 05825093 COUNTRY OF REF DOCUMENT : EP KIND CODE OF REF DOCUMENT : A2 DESIGNATED STATE(S) :
WO06099383 A1	20060921	LSPB	+	published / reissued	
WO06099383 A1	20070915	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO06099383 A1	20071014	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : RU
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WO06099383 A1	20090204	LSNE	-122	EP: PCT APPLICATION NON- ENTRY IN EUROPEAN PHASE	REF DOCUMENT NUMBER : 06738147 COUNTRY OF REF DOCUMENT : EP KIND CODE OF REF DOCUMENT : A1 DESIGNATED STATE(S) :
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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:

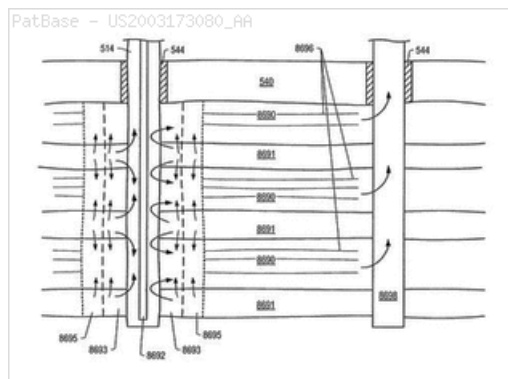
International (IPC 8-9): E21B43/24 E21B43/243 E21B43/247 E21B43/30 E21B43/34 E21B47/06 E21C41/24 (Advanced/Invention)

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): SHAHIN GORDON THOMAS ; 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 ; SHELL OIL COMPANY

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

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

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

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
US2003173080 AA	20030918	LSPB	+	published / reissued	
US2006213657 AA	20060928	LSPB	+	published / reissued	
US2006213657 AA	20070516	LSGT	STCF	INFORMATION ON STATUS: PATENT GRANT	TEXT : PATENTED CASE
US6991032 BB	20060131	LSGT	+	granted / extensions (spc, cpc, pte)	
US6991032 BB	20021022	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:BERCHENKO, ILYA EMIL; DE ROUFFIGNAC, ERIC PIERRE; FOWLER, THOMAS DAVID; AND OTHERS; REEL/FRAME:013426/0591; SIGNING DATES FROM 20020916 TO 20020927
US6991032 BB	20060111	LSGT	PAT1	Patented Case	

US6991032 BB	20090630	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6991032 BB	20130703	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US6991032 BB	20170911	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US6991032 BB	20180226	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US6991032 BB	20180226	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US6991032 BB	20180226	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US6991032 BB	20180320	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180131
US6991032 BB	20230827	PEXP		Calculated Patent Term Expiry (PTA 490 days and a terminal disclaimer has been filed)	
US7225866 BB	20070605	LSGT	+	granted / extensions (spc, cpc, pte)	
US7225866 BB	20070516	LSGT	PAT1	Patented Case	
US7225866 BB	20101019	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7225866 BB	20141105	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7225866 BB	20190121	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.); ENTITY STATUS OF PATENT OWNER: LARGE ENTITY
US7225866 BB	20260131	PEXP		Calculated Patent Term Expiry (a terminal disclaimer has been filed)	

Title: IN SITU THERMAL PROCESSING OF A RELATIVELY IMPERMEABLE FORMATION IN A REDUCING ENVIRONMENT

Abstract: A method for treating a relatively low permeability 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 pyrolyze at least some hydrocarbons within the selected section. A mixture of hydrocarbons may be produced from the selected section. In some embodiments, a reducing environment may be maintained in a portion of the formation.

Classifications:

International (IPC 8-9): E21B43/24 E21B43/243 E21B43/247 E21B43/29 E21B43/295 E21B43/30 E21B43/34 E21B43/40 E21B47/06 (Advanced/Invention)

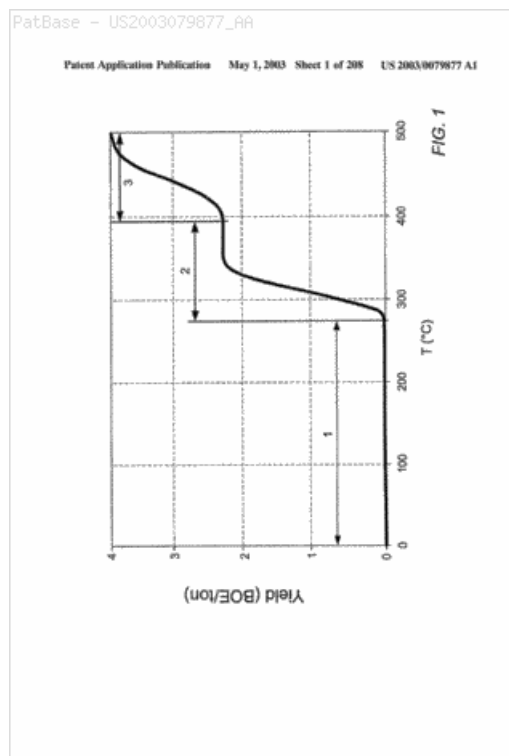
International (IPC 1-7): C10L E21B1/00 E21B43/24 E21B43/30 E21B43/40 E21B47/06

CPC: E21B43/243 E21B43/247 E21B43/30

European: E21B43/243 E21B43/247 E21B43/30

US: 166/245 166/250.01 166/257 166/266 166/267 166/272.1

166/272.100P 166/302 166/57 166/59 166/60 507/200 507/200P 585/1 585/2



Family:

Publication number	Publication date	Application number	Application date
AU2002303481 AA	20021105	AU20020303481	20020424
AU2002303481 AH	20091119	AU20020303481	20020424
US2003079877 AA	20030501	US20020128695	20020424
US2003130136 AA	20030710	US20020131349	20020424
US2003131995 AA	20030717	US20020128702	20020424
US6782947 BB	20040831	US20020128702	20020424
US7040400 BB	20060509	US20020131349	20020424
WO02086029 A2	20021031	WO2002US13121	20020424
WO02086029 A3	20091001	WO2002US13121	20020424

Priority:

US20010286083P 20010424 US20010340185P 20011024 WO2002US13121 20020424
 US20020131349 20020424 US20020128695 20020424 US20020128702 20020424

Probable Assignee: SHELL OIL CO

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

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

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

Inventor(s): AJAY M MADGAVKAR ; BRUCE ROBERTS ; BRUCE LEPPER ; BRUCE G HUNSUCKER ; CHARLIE R KEEDY ; CARLOS GLANDT ; ETUAN ZHANG ; ERIC DE ROUFFIGNAC ; GEORGE L STEGEMEIER ; FRED G CARL ; GORDON T SHAHIN ; HAROLD J VINEGAR ; JOHN M WARD ; JOHN M KARANIKAS ; JOHN M COLES ; JAMES L MENOTTI ; ILYA E BERCHENKO ; LAWRENCE J BIELAMOWICZ ; LANNY SCHOELING ; KIP PRATT ; KEVIN A MAHER ; MELIHA D SUMNU DINDORUK ; MARTIJN VAN HARDEVELD ; MARGARET MESSIER ; PHILIP T BAXLEY ; PETER VEENSTRA ; ROBERT C RYAN ; RONALD BASS ; SCOTT L WELLINGTON ; STEVE CRANE ;

TOM MIKUS ; THOMAS D FOWLER ; WADE WATKINS

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

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AU2002303481 AA	20021105	LSPB	+	published / reissued	
AU2002303481 AA	20040219	LSLE	-MK6	APPLICATION LAPSED SECTION 142(2)(F)/REG. 8.3(3) - PCT APPLIC. NOT ENTERING NATIONAL PHASE	
US2003079877 AA	20030501	LSPB	+	published / reissued	
US2003079877 AA	20060526	LSWD	-ABD2	Abandoned -- Failure to Pay Issue Fee	
US2003079877 AA	20060526	LSWD	-STCB	INFORMATION ON STATUS: APPLICATION DISCONTINUATION	TEXT : ABANDONED -- FAILURE TO PAY ISSUE FEE
US2003130136 AA	20030710	LSPB	+	published / reissued	
US2003131995 AA	20030717	LSPB	+	published / reissued	
US6782947 BB	20040831	LSGT	+	granted / extensions (spc, cpc, pte)	
US6782947 BB	20021015	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:DE ROUFFIGNAC, ERIC PIERRE; BERCHENKO, ILYA EMIL; FOWLER, THOMAS DAVID; AND OTHERS; REEL/FRAME:013406/0868 EFFECTIVE DATE : 20020926
US6782947 BB	20040812	LSGT	PAT1	Patented Case	
US6782947 BB	20080128	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US6782947 BB	20111111	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US6782947 BB	20160831	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US6782947 BB	20160926	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US6782947 BB	20160926	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US6782947 BB	20161018	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20160831
US6782947 BB	20220527	PEXP		Calculated Patent Term Expiry (PTA 33 days)	
US7040400 BB	20060509	LSGT	+	granted / extensions (spc, cpc, pte)	
US7040400 BB	20021017	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SHELL OIL COMPANY, TEXAS OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:DE ROUFFIGNAC, ERIC PIERRE; BERCHENKO, ILYA EMIL; FOWLER, THOMAS DAVID; AND

US7040400 BB	20060419	LSGT	PAT1	Patented Case	
US7040400 BB	20091007	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US7040400 BB	20131009	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 8
US7040400 BB	20171218	LSFE	FEPP	FEE PAYMENT PROCEDURE	TEXT : MAINTENANCE FEE REMINDER MAILED (ORIGINAL EVENT CODE: REM.)
US7040400 BB	20180604	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	TEXT : PATENT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES (ORIGINAL EVENT CODE: EXP.)
US7040400 BB	20180604	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US7040400 BB	20180604	LSLE	-STCH	INFORMATION ON STATUS: PATENT DISCONTINUATION	TEXT : PATENT EXPIRED DUE TO NONPAYMENT OF MAINTENANCE FEES UNDER 37 CFR 1.362
US7040400 BB	20180626	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20180509
US7040400 BB	20240223	PEXP		Calculated Patent Term Expiry (PTA 670 days and a terminal disclaimer has been filed)	
WO02086029 A2	20021031	LSPB	+	published / reissued	
WO02086029 A2	20031025	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO02086029 A2	20040311	LSWD	REG	REFERENCE TO NATIONAL CODE	REF COUNTRY CODE : DE REF LEGAL EVENT CODE : 8642
WO02086029 A2	20040714	LSNE	-122	EP: PCT APPLICATION NON- ENTRY IN EUROPEAN PHASE	REF COUNTRY CODE : WO
WO02086029 A2	20060414	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : JP
WO02086029 A2	20060414	LSWD	-WWW	WIPO INFORMATION: WITHDRAWN IN NATIONAL OFFICE	TEXT : JP