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Fact Sheet

FAMPAT

Comprehensive Worldwide Patent Family Database

- **Coverage:**

FamPat covers patent families in all disciplines. The documents are from:
90 national offices, including former Japanese patents issued law (status C) (list on page 2).
6 regional offices (EPO, WIPO, OAPI, ARIPO, EAPO and CGC).
Utility models (U) are also covered for 28 countries (list on page 2).

- Coverage starting dates vary by country. 1920's and earlier for US, DE, FR, and GB publications. See the complete country coverage listing on page 2.

- **Contents:**

In FamPat, a single family record combines together all publication stages of the family. Searches for Assignee, Inventor or Classes are conducted on all family equivalents. Boolean searching is available across all family member fields.

Questel has developed a family definition which incorporates the EPO's strict family rule with additional rules to include: Applications falling outside the 12 month filing limit; Links between EP and PCT publications; Combining US Provisionals that share the same priority with US Published Applications. FamPat's family definitions also incorporate different patenting authorities' definitions of an invention, particularly useful with Japanese publication searching.

- Official English language abstracts are provided for more than 19 million families. This coverage is supplemented by abstracts in French, German, Spanish etc. English Language Machine Translations of French, German, Japanese, Chinese, Korean and Taiwanese publications are searchable. This machine-translated data is replaced by the official English data when available.
- Full text claims and descriptions are searchable for WO, US, EP, AT, BE, BR, CA, CH, CN, DE, ES, FR, GB, JP, RU, DK, FI and SE publications.
- US, EP and WO publications are enhanced by information extracted from the full text and searchable in three fields – Patent Object (OBJ), Advantages of the invention and disadvantages of the prior art (ADB) and Independent Claim (ICLM).
- Patent Classifications: EPO Classification (ECLA, Dutch and Berlin Classifications), FI and F-Terms (Japanese Classifications), International Patent Classification (IPC), and USPTO Classification.
- Search reports, patent and bibliographic cited references are available for more than 18 patent authorities.
- The legal status of information for approximately 50 countries (see coverage page 4).
- Relevancy Indicators for cited data given in WO, EP & FR search reports are searchable.

Number of records:	More than 40 million records
Updating:	Weekly
Language of records:	Majority of titles and abstracts are in English English, French, German and other language abstracts Select documents have multi-language abstracts
SDI Profiles:	Weekly Monthly
Producer:	Questel http://www.questel.com

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Fax: +1 888 362 3657
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Country Coverage

(Year indicates the year of earliest documents)

Country	Country Code	Coverage from:
Argentina	AR	1973
Algeria	DZ	2002
ARIPO	AP	1984
Australia	AU	1966
Austria Utility Models	AT	1969 1994
Belarus	BY	1997
Belgium (1926)	BE	1964
Bosnia and Herzegovina	BA	1998
Brazil Utility Models	BR	1973 1975
Bulgaria Utility Models	BG	1973 1994
Canada	CA	1973
Chile Utility Models	CL	2005 2005
China Utility Models	CN	1986 1986
Columbia	CO	1995
Costa Rica	CR	2007
Croatia	HR	1994
Cuba	CU	1974-1995
Cyprus	CY	1975
Czech Republic Utility Models	CZ	1993 1999
Czechoslovakia	CS	1973-1994
Denmark Utility Models	DK	1968 1996
Dominican Republic	DO	2002
Ecuador (1992) Utility Models	EC	2002 2002
Estonia	EE	1995
Egypt	EG	1976
El Salvador	SV	2000
Eurasian Patents	EA	1997
European Patents	EP	1978
Finland Utility Models	FI	1970 1992
France (1902)	FR	1920
Georgia	GE	2006
Germany (1877) Utility Models	DE	1968 1968
Germany, D R Utility Models	DD	1973-1992 1973-1992
Great Britain (1909)	GB	1963
Guatemala (1996)	GT	2007
Gulf Council	GC	2002
Greece	GR	1977

Country	Country Code	Coverage from:
Latvia	LV	1993
Lithuania	LT	1993
Luxembourg (1946)	LU	1960
Malawi	MW	1973-1994
Malaysia	MY	1971-1996
Malta	MT	1968-1992
Mexico	MX	1981
Moldova Utility Models	MD	1994 1994
Monaco	MC	1958
Mongolia	MN	1972
Morocco	MA	1979
Mongolia	MN	1972
Netherlands (1912)	NL	1964
Nicaragua	NI	2008
Norway	NO	1968
Netherlands (1912)	NL	1964
New Zealand	NZ	1978
OAPI	OA	1966
Panama (1996)	PA	2000
Peru (1992) Utility Models	PE	2005 2005
Philippines Utility Models	PH	1975-1999 1981-1997
Poland Utility Models	PL	1973 1996
Portugal Utility Models	PT	1976 1976
Romania	RO	1973
Russian Federation	RU	1993
Romania	RO	1973
Russian Federation	RU	1993
Singapore	SG	1983
Serbia (Republic of)	RS	2006
Slovenia	SI	1993
South Africa	ZA	1971
Soviet Union	SU	1972-1994
Spain Utility Models	ES	1968 1993
Sweden	SE	1968
Switzerland (1920)	CH	1969
Tajikistan Utility Models	TJ	1998 1998
Taiwan (1993)	TW	2000

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Utility Models		1990
Hong Kong	HK	1976
Hungary Utility Models	HU	1973 1992
Iceland	IS	1926
India	IN	1975
Indonesia (1988)	ID	1996
Ireland	IE	1973
Israel	IL	1968
Italy Utility Models	IT	1973 1987
Japan (1928) Utility Models (1913)	JP	1972 1993
Kenya	KE	1975-1989
Korea Utility Models	KR	1978 1978

Utility Models		2000
Trinidad & Tobago	TT	1994
Turkey Utility Models	TR	1973-1998 1996-1998
Ukraine (1987) Utility Models	UA	2003 2005
United States (1920) Designs	US	1968 1977
Uruguay Utility Models	UY	2000 2002
Uzbekistan	UZ	1997
Vietnam Utility Models	CN	1984-1998 1989-1998
WIPO (PCT) Applications	WO	1978
Yugoslavia	YU	1973-1992
Zambia	ZM	1969-1994
Zimbabwe	ZW	1980-1995

Full Text / Claims Coverage

Country	Country code	Original language	English Machine Translation	Coverage
WIPO (World Intellectual Property Organization)	WO	English or German or French or Spanish or Russian or Japanese or Korean	✓ For publications in Japanese, Russian & Korean	1978
EPO (European Patent Office)	EP	English or French or German		1986 (applications) 1991 (issued)
United States	US	English		1880 (issued) 2001 (applications)
Germany	DE	German		1987 (Dem. patent) 2004 (utility models)
Austria	AT	German		1902-2005 (issued – partial coverage 1964 to 1990 and from 1996 to 1999 - years 51 to 58 and 91 to 95 not covered) 1994-2005 (utility models - partial until 1999) 2005 (Dem. patent - Partial)
Belgium	BE	Dutch or French or German		1925 (partial coverage until 1986, 1970 uncovered)
Brazil	BR	Portuguese	✓	1982 (partial coverage 1982 to 2000 and since 2006 - years 2001 to 2005 not covered)
Canada	CA	English or French		1978-1989 (old law) 1989 (new law)
China	CN	Chinese	✓	1985 (Dem. patent unexamined) 1985-1992 (Dem. patents reviewed) 1993 (patents) 1985 (utility models)
Denmark	DK	Danish	✓	2009 (issued)

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Spain	ES	Spanish	✓	1980-1992 (patents) 1993 (Dem. patent) 1980 (utility models)
Finland	FI	Finnish	✓	2009 (issued)
France	FR	French		1920 (Dem. patent)
Japan	JP	Japanese	✓	2004 (Dem. patents & utility models
United Kingdom	GB	English		1920 (Dem. patent)
Russia (Federation)	RU	Russian *	✓	1993 (patents) 1994 (utility models) 2009 (Dem. patent)
Sweden	SE	Swedish	✓	2009 (issued)
Switzerland	CH	German or French or Italian		1920 (issued -Partial coverage until 1997)
Taiwan	TW	English and Chinese	✓	2005 - Applications and Patents
India	IN	English		2005 - Applications and Patents
Korea	KR	Korean	✓ CLAIMS ONLY	2000 – Applications 2008 - Utility Models

Legal Status Coverage

Legal status of publications from the following offices:

Country	Country code	Coverage	Country	Country code	Coverage
WIPO	WO	1978	Hungary	HU	1990
EPO	EP	1978	Ireland	IE	1993
EAPO	EA	1996	Israel	IL	1996
United States	US	1968	Italy	IT	1989
Germany	DE	1978	Lithuania	LT	1995
Former East Germany	DD	1992	Moldova (Rep. of)	MD	1994
Australia	AU	2000	Monaco	MC	1972
Austria	AT	1975	Norway	NO	2001
Belgium	BE	1984	New Zealand	NZ	2001
Brazil	BR	1995	Netherlands	NL	1973
Canada	CA	1993	Portugal	PT	1991
Chile	CL	1990	United Kingdom	GB	1968
Denmark	DK	1982	Russia (Federation)	RU	2009
Spain	ES	1992	Sweden	SE	1995
Estonia	EE	2004	Slovenia	SI	2004
Finland	FI	1993	Switzerland	CH	1958
France	FR	1969	Taiwan	TW	2000
Hong Kong	HK	2004	Czech (Rep.)	CZ	2000

For Bulgaria, Belize, China, Egypt, Georgia, Japan, Kenya, South Korea, Latvia, Mexico, Poland, Romania, Slovakia, Uzbekistan and South Africa, the database only contains information on entry into national phase of the corresponding PCT application. For Luxembourg, the database only covers the Supplementary Protection Certificates.

Japanese Legal Status is available through Patolis-e. Available in orbit.com for additional cost.

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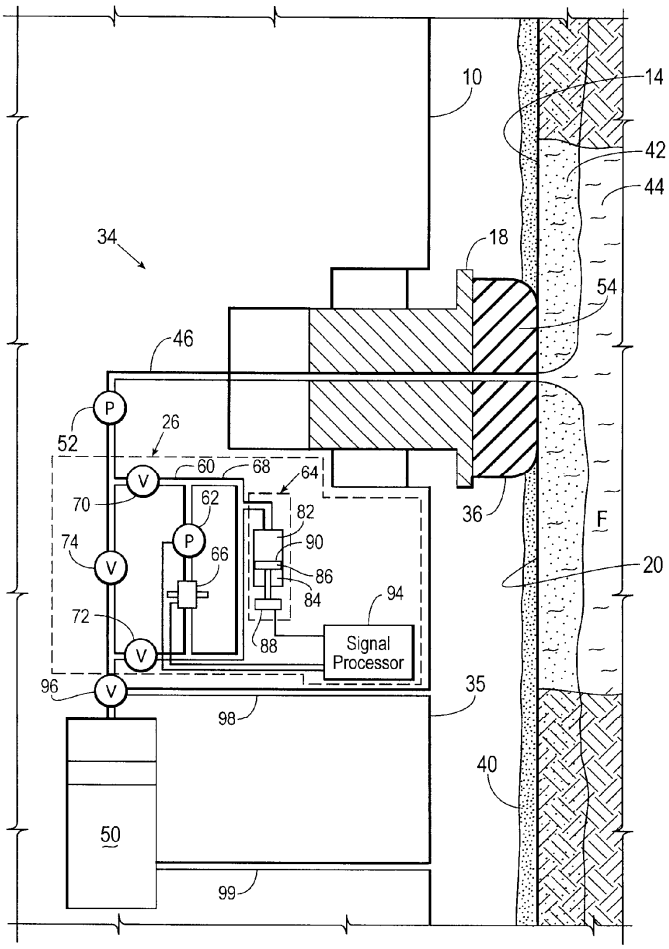
Sample Records

Format - MAXL IMG

1/1 FAMPAT - (C) Questel- image
CPIM Questel



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AP : 2006GB-0008349 20060427
- CA2544866 A1 20061029 [CA2544866]
STG: Application laid open
AP : 2006CA-2544866 20060425
- NO20061817 A 20061030 [NO200601817]
STG: Patent application made available to the public
AP : 2006NO-0001817 20060425
- US2006243033 A1 20061102 [US20060243033]
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AP : 2005US-0908161 20050429
- US2006243047 A1 20061102 [US20060243047]
STG: First published patent application
AP : 2005US-0203932 20050815
- DE102006019813 A1 20061102 [DE102006019813]
STG: Doc. laid open (First publication)
AP : 2006DE-10019813 20060428
- FR2885166 A1 20061103 [FR2885166]
STG: Application for patent of invention, (first publ.)
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      - GB2425794       A  20061108   [GB2425794]
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      - WO2006117604    A1 20061109   [WO2006117604]
            STG: International publication with international search report
            AP : 2006WO-IB00919 20060419
      - CA2605830       A1 20061109   [CA2605830]
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            AP : 2006CA-2605830 20060419
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      - MXPA06004693    A  20070424   [MX2006PA004693]
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      - GB2425794       B  20070704   [GB2425794]
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      - RU2006114647    A  20071120   [RU2006114647]
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      - NO20075593      B  20071123   [NO20075593]
            STG: Document laid open for public inspection
            AP : 2007NO-0005593 20071105
      - EP1877646       A1 20080116   [EP1877646]
            STG: Application published with search report
            AP : 2006EP-0744517 20060419
      - MX2007013221    A  20080116   [MX2007013221]
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            AP : 1920MX-7013221 20071023
      - CN101189409     A  20080528   [CN101189409]
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      - US7458252       B2 20081202   [US7458252]
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  PA0 - Schlumberger Technology B.V.; Parkstraat 83-89; 2514 JG  The Hague
        (NL) ( for : BG CZ DE DK GR HU IE IT LT PL RO SI SK TR)
      - Services Petroliers Schlumberger; 42, rue Saint Dominique; 75007 Paris
        (FR) ( for : FR)
      - Petroleum Research and Development N.V.; De Ruyterkade 62; Willemstad,
        Curacao (AN) ( for : AT BE CH CY EE ES FI IS LI LU LV MC PT SE)
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         (A1) SCHLUMBERGER OILFIELD SERVICES; 200 GILLINGHAM LANE, MD 200-9, SUGAR LAND, TX, 77478
         [US]
         (B2) Hofman, Dave R.; Fonseca, Darla; Castano, Jaime
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         (B2) Abrell, Matthias; Castano, Jaime; Gaudier, Dale
  RP  - (WO2006117604)
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  IN  - TERABAYASHI TORU; CHIKENJI AKIHITO; YAMATE TSUTOMU; MULLINS OLIVER C;
         KURKJIAN ANDREW L
  IN0 - Freemark, Darcy; 1183 Oakland Drive, Devon, Alberta, T9G-2G9 [CA]
        Borman, Craig; Box 1655, Camrose, Alberta, T4V 1X6 [CA]
        Hammami, Ahmed; 450 Osborne, Cres, Edmonton, Alberta, T6R 2C2 [CA]
        Muhammed, Moin; 623 Kulawy Place, Edmonton, Alberta, T6L 7E5 [CA]
        Jacobs, Scott; 1004, 11307-99 Ave., Edmonton, Alberta, T5K 0H2 [CA]
        Brown, Jonathan W.; 22 Ferncastle Lane, Sugar Land, 77479, TX [US]
        Kurkjian, Andrew L.; 3327 Oakland Drive, Sugar Land, 77479, TX [US]
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  ICCA- E21B-049/00 [2006 C F I B H EP]; G01N-007/00 [2006 C L I B H EP]
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      - OAPI patent : BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG
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        US5934374(A) [US5934374]
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        US3954006(A) [US3954006]
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        US3780575(A) [US3780575]
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US2002112854(A1)(Cat. A) [US20020112854]
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REF - (EP1877646)
Search Report references [Examiner]
-See references of WO 2006117604A1
REF - (US20060243033)
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  AB  - (EP1877646)
       Methods and apparatus for downhole analysis of formation fluids by
       isolating the fluids from the formation and/or borehole in a pressure
       and volume control unit that is integrated with a flowline of a fluid
       analysis module and determining fluid characteristics of the isolated
       fluids. Parameters of interest may be derived for formation fluids in
       a static state and undesirable formation fluids may be drained and
       replaced with formation fluids that are suitable for downhole
       characterization or surface sample extraction. Isolated formation
       fluids may be circulated in a loop of the flowline for phase behavior
       characterization. Real-time analysis of the fluids may be performed at
       or near downhole conditions.
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       Number of Figures: NFG=0
       Number of Claims: NCL=27
       Independant Claim Number: ICL=1,9,21,27
       (B2) Attorney or Agent: Hofman, Dave R.; Fonseca, Darla; Castano, Jaime
       Primary examiner: Williams, Hezron
       Assistant examiner: Frank, Rodney T
       Number of Drawings: NDR=7
       Number of Figures: NFG=8
       Number of Claims: NCL=25
       Exemplary Claim Number: ECL=1
       Independant Claim Number: ICL=1,7,19,25
       Extended under 35 USC 154(b) the following days: EXTD=104
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       Number of Drawings/Images: NDR=11
       Number of Figures: NFG=0
       Number of Claims: NCL=21
       Independant Claim Number: ICL=1,11,19
       (B2) Attorney or Agent: Abrell, Matthias; Castano, Jaime; Gaudier, Dale
       Primary examiner: Williams, Hezron E.
       Assistant examiner: Frank, Rodney T
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       Number of Claims: NCL=31
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       Independant Claim Number: ICL=1,4,6,9,12,14,16,25,26
       Art Unit: ART=2856
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OBJ - (US20060243033)
[0002] The present invention relates to techniques for performing formation evaluation of a subterranean formation by a down hole tool positioned in a well bore penetrating the subterranean formation.
- [0014] In at least one aspect, the present invention relates to a fluid analysis assembly for analyzing a fluid.
- [0019] In another aspect, the present invention relates to a down hole tool positionable in a well bore having a wall and penetrating a subterranean formation.

ADB - (US20060243033)
[0013] It is, therefore, desirable to provide techniques capable of performing formation evaluation of fluid that is representative of fluid in the formation.
It is further desirable that such techniques provide accurate and real-time measurements.
- The advantage of having multiple fluid analysis assemblies 26 permits the down hole tool 10a to retrieve more than one sample of the formation fluid and to test the samples either simultaneously or intermittently.
This permits comparisons of the results of the samples to provide a better indication of the accuracy of the down hole measurements.
- As discussed above with reference to FIG. 4, the advantage of having multiple fluid analysis assemblies 26 permits the down hole tool 10a or 10c to retrieve more than one sample of the formation fluid and to test the samples either simultaneously or intermittently.
This permits comparisons of the results of the samples to provide a better indication of the accuracy of the down hole measurements.
- These changes can affect the measurements taken during formation evaluation.
- Such loop mixing may also be desirable in other applications that do not involve narrow flowlines.

ICLM- (US20060243033)
1. A fluid analysis assembly for analyzing a fluid, the fluid analysis assembly comprising:
a chamber defining an evaluation cavity for receiving the fluid; a fluid movement device having a force medium applying force to the fluid to cause the fluid to move within the cavity; a pressurization assembly changing the pressure of the fluid in a continuous manner; and at least one sensor communicating with the fluid for sensing at least one parameter of the fluid while the pressure of the fluid is changing in the continuous manner.
- 9. A down hole tool positionable in a well bore having a wall and penetrating a subterranean formation, the formation having a fluid therein, the down hole tool comprising:
a housing; a fluid communication device extendable from the housing for sealing engagement with the wall of the well bore, the fluid communication device having at least one inlet for receiving the fluid from the formation; a fluid analysis assembly positioned within the housing for analyzing the fluid, the fluid analysis assembly comprising:
a chamber defining an evaluation cavity for receiving the fluid from the fluid communication device; a fluid movement device having a force medium applying force to the fluid to cause the fluid to move within the evaluation cavity; a pressurization assembly changing the pressure of the fluid; and at least one sensor communicating with the fluid for sensing at least one parameter of the fluid.

…/…

- 21. A method for measuring a parameter of an unknown fluid within a well bore penetrating a formation having the fluid therein, comprising the steps of:
positioning a fluid communication device of the down hole tool in sealing engagement with a wall of the well bore; drawing fluid out of the formation and into an evaluation cavity within the down hole tool; moving the fluid within the evaluation cavity; and sampling data of the fluid while the fluid is being moved within the evaluation cavity.
- 27. A down hole tool positionable in a well bore having a wall and penetrating a subterranean formation, the formation having a fluid therein, the down hole tool comprising:
a housing; a fluid communication device extendable from the housing for sealing engagement with the wall of the well bore, the fluid

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communication device having at least one inlet for receiving the fluid from the formation; a fluid analysis assembly positioned within the housing for analyzing the fluid, the fluid analysis assembly comprising:
a chamber defining an evaluation cavity configured as a re-circulating loop for receiving the fluid from the fluid communication device; a fluid movement device having a force medium applying force to the fluid to cause the fluid to re-circulate within the re-circulating loop; a pressurization assembly changing the pressure of the fluid; and at least one sensor communicating with the fluid for sensing at least one parameter of the fluid.
UP - 2006-46

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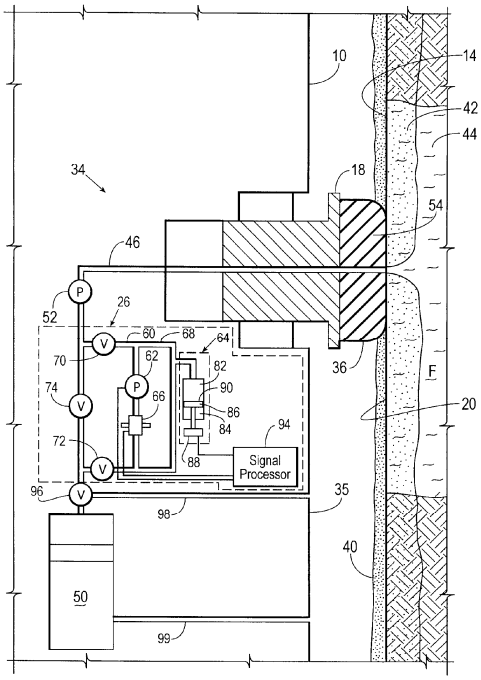

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TI - METHODS AND APPARATUS OF DOWNHOLE FLUID ANALYSIS

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AB - (EP1877646)
Methods and apparatus for downhole analysis of formation fluids by isolating the fluids from the formation and/or borehole in a pressure and volume control unit that is integrated with a flowline of a fluid analysis module and determining fluid characteristics of the isolated fluids. Parameters of interest may be derived for formation fluids in a static state and undesirable formation fluids may be drained and replaced with formation fluids that are suitable for downhole characterization or surface sample extraction. Isolated formation fluids may be circulated in a loop of the flowline for phase behavior characterization. Real-time analysis of the fluids may be performed at or near downhole conditions.
- (From US7461547 B2)

NO - (US20060243033)
- (A1) Legal Rep. Firm: SCHLUMBERGER OILFIELD SERVICES
Number of Drawings/Images: NDR=8
Number of Figures: NFG=0
Number of Claims: NCL=27
Independant Claim Number: ICL=1,9,21,27
- (B2) Attorney or Agent: Hofman, Dave R.; Fonseca, Darla; Castano, Jaime
Primary examiner: Williams, Hezron
Assistant examiner: Frank, Rodney T
Number of Drawings: NDR=7
Number of Figures: NFG=8
Number of Claims: NCL=25
Exemplary Claim Number: ECL=1
Independant Claim Number: ICL=1,7,19,25
Extended under 35 USC 154(b) the following days: EXTD=104

NO - (US20060243047)
- (A1) Legal Rep. Firm: SCHLUMBERGER K.K.
Number of Drawings/Images: NDR=11
Number of Figures: NFG=0
Number of Claims: NCL=21
Independant Claim Number: ICL=1,11,19
- (B2) Attorney or Agent: Abrell, Matthias; Castano, Jaime; Gaudier, Dale
Primary examiner: Williams, Hezron E.
Assistant examiner: Frank, Rodney T
Number of Drawings: NDR=10
Number of Figures: NFG=10
Number of Claims: NCL=31
Exemplary Claim Number: ECL=1
Independant Claim Number: ICL=1,4,6,9,12,14,16,25,26
Art Unit: ART=2856

NO - (WO2006117604)
- (A1) Published: With international search report

OBJ - (US20060243033)
[0002] The present invention relates to techniques for performing formation evaluation of a subterranean formation by a down hole tool positioned in a well bore penetrating the subterranean formation.
- [0014] In at least one aspect, the present invention relates to a fluid analysis assembly for analyzing a fluid.
- [0019] In another aspect, the present invention relates to a down hole tool positionable in a well bore having a wall and penetrating a subterranean formation.

OBJ - (US20060243047)
[0002] The present invention relates to the field of analysis of downhole fluids of a geological formation for evaluating and testing the formation for purposes of exploration and development of hydrocarbon-producing wells, such as oil or gas wells.
More particularly, the present invention is directed to methods and apparatus suitable for isolating formation fluids and characterizing the isolated fluids downhole utilizing, in part, a pressure and volume control unit.
- In one aspect of the invention, an optical sensor, for example, may measure fluid properties of interest, such as hydrocarbon composition, GOR, BTU, of the isolated formation fluid.
As another aspect of the invention, a suitable device, such as a density and viscosity sensor, may measure additional fluid properties of interest, such as fluid density and viscosity.

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As yet another aspect of the invention, a pressure/temperature sensor (P/T gauge) may measure fluid pressure and temperature of the isolated formation fluid.

…/… - In yet another aspect of the invention, fluid compressibility may be measured with the changed volume and changed pressure, or fluid density change or optical absorption level change may be determined. [0026] In yet another aspect of the present invention, fluid pressure of the isolated formation fluid may be reduced down to a certain pressure such that asphaltene is precipitated.

OBJ - (WO2006117604)
I 0 FIELD OF THE INVENTION [0002] The present invention relates to the field of analysis of downhole fluids of a geological formation for evaluating and testing the formation for purposes of exploration and development of hydrocarbon-producing wells, such as oil or gas wells. More particularly, the present 1 5 invention is directed to methods and apparatus suitable for isolating formation fluids and characterizing the isolated fluids downhole.

- In one aspect of the invention, an optical sensor, for example, may measure fluid properties of interest, such as hydrocarbon composition, GOR, BTU, of the isolated forrnation fluid.
- In yet another aspect of the invention, fluid compressibility may be measured with the changed volume and changed pressure, or fluid density change or optical absorption level change may be determined. [0026] In yet another aspect of the present invention, fluid pressure of the isolated formation fluid may be reduced down to a certain pressure such that asphaltene is precipitated.

ADB - (US20060243033)
[0013] It is, therefore, desirable to provide techniques capable of performing formation evaluation of fluid that is representative of fluid in the formation.
It is further desirable that such techniques provide accurate and real-time measurements.

- The advantage of having multiple fluid analysis assemblies 26 permits the down hole tool 10a to retrieve more than one sample of the formation fluid and to test the samples either simultaneously or intermittently.
This permits comparisons of the results of the samples to provide a better indication of the accuracy of the down hole measurements.
- As discussed above with reference to FIG. 4, the advantage of having multiple fluid analysis assemblies 26 permits the down hole tool 10a or 10c to retrieve more than one sample of the formation fluid and to test the samples either simultaneously or intermittently.
This permits comparisons of the results of the samples to provide a better indication of the accuracy of the down hole measurements.
- These changes can affect the measurements taken during formation evaluation.
- Such loop mixing may also be desirable in other applications that do not involve narrow flowlines.

ADB - (US20060243047)
[0015] Advantageously, the PVCU is suitable for downhole applications and since the flowline and/or PVCU of the downhole tool are used to isolate formation fluids, undesirable formation fluids can easily be drained and replaced with formation fluids that are suitable for downhole characterization.

- [0016] Applicants recognized that there is need for downhole analyses, which provide accurate answer products in close conjunction with sampling by a downhole tool, such as a formation tester tool.
- Advantageously, the flowline of the tool may include a pressure and volume control unit (PVCU) that is integrated with the flowline such that pressure and volume changes to isolated formation fluids are possible under downhole conditions.
- The sample transfer and transportation procedures in use are known to damage or spoil formation fluid samples by bubble formation, solid precipitation in the sample, among other difficulties associated with the handling of formation fluids for surface analysis of downhole fluid characteristics.

…/… - Conventional apparatuses for changing the volume of fluid samples under downhole conditions use hydraulic pressure with one attendant shortcoming that it is difficult to precisely control the stroke and speed of the piston under the downhole conditions due to oil expansion

-

and viscosity changes that are caused by the extreme downhole temperatures.

ADB - (WO2006117604)
[0015] Advantageously,thePVCUissuitablefordownholeapplicationsandsinc etheflowline and/or PVCU of the downhole tool are used to isolate formation fluids, undesirable formation fluids can easily be drained and replaced with formation fluids that are suitable for downhole 5 characterization.
- Advantageously, the flowline of the tool may include a pressure and volume control unit (PVCU) that is integrated with the flowline such that pressure and volume changes to isolated formation fluids are possible under downhole conditions.
- Advantageously, characteristics of the isolated fluid may be determined.
- The sample transfer and transportation procedures in use are known to damage or spoil formation fluid samples by bubble formation, solid precipitation in the sample, among other difficulties associated with the handling of formation fluids for surface analysis of downhole fluid characteristics.
- Conventional apparatuses for changing the volume of fluid samples under downhole conditions use hydraulic pressure with one attendant shortcoming that it is difficult to precisely control the stroke and speed of the piston under the downhole conditions due to oil expansion and viscosity changes that are caused by the extreme downhole temperatures.

ICLM- (US20060243033)
1. A fluid analysis assembly for analyzing a fluid, the fluid analysis assembly comprising:
a chamber defining an evaluation cavity for receiving the fluid; a fluid movement device having a force medium applying force to the fluid to cause the fluid to move within the cavity; a pressurization assembly changing the pressure of the fluid in a continuous manner; and at least one sensor communicating with the fluid for sensing at least one parameter of the fluid while the pressure of the fluid is changing in the continuous manner.
- 9. A down hole tool positionable in a well bore having a wall and penetrating a subterranean formation, the formation having a fluid therein, the down hole tool comprising:
a housing; a fluid communication device extendable from the housing for sealing engagement with the wall of the well bore, the fluid communication device having at least one inlet for receiving the fluid from the formation; a fluid analysis assembly positioned within the housing for analyzing the fluid, the fluid analysis assembly comprising:
a chamber defining an evaluation cavity for receiving the fluid from the fluid communication device; a fluid movement device having a force medium applying force to the fluid to cause the fluid to move within the evaluation cavity; a pressurization assembly changing the pressure of the fluid; and at least one sensor communicating with the fluid for sensing at least one parameter of the fluid.
- 21. A method for measuring a parameter of an unknown fluid within a well bore penetrating a formation having the fluid therein, comprising the steps of:
positioning a fluid communication device of the down hole tool in sealing engagement with a wall of the well bore; drawing fluid out of the formation and into an evaluation cavity within the down hole tool; moving the fluid within the evaluation cavity; and sampling data of the fluid while the fluid is being moved within the evaluation cavity.
- 27. A down hole tool positionable in a well bore having a wall and penetrating a subterranean formation, the formation having a fluid therein, the down hole tool comprising:

…/…

a housing; a fluid communication device extendable from the housing for sealing engagement with the wall of the well bore, the fluid communication device having at least one inlet for receiving the fluid from the formation; a fluid analysis assembly positioned within the housing for analyzing the fluid, the fluid analysis assembly comprising:
a chamber defining an evaluation cavity configured as a re-circulating loop for receiving the fluid from the fluid communication device; a fluid movement device having a force medium applying force to the

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fluid to cause the fluid to re-circulate within the re-circulating loop; a pressurization assembly changing the pressure of the fluid; and at least one sensor communicating with the fluid for sensing at least one parameter of the fluid.

ICLM- (US20060243047)

1. A downhole fluid characterization apparatus, comprising: a fluid analysis module, the fluid analysis module comprising: a flowline for fluids withdrawn from a formation to flow through the fluid analysis module, the flowline having a first end for the fluids to enter and a second end for the fluids to exit the fluid analysis module; a first selectively operable device and a second selectively operable device structured and arranged with respect to the flowline for isolating a quantity of the fluids in a portion of the flowline between the first and second selectively operable device; and at least one sensor situated on the portion of the flowline between the first and second selectively operable device for measuring parameters of interest relating to the fluids in the flowline.

- 11. A method of downhole characterization of formation fluids utilizing a downhole tool comprising a fluid analysis module having a flowline for flowing formation fluids through the fluid analysis module, the method comprising: monitoring at least a first parameter of interest relating to formation fluids flowing in the flowline; when a predetermined criterion for the first parameter of interest is satisfied, restricting flow of the formation fluids in the flowline by operation of a first selectively operable device and a second selectively operable device of the fluid analysis module to isolate formation fluids in a portion of the flowline of the fluid analysis module between the first and second selectively operable device; and characterizing the isolated fluids by operation of one or more sensor on the flowline between the first and second selectively operable device.
- 19. A tool for characterizing formation fluids located downhole in an oilfield reservoir, comprising: a fluid analysis module, the fluid analysis module comprising: a flowline for fluids withdrawn from a formation to flow through the fluid analysis module, the flowline having a first end for the fluids to enter and a second end for the fluids to exit the fluid analysis module; the flowline comprising: a bypass flowline and a circulation line interconnecting a first end of the bypass flowline with a second end of the bypass flowline such that fluids can circulate in the circulation line and the bypass flowline; and the fluid analysis module further comprising: a circulation pump for circulating fluids in the circulation line and the bypass flowline; at least one sensor situated on the bypass flowline for measuring parameters of interest relating to the fluids in the bypass flowline; and a first selectively operable device and a second selectively operable device structured and arranged with respect to the flowline for isolating a quantity of the fluids in the bypass flowline between the first and second selectively operable device.

…/… ICLM- (WO2006117604)

1 - A downhole fluid characterization apparatus, comprising: a fluid analysis module, the fluid analysis module comprising: a flowline for fluids withdrawn from a formation to flow through the fluid analysis module, the flowline having a first end for the fluids to enter and a second end for the fluids to exit the fluid analysis module; a first selectively operable device and a second selectively operable device structured and arranged with respect to the flowline for isolating a quantity of the fluids in a portion of the flowline between the first and second selectively operable device; and at least one sensor situated on the portion of the flowline between the first and second selectively operable device for measuring parameters of interest relating to the fluids in the flowline.

- 5 a circulation pump for circulating fluids in the closed loop of the circulation line and the bypass flowline.
- 10 Thedownholefluidcharacterizationapparatusaccordingtoclaim9,wherein the at least one sensor comprises one or more of a density sensor; a pressure sensor; a temperature sensor; a bubbles/gas sensor; a MEMS based sensor; an imager; and a scattering sensor, wherein the at least

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one sensor measures parameters of interest relating to fluids isolated in the bypass flowline; and the fluid analysis module ftu-ther comprising:
one or more of a spectral sensor optically coupled to the flowline; a fluorescence and gas sensor; a chemical sensor; and a resistivity sensor, structured and arranged with respect to the flowline for measuring parameters of interest relating to fluids flowing through the flowline.

- I 1. A method of downhole characterization of formation fluids utilizing a downhole tool comprising a fluid analysis module having a flowline for flowing formation fluids through the fluid analysis module, the method comprising:
monitoring at least a first parameter of interest relating to formation fluids flowing in the flowline; 24 .
The method of downhole characterization of formation fluids according to claim I 0 1 1, wherein characterizing the isolated fluids includes determining one or more fluid property of the isolated fluids.
- 13 wherein the one or more fluid property determined after changing fluid pressure includes one or more of fluid compressibility; asphaltene precipitation onset; bubble point; and dew point.
- 16 wherein characterizing the isolated fluids includes determining phase behavior of the isolated fluids while circulating the fluids in the closed loop.
- 17 wherein determining phase behavior of the isolated fluids comprises monitoring time dependent sensor properties to detect gravity separation of the phases.
- 19 A tool for characterizing formation fluids located downhole in an oilfield reservoir, comprising:
a fluid analysis module, the fluid analysis module comprising:
a flowline for fluids withdrawn from a formation to flow through the fluid analysis module, the flowline having a first end for the fluids to enter and a second end for the fluids to exit the fluid analysis module; the flowline comprising:
a bypass flowline and a circulation line interconnecting a first end of the bypass flowline with a second end of the bypass flowline such that fluids can circulate in the circulation line and the bypass flowline; and the fluid analysis module further comprising:
a circulation pump for circulating fluids in the circulation line and the bypass flowline; at least one sensor situated on the bypass flowline for measuring parameters of interest relating to the fluids in the bypass flowline; and a first selectively operable device and a second selectively operable device structured and arranged with respect to the flowline for isolating a quantity of the fluids in the bypass flowline between the first and second selectively operable device.

…/…ECLM- (EP1877646)

1. A downhole fluid characterization apparatus, comprising: a fluid analysis module (32), the fluid analysis module comprising: a flowline (33) for fluids withdrawn from a formation to flow through the fluid analysis module, the flowline having a first end for the fluids to enter and a second end for the fluids to exit the fluid analysis module (32); a first selectively operable device (52) and a second selectively operable device (54) arranged with respect to the flowline (33) for isolating a quantity of the fluids in a portion of the flowline between the first and second selectively operable device; and at least one sensor (11) situated on the portion of the flowline (33) between the first and second selectively operable devices (52, 54) for measuring parameters of interest relating to the fluids in the flowline; characterized in that the portion of the flowline (33) for isolating the fluids comprises: a bypass flowline (35), the first and second selectively operable devices (52, 54) being structured and arranged for isolating fluids in the bypass flowline, and a circulation line (37) interconnecting a first end of the bypass flowline with a second end of the bypass flowline such that fluids isolated between the first and second selectively operable devices (52, 54) can circulate in a closed loop formed by the circulation line and the bypass flowline; the fluid analysis module (32) further comprising a circulation pump (78) for circulating fluids in the closed loop of the circulation line (37) and the bypass flowline (35).

- 2. The apparatus of claim 1, wherein at least one of the first and

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second selectively operable devices (52, 54) comprises a valve.
- 3. The apparatus of claim 1, wherein one of the first and second selectively operable devices (52, 54) comprises a pump and the other of the first and second selectively operable devices (52, 54) comprises a valve.
- 4. The apparatus of claim 3, wherein the pump is in a pumpout module (38) of the apparatus.
- 5. The apparatus of claim 1, wherein the fluid analysis module (32) further comprises a pump unit (71) integrated with the flowline (33) for varying pressure and volume of the isolated fluids.
- 6. The apparatus of claim 5, wherein the pump unit (71) comprises a syringe-type pump.
- 7. The apparatus of claim 1, wherein the at least one sensor comprises a plurality of sensors.
- 8. The apparatus of claim 1, wherein the at least one sensor comprises one or more of a spectral sensor (56) optically coupled to the flowline (33), a fluorescence and gas sensor (58), a density sensor (68), a pressure sensor (64), a temperature sensor (64), a bubbles/gas sensor (76), a MEMS based sensor (68), an imager (72), a resistivity sensor (74), a chemical sensor (69), and a scattering sensor (76).
- 9. The apparatus of claim 1, wherein the at least one sensor comprises one or more of a density sensor (68), a pressure sensor (64), a temperature sensor (64), a bubbles/gas sensor (76), a MEMS based sensor (68); an imager (72); and a scattering sensor (76), and measures parameters of interest relating to fluids isolated in the bypass flowline (35), and the fluid analysis module (32) further comprises one or more of a spectral sensor (56)optically coupled to the flowline (33), a fluorescence and gas sensor (58), a chemical sensor (69), and a resistivity sensor (74), arranged with respect to the flowline (33) for measuring parameters of interest relating to fluids flowing through the flowline.
- 10. A method of downhole characterization of formation fluids utilizing a downhole tool comprising a fluid analysis module (32) having a flowline (33) for flowing formation fluids through the fluid analysis module, the method comprising: monitoring at least a first parameter of interest relating to formation fluids flowing in the flowline; when a predetermined criterion for the first parameter of
…/… interest is satisfied, restricting flow of the formation fluids in the flowline by operation of a fist selectively operable device (52) and a second selectively operable device (54) of the fluid analysis module (32) to isolate formation fluids in a portion of the flowline (33) of the fluid analysis module between the first and second selectively operable devices; and characterizing the isolated fluids by operation of one or more sensors (11) on the flowline (33) between the first and second selectively operable devices (52, 54); the method being characterized by circulating the isolated fluids in a closed loop (35, 37) of the flowline (33) while characterizing the isolated fluids.
- 11. The method of claim 10, wherein characterizing the isolated fluids includes determining one or more fluid property of the isolated fluids.
- 12. The method of claim 11, wherein determining one or more fluid property comprises changing fluid pressure of the isolated fluids by varying volume of the isolated fluids before determining the one or more fluid property.
- 13. The method claim 12, further comprising monitoring time dependent signals in the one or more sensor on the flowline to detect gravity separation of the isolated fluids.
- 14. The method of claim 13, wherein the one or more fluid property determined after changing fluid pressure includes one or more of fluid compressibility, asphaltene precipitation onset, bubble point, and dew point.
- 15. The method of claim 14, wherein characterizing the isolated fluids includes determining phase behavior of the isolated fluids while circulating the fluids in the closed loop (35, 37).
- 16. The method of claim 15, wherein determining phase behavior of the isolated fluids comprises monitoring time dependent sensor properties to detect gravity separation of the phases.

DESC- (EP1877646)

BACKGROUND OF THE INVENTION

- [0001] The present invention relates to the field of analysis of downhole fluids of a geological formation for evaluating and testing

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the formation for purposes of exploration and development of hydrocarbon-producing wells, such as oil or gas wells. More particularly, the present invention is directed to methods and apparatus suitable for isolating formation fluids and characterizing the isolated fluids downhole.

- [0002] Downhole fluid analysis is an important and efficient investigative technique typically used to ascertain characteristics and nature of geological formations having hydrocarbon deposits. In this, typical oilfield exploration and development includes downhole fluid analysis for determining petrophysical and fluid properties of hydrocarbon reservoirs. Fluid characterization is integral to an accurate evaluation of the economic viability of a hydrocarbon reservoir formation.
- [0003] Typically, a complex mixture of fluids, such as oil, gas, and water, is found downhole in reservoir formations. The downhole fluids, which are also referred to as formation fluids, have characteristics,

[…/…]

formation fluid is isolated or trapped in the bypass flowline 35 between the valves 53 and 55.

- [0095] After isolating formation fluid in the bypass flowline 35, characteristics of the isolated formation fluid, such as density, viscosity, chemical composition, pressure, and temperature may be measured. The circulation pump 78 (note again Fig. Figures 9 and Fig. 10) may be operated to circulate or mix the formation fluid in the bypass flowline 35. A pump unit may be operated to increase the volume of the formation fluid isolated in the bypass flowline 35 so that pressure of the fluid is reduced. A scattering detector, US transducer, and/or CCD camera may be used to measure the bubble point of the isolated formation fluid.

/…

- [0096] During the pressure-volume-temperature (PVT) analysis of the isolated formation fluid, or after the PVT analysis has been completed, a sample of the formation fluid may be captured in one or more sampling chambers, such as 34 and 36 in Fig. Figure 3, for surface analysis. Then the tool 20 may be moved to the next test point in the formation.
- [0097] In conventional methods and apparatus, a formation fluid sample is collected downhole and then transported to a laboratory at the surface for analysis. In this, typically a special sampling chamber or container is necessary to maintain sample pressure and temperature at downhole conditions so as to avoid damage and spoilage of the formation fluid sample. Moreover, sample analysis conditions at a surface laboratory are different from downhole conditions causing unpredictable and unacceptable variations in analytical results, and erroneous answer products derived from the formation fluid analysis.
- [0098] Advantageously, the present invention obviates need for a specialized chamber to store or analyze the formation fluids. The flowline of a downhole formation tester tool, through which formation fluids flow during normal operation of the downhole tool, may advantageously be used to isolate formation fluids for fluid characterization downhole. Furthermore, the same flowline may be used to change fluid conditions for measuring additional fluid properties and phase behavior of the isolated formation fluids.
- [0099] The preceding description has been presented only to illustrate and describe the invention and some examples of its implementation. It is not intended to be exhaustive or to limit the invention to any precise form disclosed. Many modifications and variations are possible in light of the above teaching.
- [0100] The preferred aspects were chosen and described in order to best explain principles of the invention and its practical applications. The preceding description is intended to enable others skilled in the art to best utilize the invention in various embodiments and aspects and with various modifications as are suited to the particular use contemplated. It is intended that the scope of the invention be defined by the following claims.

UP - 2006-46

FULL Format – Detail Display

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<< Patent family      1 >>
1/1 FAMPAT - (C) Questel- image
FAN - 20090121357759
PN  - GB0608349 D0 20060607 [GB200608349]
TI  - (D0) Fluid analysis method and apparatus
PA  - (D0) SCHLUMBERGER HOLDINGS
PA0 - SCHLUMBERGER HOLDINGS LIMITED
PAH - (D0) SCHLUMBERGER HOLDINGS
      (A) SCHLUMBERGER HOLDINGS (VG)
IN  - (A) FREEMARK DARCY  (CA); BORMAN CRAIG  (CA); HAMMAMI AHMED  (CA);
      MUHAMMED MOIN  (CA); JACOBS SCOTT  (CA); BROWN JONATHAN W  (US);
      KURKJIAN ANDREW J  (US); DONG CHENGLI  (US); DHRUVA BRINDESH  (US);
      HAVLINEK KENNETH L  (US); GOODWIN ANTHONY R H  (US)
AP  - GB0608349  20060427  [2006GB-0008349]
PR  - US90816105  20050429  [2005US-0908161]
IC  - (A) E21B-049/00 E21B-049/10
ICAA- E21B-049/10 [2006-01 A F I B H GB]
ICCA- E21B-049/00 [2006 C F I B H GB]
EC  - E21B-049/10
CT  - Search Report [Examiner]
      GB2362960(A) [GB2362960]
      GB2397382(A) [GB2397382]
      US4782695(A) [US4782695]
AB  - A fluid analysis assembly (26) for analyzing a fluid includes a chamber
      (60), a fluid movement device (62), a pressurization assembly (64) and
      at least one sensor (66). The chamber defines an evaluation cavity for
      receiving the fluid. The fluid movement device has a force medium applying
      force to the fluid to cause the fluid to move within the cavity. The
      pressurization assembly changes the pressure of the fluid in a continuous
      manner. The at least one sensor communicates with the fluid for sensing at
      least one parameter of the fluid while the pressure of the fluid is changing
      in the continuous manner. The device is housed in a downhole tool in sealing engagement
      with the wall (44) of a borehole and equipped with a probe (18)
      to allow admission of a sample of fluid into the chamber via flow line (46).
UP  - 2006-46

1/1 FAMPAT - (C) Questel- image
FAN - 20090121357759
PN  - CA2544866 A1 20061029 [CA2544866]
TI  - (A1) FLUID ANALYSIS METHOD AND APPARATUS
PA  - (A1) SCHLUMBERGER CA LTD  (CA)
PA0 - SCHLUMBERGER CANADA LIMITED  (CA)
PAH - (A1) SCHLUMBERGER CA LTD (CA)
IN  - (A1) JACOBS SCOTT  (CA); GOODWIN ANTHONY R H  (US); DHRUVA BRINDESH
      (US); KURKJIAN ANDREW L  (US); BROWN JONATHAN W  (US); DONG CHENGLI
      (US); HAMMAMI AHMED  (CA); FREEMARK DARCY  (CA); HAVLINEK KENNETH L
      (US); MUHAMMED MOIN  (CA); BORMAN CRAIG  (CA)
AP  - CA2544866  20060425  [2006CA-2544866]
PR  - US90816105  20050429  [2005US-0908161]
IC  - (A1) E21B-047/06 E21B-049/00 E21B-049/08 E21B-049/10 G01V-008/10
ICAA- E21B-049/08 [2006-01 A F I B H CA]; E21B-047/06 [2006-01 A L I B H CA];
      E21B-049/10 [2006-01 A L I B H CA]
    - G01V-008/10 [2006-01 A L N B H CA]
ICCA- E21B-049/00 [2006 C F I B H CA]; E21B-047/06 [2006 C L I B H CA]
    - G01V-008/10 [2006 C L N B H CA]
EC  - E21B-049/10
AB  - A fluid analysis assembly for analyzing a fluid the fluid analysis assembly includes a
      chamber, a fluid movement device, a pressurization assembly and at least one sensor. The
      chamber defines an evaluation cavity for receiving the fluid. The fluid movement device has
      a force medium applying force to the fluid to cause the fluid to move within the cavity.
      The pressurization assembly changes the pressure of the fluid in a continuous manner. The
      at least one sensor communicates with the fluid for sensing at least one parameter of the
      fluid while the pressure of the fluid is changing in the continuous manner.
UP  - 2006-46

1/1 FAMPAT - (C) Questel- image
FAN - 20090121357759
PN  - NO20061817 A 20061030 [NO200601817]
PA  - (A) SCHLUMBERGER TECHNOLOGY BV  (NL)
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        (US); JACOBS SCOTT  (CA); BORMAN CRAIG  (CA); MUHAMMED MOIN  (CA)
  AP  - NO20061817  20060425  [2006NO-0001817]
  PR  - US90816105  20050429  [2005US-0908161]
  IC  - (A) E21B-049/00 E21B-049/10
  ICAA- E21B-049/10 [2006-01 A F I B H NO]
  ICCA- E21B-049/00 [2006 C F I B H NO]
  EC  - E21B-049/10
  AB  - The assembly has a chamber (60) defining an evaluation cavity for receiving
        a formation fluid. A fluid movement device has a force medium applying force
        to the formation fluid, which causes the fluid to be recirculated and
        optionally mixed within the evaluation cavity. A pressurization assembly
        changes the pressure of the fluid within a chamber in a continuous manner.
        Sensors (64a-64e) communicate with the fluid to sense one parameter of the
        fluid while the pressure of the fluid changes in the continuous manner.
        An independent claim is also included for a method of measuring a parameter
        of an unknown fluid.(From DE102006019813 A1)
  UP  - 2006-46

  1/1 FAMPAT - (C) Questel- image
  FAN - 20090121357759
  PN  - US2006243033 A1 20061102 [US20060243033]
  TI  - (A1) FLUID ANALYSIS METHOD AND APPARATUS
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  PA  - (A1) SCHLUMBERGER TECHNOLOGY CORP  (US)
  PA0 - Schlumberger Technology Corporation, Sugar Land TX [US]
  PAH - GOODWIN ANTHONY R H; FROM 20050429 TO 20050502
        FREEMARK DARCY; FROM 20050429 TO 20050503
        JACOBS SCOTT; FROM 20050429 TO 20050505
        HAMMAMI AHMED; FROM 20050429 TO 20050510
        MUHAMMED MOIN; FROM 20050429 TO 20050510
        BORMAN CRAIG; FROM 20050429 TO 20050516
        DHRUVA BRINDESH; FROM 20050429 TO 20050517
        DONG CHENGLI; FROM 20050429 TO 20050529
        BROWN JONATHAN W; FROM 20050429 TO 20050624
        KURKJIAN ANDREW L; FROM 20050429 TO 20050627
        HAVLINEK KENNETH L; FROM 20050429 TO 20050711
        SCHLUMBERGER TECHNOLOGY; FROM 20050502
  RP  - (A1) SCHLUMBERGER OILFIELD SERVICES; 200 GILLINGHAM LANE, MD 200-9,
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        (B2) Hofman, Dave R.; Fonseca, Darla; Castano, Jaime
  IN  - (A1) FREEMARK DARCY  (CA); BORMAN CRAIG  (CA); HAMMAMI AHMED  (CA);
        MUHAMMED MOIN  (CA); JACOBS SCOTT  (CA); BROWN JONATHAN W  (US);
        KURKJIAN ANDREW L  (US); DONG CHENGLI  (US); DHRUVA BRINDESH  (US);
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        Jacobs, Scott; 1004, 11307-99 Ave., Edmonton, Alberta, T5K 0H2 [CA]
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        Dhruva, Brindesh; 10303 E. Crosby Lane, Missouri City, 77459, TX [US]
        Havlinek, Kenneth L.; 3118 Wroxton, Houston, 77005, TX [US]
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  AP  - US10908161  20050429  [2005US-0908161]
  FD  - Previous Publication:  US20060243033 A1 20061102
  PR  - US90816105  20050429  [2005US-0908161]
  IC  - (A1) G01N-007/00
  ICAA- G01N-007/00 [2006-01 A F I B H US]
  ICCA- G01N-007/00 [2006 C F I B H US]
  EC  - E21B-049/10
  PCL - ORIGINAL (O) : 073064450
  CT  - Search Report [Examiner]
        US5934374(A) [US5934374]
        US6964301(B2) [US6964301]
        US7100689(B2) [US7100689]
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        US4782695(A) [US4782695]
        US4860581(A) [US4860581]
        US4936139(A) [US4936139]
        US4994671(A) [US4994671]
        US5329811(A) [US5329811]
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        US2004000433(A1) [US20040000433]
        US2004045706(A1) [US20040045706]
        US2006070426(A1) [US20060070426]
        GB2362960(A) [GB2362960]
        GB2397382(A) [GB2397382]
        WO0231476(A2) [WO200231476]
  REF - Applicant references
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        Pressure and a Novel Linear Motor Positioning System," Rev. Sc.
        Instrum. 67 (2), Feb. 1996, pp. 564-578.
        -Sterner, Charles J., "Electromagnetic Pump for Circulating Gases at
        Low Flow Rates," Rev. Sc. Instruments, Oct. 1960, vol. 31, Issue 10,
        pp. 1159-1160.
        -Canfield, F.B. et al., "Electromagnetic Gas Pump for Low Temperature
        Service," Rev. Sci. Instrum. 34, 1431 (1963), pp. 1431-1433.
        -Erdman, K.L. et al., "Simple Gas Circulation Pump," Rev. Sci.
        Instrum. 35, 241 (1964), p. 241.
        -Lloyd, R.V. et al., "EPR Cavity for Oriented Single Crystals in
        Sealed Tubes," Rev. Sci. Instrum. 40, 514 (1969), pp. 514-515.
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        J. Sci. Instrum., 1967, vol. 44, p. 388.
        -Ellis, T. et al., "A Demountable Glass Circulating Pump," J. Sci.
        Instrum., 1962, vol. 39, pp. 234-235.
        -Kallo, D. et al., "Circulating Pump and Flowmeter for Kinetic
        Reaction Apparatus," J. Sci. Instrum., 1964, vol. 41, pp. 338-340.
  AB  - A fluid analysis assembly for analyzing a fluid the fluid analysis assembly includes a
        chamber, a fluid movement device, a pressurization assembly and
        at least one sensor. The chamber defines an evaluation cavity for receiving
        the fluid. The fluid movement device has a force medium applying force to
        the fluid to cause the fluid to move within the cavity. The pressurization assembly changes
        the pressure of the fluid in a continuous manner. The at
        least one sensor communicates with the fluid for sensing at least one
        parameter of the fluid while the pressure of the fluid is changing in the continuous
        manner.
  NO  - (A1) Legal Rep. Firm: SCHLUMBERGER OILFIELD SERVICES
        Number of Drawings/Images: NDR=8
        Number of Figures: NFG=0
        Number of Claims: NCL=27
        Independant Claim Number: ICL=1,9,21,27
        (B2) Attorney or Agent: Hofman, Dave R.; Fonseca, Darla; Castano, Jaime
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Primary examiner: Williams, Hezron
Assistant examiner: Frank, Rodney T
Number of Drawings: NDR=7
Number of Figures: NFG=8
Number of Claims: NCL=25
Exemplary Claim Number: ECL=1
Independant Claim Number: ICL=1,7,19,25
Extended under 35 USC 154(b) the following days: EXTD=104

OBJ - [0002] The present invention relates to techniques for performing formation evaluation of a subterranean formation by a down hole tool positioned in a well bore penetrating the subterranean formation. More particularly, but not by way of limitation, the present invention relates to techniques for making measurements of formation fluids.

[0014] In at least one aspect, the present invention relates to a fluid analysis assembly for analyzing a fluid.

[0019] In another aspect, the present invention relates to a down hole tool positionable in a well bore having a wall and penetrating a subterranean formation.

ADB - [0013] It is, therefore, desirable to provide techniques capable of performing formation evaluation of fluid that is representative of fluid in the formation.

It is further desirable that such techniques provide accurate and real-time measurements.

This permits comparisons of the results of the samples to provide a better indication of the accuracy of the down hole measurements.

…/…

ICLM- 1. A fluid analysis assembly for analyzing a fluid, the fluid analysis assembly comprising: a chamber defining an evaluation cavity for receiving the fluid; a fluid movement device having a force medium applying force to the fluid to cause the fluid to move within the cavity; a pressurization assembly changing the pressure of the fluid in a continuous manner; and at least one sensor communicating with the fluid for sensing at least one parameter of the fluid while the pressure of the fluid is changing in the continuous manner.

a bypass loop communicating with the flow line and defining the evaluation cavity; and at least one valve positioned between the flow line and the evaluation cavity of the bypass loop for selectively diverting fluid into the evaluation cavity of the bypass loop from the flow line.

a second housing defining a second cavity communicating with the evaluation cavity of the chamber, the first cavity having a cross-sectional area larger than a cross-sectional area of the second cavity; a first piston positioned within the first cavity and movable within the first cavity; and a second piston positioned with the second cavity and movable within the second cavity, wherein the movement of the first and second pistons are synchronized to simultaneously cause movement of the fluid and a change in the pressure within the chamber.

a temperature sensor for reading the temperature of the fluid within the evaluation cavity; and a bubble-point sensor for detecting the formation of bubbles within the fluid.

…/…

21. A method for measuring a parameter of an unknown fluid within a well bore penetrating a formation having the fluid therein, comprising the steps of: positioning a fluid communication device of the down hole tool in sealing engagement with a wall of the well bore; drawing fluid out of the formation and into an evaluation cavity within the down hole tool; moving the fluid within the evaluation cavity; and sampling data of the fluid while the fluid is being moved within the evaluation cavity.

re-circulating the diverted fluid within the separate evaluation cavity; and sampling data of the diverted fluid within the separate evaluation cavity while the diverted fluid is being re-circulated.

re-circulating the mixed fluid; and sampling data of the mixed fluid while the mixed fluid is being re-circulated.

27. A down hole tool positionable in a well bore having a wall and penetrating a subterranean formation, the formation having a fluid therein, the down hole tool comprising: a housing; a fluid communication device extendable from the housing for sealing engagement with the wall of the well bore, the fluid communication device having at least one inlet for receiving the fluid from the formation; a fluid analysis assembly positioned within the housing for analyzing the fluid, the fluid analysis assembly comprising: a chamber defining an evaluation cavity configured as a re-circulating loop for receiving the fluid from the fluid communication device; a fluid

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       movement device having a force medium applying force to the fluid to cause
       the fluid to re-circulate within the re-circulating loop; a pressurization assembly
      changing the pressure of the fluid; and at least one sensor
       communicating with the fluid for sensing at least one parameter of the fluid.
UP  - 2006-46

1/1 FAMPAT - (C) Questel- image
FAN - 20090121357759
PN  - US2006243047 A1 20061102 [US20060243047]
TI  - (A1) Methods and apparatus of downhole fluid analysis
PA  - (A1) TERABAYASHI TORU; CHIKENJI AKIHITO; YAMATE TSUTOMU; MULLINS
      OLIVER C; KURKJIAN ANDREW L; ELSHAHAWI HANI
PA0 - Schlumberger Technology Corporation, Sugar Land TX [US]
PAH - TERABAYASHI T; FROM 20050815 TO 20050818
      YAMATE T; FROM 20050815 TO 20050818
      MULLINS O; FROM 20050815 TO 20050819
      EISHAHAWI H; FROM 20050815 TO 20050820
      CHIKENJI A; FROM 20050815 TO 20050824
      KURKJIAN A; FROM 20050815 TO 20050928
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RP  - (A1) SCHLUMBERGER K.K.; 2-2-1 FUCHINOBE, SAGAMIHARA-SHI, KANAOAWA-KEN,
      229-0006 [JP]
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IN  - (A1) TERABAYASHI TORU (JP); CHIKENJI AKIHITO (FR); YAMATE TSUTOMU (JP);
       MULLINS OLIVER C (US); KURKJIAN ANDREW L (US); ELSHAHAWI HANI (US)
IN0 - (A1) Terabayashi, Toru; Sagamihara-shi [JP]
       Chikenji, Akihito; Paris [FR]
       Yamate, Tsutomu; Yokohama-shi [JP]
       Mullins, Oliver C.; Ridgefield, CT [US]
       Kurkjian, Andrew L.; Sugar Land, TX [US]
       Elshahawi, Hani; Houston, TX [US]
AP  - US11203932  20050815  [2005US-0203932]
FD  - CIP of:  US10908161 20050429 [2005US-0908161]
    - Previous Publication:  US20060243047 A1 20061102
PR  - US20393205  20050815  [2005US-0203932]
    - US90816105  20050429  [2005US-0908161]
IC  - (A1) E21B-047/00 E21B-047/08
ICAA- E21B-047/08 [2006-01 A F I B H US]
ICCA- E21B-047/00 [2006 C F I B H US]
EC  - G01N-009/36
    - E21B-049/10
ICO - S01N-011/00S
PCL - ORIGINAL (O) : 073152550
CT  - Search Report [Examiner]
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      US6102673(A) [US6102673]
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      US6775996(B2) [US6775996]
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      US3954006(A) [US3954006]
      US4782695(A) [US4782695]
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      US5266800(A) [US5266800]
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US6128949(A) [US6128949]
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-Walker, I.R., "Circulation Pump for High Purity Gases at High Pressure and a Novel Linear Motor Positioning System," Rev. Sc. Instrum. 67 (2), Feb. 1996, pp. 564-578.
-Sterner, Charles J., "Electromagnetic Pump for Circulating Gases at Low Flow Rates," Rev. Sc. Instruments, Oct. 1960, vol. 31, Issue 10, pp. 1159-1160.
-Canfield, F.B. et al., "Electromagnetic Gas Pump for Low Temperature Service," Rev. Sci. Instrum. 34, 1431 (1963), pp. 1431-1433.
-Erdman, K.L. et al., "Simple Gas Circulation Pump," Rev. Sci. Instrum. 35, 241 (1964), p. 241.
-Lloyd, R.V. et al., "EPR Cavity for Oriented Single Crystals in Sealed Tubes," Rev. Sci. Instrum. 40, 514 (1969), pp. 514-515.

…/…

AB - Methods and apparatus for downhole analysis of formation fluids by isolating the fluids from the formation and/or borehole in a pressure and volume control unit that is integrated with a flowline of a fluid analysis module and determining fluid characteristics of the isolated fluids. Parameters of interest may be derived for formation fluids in a static state and undesirable formation fluids may be drained and replaced with formation fluids that are suitable for downhole characterization or surface sample extraction. Isolated formation fluids may be circulated in a loop of the flowline for phase behavior characterization. Real-time analysis of the fluids may be performed at or near downhole conditions.

NO - (A1) Legal Rep. Firm: SCHLUMBERGER K.K.
Number of Drawings/Images: NDR=11
Number of Figures: NFG=0
Number of Claims: NCL=21
Independant Claim Number: ICL=1,11,19
(B2) Attorney or Agent: Abrell, Matthias; Castano, Jaime; Gaudier, Dale
Primary examiner: Williams, Hezron E.
Assistant examiner: Frank, Rodney T
Number of Drawings: NDR=10
Number of Figures: NFG=10
Number of Claims: NCL=31
Exemplary Claim Number: ECL=1
Independant Claim Number: ICL=1,4,6,9,12,14,16,25,26
Art Unit: ART=2856

OBJ - In one aspect of the invention, an optical sensor, for example, may measure fluid properties of interest, such as hydrocarbon composition, GOR, BTU, of the isolated formation fluid. As another aspect of the invention, a suitable device, such as a density and viscosity sensor, may measure additional fluid properties of interest, such as fluid density and viscosity. As yet another aspect of the invention, a pressure/temperature sensor (P/T gauge) may measure fluid pressure and temperature of the isolated formation fluid.

…/…

[0032] The present invention provides a method of downhole characterization of formation fluids utilizing a downhole tool having a fluid analysis module with a flowline.

ADB - [0016] Applicants recognized that there is need for downhole analyses, which provide accurate answer products in close conjunction with sampling by a downhole tool, such as a formation tester tool.
Moreover, it will be appreciated that such development effort might be complex and time-consuming, but would nevertheless be a routine undertaking for those of ordinary skill in the art having benefit of the disclosure herein.
The present invention advantageously provides a formation tester tool, such as the MDT, with enhanced functionality for the downhole characterization of formation fluids and the collection of formation fluid samples. In this, the formation tester tool may advantageously be used for sampling formation

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fluids in conjunction with downhole characterization of the formation fluids. The sample transfer and transportation procedures in use are known to damage or spoil formation fluid samples by bubble formation, solid precipitation in the sample, among other difficulties associated with the handling of formation fluids for surface analysis of downhole fluid characteristics. Conventional apparatuses for changing the volume of fluid samples under downhole conditions use hydraulic pressure with one attendant shortcoming that it is difficult to precisely control the stroke and speed of the piston under the downhole conditions due to oil expansion and viscosity changes that are caused by the extreme downhole temperatures. In this, by situating the piston 80 of the pump 71 along the same axial direction as the inlet segment of the flowline 33 the dead volume of the isolated fluids is reduced since the volume of fluids left in the flowline 33 from previously sampled fluids affects the fluid properties of subsequently sampled fluids.

ICLM- 1. A downhole fluid characterization apparatus, comprising: a fluid analysis module, the fluid analysis module comprising: a flowline for fluids withdrawn from a formation to flow through the fluid analysis module, the flowline having a first end for the fluids to enter and a second end for the fluids to exit the fluid analysis module; a first selectively operable device and a second selectively operable device structured and arranged with respect to the flowline for isolating a quantity of the fluids in a portion of the flowline between the first and second selectively operable device; and at least one sensor situated on the portion of the flowline between the first and second selectively operable device for measuring parameters of interest relating to the fluids in the flowline. a fluorescence and gas sensor; a density sensor; a pressure sensor; a temperature sensor; a bubbles/gas sensor; a MEMS based sensor; an imager; a resistivity sensor; a chemical sensor; and a scattering sensor. and the fluid analysis module further comprising: a circulation pump for circulating fluids in the closed loop of the circulation line and the bypass flowline. a pressure sensor; a temperature sensor; a bubbles/gas sensor; a MEMS based sensor; an imager; and a scattering sensor, wherein the at least one sensor measures parameters of interest relating to fluids isolated in the bypass flowline; and the fluid analysis module further comprising: one or more of a spectral sensor optically coupled to the flowline; a fluorescence and gas sensor; a chemical sensor; and a resistivity sensor, structured and arranged with respect to the flowline for measuring parameters of interest relating to fluids flowing through the flowline. 11. A method of downhole characterization of formation fluids utilizing a downhole tool comprising a fluid analysis module having a flowline for flowing formation fluids through the fluid analysis module, the method comprising: monitoring at least a first parameter of interest relating to formation fluids flowing in the flowline; when a predetermined criterion for the first parameter of interest is satisfied, restricting flow of the formation fluids in the flowline by operation of a first selectively operable device and a second selectively operable device of the fluid analysis module to isolate formation fluids in a portion of the flowline of the fluid analysis module between the first and second selectively operable device; and characterizing the isolated fluids by operation of one or more sensor on the flowline between the first and second selectively operable device. asphaltene precipitation onset; bubble point; and dew point. 19. A tool for characterizing formation fluids located downhole in an oilfield reservoir, comprising: a fluid analysis module, the fluid analysis module comprising: a flowline for fluids withdrawn from a formation to flow through the fluid analysis module, the flowline having a first end for the fluids to enter and a second end for the fluids to exit the fluid analysis module; the flowline comprising: a bypass flowline and a circulation line interconnecting a first end of the bypass flowline with a second end of the bypass flowline such that fluids can circulate in the circulation line and the bypass flowline; and the fluid analysis module further comprising: a circulation pump for circulating fluids in the circulation line and the bypass flowline; at least one sensor situated on the bypass flowline for measuring parameters of interest relating to the fluids in the bypass flowline; and a first selectively operable device and a second selectively operable device structured and arranged with respect to the flowline for isolating a quantity of the fluids in the bypass flowline between the first and second selectively operable device. a pressure sensor; a temperature sensor; a bubbles/gas sensor; a MEMS

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        based sensor; an imager; and a scattering sensor, wherein the at least one
        sensor measures parameters of interest relating to fluids isolated in the
        bypass flowline; and the fluid analysis module further comprising: one or
        more of a spectral sensor optically coupled to the flowline; a fluorescence
        and gas sensor; a chemical sensor; and a resistivity sensor, structured and arranged with
        respect to the flowline for measuring parameters of interest relating to fluids flowing
        through the flowline.
        and the fluid analysis module further comprising: a pump unit integrated
        with the flowline for varying pressure and volume of the isolated fluids.
  UP  - 2006-46

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  FAN - 20090121357759
  PN  - DE102006019813 A1 20061102 [DE102006019813]
  TI  - (A1) Fluid analysis assembly for down hole tool, has sensors that
        communicate with formation fluid to sense one parameter of formation
        fluid while pressure of formation fluid changes in continuous manner
  PA  - (A1) SCHLUMBERGER TECHNOLOGY BV  (NL)
  PA0 - Schlumberger Technology B.V., Den Haag, NL
  PAH - (A1) SCHLUMBERGER TECHNOLOGY BV (NL)
  IN  - (A1) FREEMARK DARCY  (CA); BORMAN CRAIG  (CA); HAMMAMI AHMED  (CA);
        MUHAMMED MOIN  (CA); JACOBS SCOTT  (CA); BROWN JONATHAN W  (US);
        KURKJIAN ANDREW L  (US); DONG CHENGLI  (US); DHRUVA BRINDESH  (US);
        HAVLINEK KENNETH L  (US); GOODWIN ANTHONY R H  (US)
  AP  - DE102006019813  20060428  [2006DE-10019813]
  PR  - US90816105  20050429  [2005US-0908161]
  IC  - (A1) E21B-049/00 E21B-049/10
  ICAA- E21B-049/10 [2006-01 A F I B H DE]
  ICCA- E21B-049/00 [2006 C F I B H DE]
  EC  - E21B-049/10
  AB  - The assembly has a chamber (60) defining an evaluation cavity for receiving
        a formation fluid. A fluid movement device has a force medium applying
        force to the formation fluid, which causes the fluid to be recirculated
        and optionally mixed within the evaluation cavity. A pressurization assembly changes the
        pressure of the fluid within a chamber in a continuous manner. Sensors (64a-64e)
        communicate with the fluid to sense one parameter of the
        fluid while the pressure of the fluid changes in the continuous manner.
        An independent claim is also included for a method of measuring a parameter
        of an unknown fluid.
  UP  - 2006-46
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  FAN - 20090121357759
  PN  - FR2885166 A1 20061103 [FR2885166]
  TI  - (A1) METHOD AND APPARATUS Of ANALYSIS OF the FLUIDS [Machine Translation]
  PA  - (A1) SCHLUMBERGER SERVICES PETROL  (FR)
  PA0 - SERVICES PETROLIERS SCHLUMBERGER; 42 RUE ST DOMINIQUE 75007 PARIS (FR)
  PAH - (A1) SCHLUMBERGER SERVICES PETROL (FR)
  IN  - (A1) FREEMARK DARCY; BORMAN CRAIG; HAMMAMI AHMED; MUHAMMED MOIN;
        JACOBS SCOTT; BROWN JONATHAN W; KURKJIAN ANDREW L; DONG CHENGLI;
        DHRUVA BRINDESH; HAVLINEK KENNETH L; GOODWIN ANTHONY R H
  AP  - FR0603697  20060421  [2006FR-0003697]
  PR  - US90816105  20050429  [2005US-0908161]
  IC  - (A1) E21B-049/00 E21B-049/08
  ICAA- E21B-049/08 [2006-01 A F I B H FR]
  ICCA- E21B-049/00 [2006 C F I B H FR]
  EC  - E21B-049/10
  AB  - The assembly has a chamber (60) defining an evaluation cavity for receiving
        a formation fluid. A fluid movement device has a force medium applying
        force to the formation fluid, which causes the fluid to be recirculated
        and optionally mixed within the evaluation cavity. A pressurization assembly changes the
        pressure of the fluid within a chamber in a continuous manner. Sensors (64a-64e)
        communicate with the fluid to sense one parameter of the
        fluid while the pressure of the fluid changes in the continuous manner.
        An independent claim is also included for a method of measuring a parameter
        of an unknown fluid. (From DE102006019813 A1)
  UP  - 2006-46

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  PN  - CA2605830 A1 20061109 [CA2605830]
  TI  - (A1) METHODS AND APPARATUS OF DOWNHOLE FLUID ANALYSIS
  PA  - (A1) SCHLUMBERGER CA LTD  (CA)
  PA0 - SCHLUMBERGER CANADA LIMITED  (CA)
  PAH - (A1) SCHLUMBERGER CA LTD (CA)
  IN  - (A1) TERABAYASHI TORU  (JP); CHIKENJI AKIHITO  (FR); YAMATE TSUTOMU
        (JP); MULLINS OLIVER C  (US); KURKJIAN ANDREW L  (US)
  AP  - CA2605830  20060419  [2006CA-2605830]
  PAP - WOIB2006000919 20060419 [2006WO-IB00919]
  PR  - US90816105  20050429  [2005US-0908161]
      - US20393205  20050815  [2005US-0203932]
      - WOIB2006000919  20060419  [2006WO-IB00919]
  IC  - (A1) E21B-049/00 E21B-049/10 G01N-007/00
  ICAA- E21B-049/10 [2006-01 A F I B H EP]; G01N-007/00 [2006-01 A L I B H EP]
  ICCA- E21B-049/00 [2006 C F I B H EP]; G01N-007/00 [2006 C L I B H EP]
  EC  - G01N-009/36
      - E21B-049/10
  ICO - S01N-011/00S
  UP  - 2006-46

  1/1 FAMPAT - (C) Questel- image
  FAN - 20090121357759
  PN  - WO2006117604 A1 20061109 [WO2006117604]
  TI  - (A1) METHODS AND APPARATUS OF DOWNHOLE FLUID ANALYSIS

  PA  - (A1) SCHLUMBERGER TECHNOLOGY BV  (NL); SCHLUMBERGER SERVICES PETROL
        (FR); PETROLEUM RES & DEV NV  (NL); SCHLUMBERGER CA LTD  (CA);
        SCHLUMBERGER HOLDINGS  (FR); TERABAYASHI TORU  (JP); CHIKENJI AKIHITO
        (US); YAMATE TSUTOMU  (US); MULLINS OLIVER C; KURKJIAN ANDREW L
  PA0 - SCHLUMBERGER TECHNOLOGY B.V.; / Parkstraat 83-89, NL-2514 jg The Hague
        (NL) (as-indicated)
      - SERVICES PETROLIERS SCHLUMBERGER; / 42, rue Saint Dominique, F-75007
        Paris (FR) (as-indicated)
      - PETROLEUM RESEARCH AND DEVELOPMENT N.V.; / De Ruyterkade 62,
        Willemstad, Curacao (AN) (as-indicated)
      - SCHLUMBERGER CANADA LIMITED; / 525-3rd Ave S.W., Calgary, Alberta T2P
        0G4 (CA) (as-indicated)
…/…
      - SCHLUMBERGER HOLDINGS LIMITED / Craigmuir Chambers, Road Town, Tortola
        (VG) (as-indicated)
      - TERABAYASHI, Toru / 235-10, Tana, Sagamihara-shi, Kanagawa-Ken
        229-1124 (JP) (only US)
      - CHIKENJI, Akihito; / 87, rue Falguiere, F-75015 Paris (FR) (only US)
      - YAMATE, Tsutomu; / 1-24-5-403, Kagahara, Tsuzuki-ku, Yokohama-shi,
        Kanagawa- Ken, 224-0055 (JP) (only US)
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      - KURKJIAN, Andrew, L.; / 3327 Oakland Drive, Sugar Land, TX 77479 (US)
        (only US)
  PAH - (A1) SCHLUMBERGER TECHNOLOGY BV (NL); SCHLUMBERGER SERVICES PETROL (FR);
        PETROLEUM RES & DEV NV (NL); SCHLUMBERGER CA LTD (CA); SCHLUMBERGER HOLDINGS
        (FR); TERABAYASHI TORU (JP); CHIKENJI AKIHITO (US); YAMATE TSUTOMU (US);
        MULLINS OLIVER C; KURKJIAN ANDREW L
  IN  - (A1) TERABAYASHI TORU  (FR); CHIKENJI AKIHITO  (JP); YAMATE TSUTOMU
        (US); MULLINS OLIVER C  (US); KURKJIAN ANDREW L
  AP  - WOIB2006000919  20060419  [2006WO-IB00919]
  PR  - US90816105  20050429  [2005US-0908161]
      - US20393205  20050815  [2005US-0203932]
  IC  - (A1) E21B-049/00 E21B-049/10 G01N-007/00
  ICAA- E21B-049/10 [2006-01 A F I B H EP]; G01N-007/00 [2006-01 A L I B H EP]
  ICCA- E21B-049/00 [2006 C F I B H EP]; G01N-007/00 [2006 C L I B H EP]
  EC  - G01N-009/36
      - E21B-049/10
  ICO - S01N-011/00S
  DS  - AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK
        DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KM KN
        KP KR KZ LC LK LR LS LT LU LV LY MA MD MG MK MN MW MX MZ NA NG NI NO
        NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SM SY TJ TM TN TR TT TZ UA
        UG US UZ VC VN YU ZA ZM ZW
      - ARIPO patent : BW GH GM KE LS MW MZ NA SD SL SZ TZ UG ZM ZW
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- Eurasian patent : AM AZ BY KG KZ MD RU TJ TM
- European patent : AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LT LU LV MC NL PL PT RO SE SI SK TR
- OAPI patent : BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG

CT - Search Report [Examiner]
US5549159(A)(Cat. X) [US5549159]
US5622223(A)(Cat. X) [US5622223]
US2002194907(A1)(Cat. X,D) [US20020194907]
US5233866(A)(Cat. A) [US5233866]
US2002112854(A1)(Cat. A) [US20020112854]
US6128949(A)(Cat. A) [US6128949]

AB - Methods and apparatus for downhole analysis of formation fluids by isolating the fluids from the formation and/or borehole in a pressure and volume control unit that is integrated with a flowline of a fluid analysis module and determining fluid characteristics of the isolated fluids. Parameters of interest may be derived for formation fluids in a static state and undesirable formation fluids may be drained and replaced with formation fluids that are suitable for downhole characterization or surface sample extraction. Isolated formation fluids may be circulated in a loop of the flowline for phase behavior characterization. Real-time analysis of the fluids may be performed at or near downhole conditions.

NO - (A1) Published: With international search report

OBJ - [0006] [0002] The present invention relates to the field of analysis of downhole fluids of a geological formation for evaluating and testing the formation for purposes of exploration and development of hydrocarbon-producing wells, such as oil or gas wells. More particularly, the present invention is directed to methods and apparatus suitable for isolating formation fluids and characterizing the isolated fluids downhole.
In one aspect of the invention, an optical sensor, for example, may measure fluid properties of interest, such as hydrocarbon composition, GOR, BTU, of the isolated formation fluid. As another aspect of the invention, a suitable device, such as a density and viscosity sensor, may measure additional fluid properties of interest, such as fluid density and viscosity.
As yet another aspect of the invention, a pressure/temperature sensor (P/T gauge) may measure fluid pressure and temperature of the isolated formation fluid.
In yet another aspect of the invention, fluid compressibility may be measured with the changed volume and changed pressure, or fluid density change or optical absorption level change may be determined. [0032] [0026]
In yet another aspect of the present invention, fluid pressure of the isolated formation fluid may be reduced down to a certain pressure such that asphaltene is precipitated.

ADB - [0023] [0016] Applicants recognized that there is need for downhole analyses, which provide accurate answer products in close conjunction with sampling by a downhole tool, such as a formation tester tool.
Moreover, it will be appreciated that such development effort might be complex and time-consuming, but would nevertheless be a routine undertaking for those of ordinary skill in the art having benefit of the disclosure herein.
The present invention advantageously provides a formation tester tool, such as the MDT, with enhanced functionality for the downhole characterization of formation fluids and the collection of formation fluid samples. In this, the formation tester tool may advantageously be used for sampling formation fluids in conjunction with downhole characterization of the formation fluids.
The sample transfer and transportation procedures in use are known to damage or spoil formation fluid samples by bubble formation, solid precipitation in the sample, among other difficulties associated with the handling of formation fluids for surface analysis of downhole fluid characteristics.
Conventional apparatuses for changing the volume of fluid samples under downhole conditions use hydraulic pressure with one attendant shortcoming that it is difficult to precisely control the stroke and speed of the piston under the downhole conditions due to oil expansion and viscosity changes that are caused by the extreme downhole temperatures.
In this, by situating the piston 80 of the pump 71 along the same axial direction as the inlet segment of the flowline 33 the dead volume of the isolated fluids is reduced since the volume of fluids left in the flowline 33 from previously sampled fluids affects the fluid properties of subsequently sampled fluids.

ICLM- 1. A downhole fluid characterization apparatus, comprising: a fluid analysis module, the fluid analysis module comprising: a flowline for fluids withdrawn from a formation to flow through the fluid analysis module, the flowline

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having a first end for the fluids to enter and a second end for the fluids to exit the fluid analysis module; a first selectively operable device and a second selectively operable device structured and arranged with respect to the flowline for isolating a quantity of the fluids in a portion of the flowline between the first and second selectively operable device; and at least one sensor situated on the portion of the flowline between the first and second selectively operable device for measuring parameters of interest relating to the fluids in the flowline. a fluorescence and gas sensor; a density sensor; a pressure sensor; a temperature sensor; a bubbles/gas sensor; a MEMS based sensor; an imager; a resistivity sensor; a chemical sensor; and a scattering sensor. and the fluid analysis module further comprising: a circulation pump for circulating fluids in the closed loop of the circulation line and the bypass flowline. a pressure sensor; a temperature sensor; a bubbles/gas sensor; a MEMS based sensor; an imager; and a scattering sensor, wherein the at least one sensor measures parameters of interest relating to fluids isolated in the bypass flowline; and the fluid analysis module further comprising: one or more of a spectral sensor optically coupled to the flowline; a fluorescence and gas sensor; a chemical sensor; and a resistivity sensor, structured and arranged with respect to the flowline for measuring parameters of interest relating to fluids flowing through the flowline. 11. A method of downhole characterization of formation fluids utilizing a downhole tool comprising a fluid analysis module having a flowline for flowing formation fluids through the fluid analysis module, the method comprising: monitoring at least a first parameter of interest relating to formation fluids flowing in the flowline;

…/…

14. The method of downhole characterization of formation fluids according to claim 13 further comprising: monitoring time dependent signals in the one or more sensor on the flowline to detect gravity separation of the isolated fluids. 15. The method of downhole characterization of formation fluids according to claim 13, wherein the one or more fluid property determined after changing fluid pressure includes one or more of fluid compressibility; asphaltene precipitation onset; bubble point; and dew point. 16. The method of downhole characterization of formation fluids according to claim 11 further comprising circulating the isolated fluids in a closed loop of the flowline while characterizing the isolated fluids. 17. The method of downhole characterization of formation fluids according to claim 16, wherein characterizing the isolated fluids includes determining phase behavior of the isolated fluids while circulating the fluids in the closed loop. 18. The method of downhole characterization of formation fluids according to claim 17, wherein determining phase behavior of the isolated fluids comprises monitoring time dependent sensor properties to detect gravity separation of the phases. 19. A tool for characterizing formation fluids located downhole in an oilfield reservoir, comprising: a fluid analysis module, the fluid analysis module comprising: a flowline for fluids withdrawn from a formation to flow through the fluid analysis module, the flowline having a first end for the fluids to enter and a second end for the fluids to exit the fluid analysis module; the flowline comprising: a bypass flowline and a circulation line interconnecting a first end of the bypass flowline with a second end of the bypass flowline such that fluids can circulate in the circulation line and the bypass flowline; and the fluid analysis module further comprising: a circulation pump for circulating fluids in the circulation line and the bypass flowline; at least one sensor situated on the bypass flowline for measuring parameters of interest relating to the fluids in the bypass flowline; and a first selectively operable device and a second selectively operable device structured and arranged with respect to the flowline for isolating a quantity of the fluids in the bypass flowline between the first and second selectively operable device.

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UP - 2006-46

…/…

1/1 FAMPAT - (C) Questel- image
FAN - 20090121357759
PN - CN1912341 A 20070214 [CN1912341]
TI - (A) Methods and apparatus of fluid analysis
PA - (A) SCHLUMBERGER TECHNOLOGY BV (AN)
PAH - (A) SCHLUMBERGER TECHNOLOGY BV (AN)
IN - (A) ANDR FREEMARK DARCY BORMAN CRA (AN)

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AP  - CN200610089814  20060429  [2006CN-0089814]
PR  - US90816105  20050429  [2005US-0908161]
IC  - (A) E21B-049/00 E21B-049/08
ICAA- E21B-049/08 [2006-01 A F I B H CN]
ICCA- E21B-049/00 [2006 C F I B H CN]
EC  - E21B-049/10
AB  - The assembly has a chamber (60) defining an evaluation cavity for receiving
      a formation fluid. A fluid movement device has a force medium applying
      force to the formation fluid, which causes the fluid to be recirculated
      and optionally mixed within the evaluation cavity. A pressurization assembly changes the
       pressure of the fluid within a chamber in a continuous manner. Sensors (64a-64e)
       communicate with the fluid to sense one parameter of the
      fluid while the pressure of the fluid changes in the continuous manner.
      An independent claim is also included for a method of measuring a parameter
      of an unknown fluid. (From DE102006019813 A1)
UP  - 2006-46

1/1 FAMPAT - (C) Questel- image
FAN - 20090121357759
PN  - MXPA06004693 A 20070424 [MX2006PA004693]
TI  - (A) METHODS AND APPARATUS OF DOWNHOLE FLUID ANALYSIS.
PA  - (A) SCHLUMBERGER TECHNOLOGY BV  (NL)
PA0 - SCHLUMBERGER TECHNOLOGY B.V.  (NL)
PAH - (A) SCHLUMBERGER TECHNOLOGY BV (NL)
IN  - (A) DONG CHENGLI  (CA); KURKJIAN ANDREW L; BROWN JONATHAN W; HAVLINEK
      KENNETH L; FREEMARK DARCY; BORMAN CRAIG; HAMMAMI AHMED; MUHAMMED MOIN;
      JACOBS SCOTT; DHRUVA BRINDESH; GOOWIN ANTHONY R H
AP  - MXPA06004693  20060427  [2006MX-PA04693]
PR  - US90816105  20050429  [2005US-0908161]
IC  - (A) E21B-049/00
ICCA- E21B-049/00 [2006 C F I B M MX]
EC  - E21B-049/10
AB  - Methods and apparatus for downhole analysis of formation fluids by isolating
      the fluids from the formation and/or borehole in a pressure and volume
      control unit that is integrated with a flowline of a fluid analysis module
      and determining fluid characteristics of the isolated fluids. Parameters
      of interest may be derived for formation fluids in a static state and
      undesirable formation fluids may be drained and replaced with formation
      fluids that are suitable for downhole characterization or surface sample extraction.
       Isolated formation fluids may be circulated in a loop of the
      flowline for phase behavior characterization. Real-time analysis of the
      fluids may be performed at or near downhole conditions.
UP  - 2006-46

1/1 FAMPAT - (C) Questel- image
FAN - 20090121357759
PN  - RU2006114647 A 20071120 [RU2006114647]
TI  - (C2) METHOD AND DEVICE TO ANALYSE FLUID
PA  - SHLJUMBERGER TEKNOLODZHI (NL)
PA0 - ShLJuMBERGER TEKNOLODZhI BV (NL)
PAH - (C2) SHLJUMBERGER TEKNOLODZHI BV (NL)
IN  - (C2) FRIMARK DARSI (CA); BORMAN KREHJG (CA); KHAMMAMI AKHMED (CA); MUKHAMMED
      MOIN (CA); DZHEJKOBS SKOTT (CA); BRAUN DZHONATAN V (US); KERKDZHIAN EHNDRJU
      L (US); DUN CHEHNLI (US); DKHRUVA BRINDESH (US); KHAVLINEK KENNET L (US);
      GUDVIN EHNTONI R KH (US)
AP  - RU2006114647  20060428  [2006RU-0114647]
PR  - US90816105  20050429  [2005US-0908161]
IC  - (A) E21B-049/00
ICAA- E21B-049/00 [2006-01 A F I B H RU]
ICCA- E21B-049/00 [2006 C F I B H RU]
EC  - E21B-049/10
AB  - FIELD: oil-and-gas industry.
      SUBSTANCE: proposed device comprises test chamber, appliance to displace
      fluid, pressure device and at least one transducer. Test chamber makes a
      fluid receiving estimation chamber. Appliance to displace fluid comprises
      drive to act on fluid to make it displace inside said test chamber.
      Pressure device continuously varies fluid pressure.
      EFFECT: accurate real-time analysis inside borehole.
      27 cl, 8 dwg
UP  - 2006-46
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1/1 FAMPAT - (C) Questel- image
FAN - 20090121357759
PN  - NO20075593 B 20071123 [NO20075593]
PA  - (B) SCHLUMBERGER TECHNOLOGY BV  (NL)
PAH - A) SCHLUMBERGER TECHNOLOGY BV (NL)
IN  - (B) MULLINS OLIVER CLINTON  (US); TERABAYASHI TORU  (JP); CHIKENJI
      AKIHITO  (JP); YAMATE TSUTOMU  (JP); KURKJIAN ANDREW L  (US)
AP  - NO20075593  20071105  [2007NO-0005593]
PAP - WOIB2006000919 20060419 [2006WO-IB00919]
PR  - US90816105  20050429  [2005US-0908161]
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    - WOIB2006000919  20060419  [2006WO-IB00919]
IC  - (B) E21B-049/00 E21B-049/10 G01N-007/00
ICAA- E21B-049/10 [2006-01 A F I B H NO]; G01N-007/00 [2006-01 A L I B H NO]
ICCA- E21B-049/00 [2006 C F I B H NO]; G01N-007/00 [2006 C L I B H NO]
EC  - G01N-009/36
    - E21B-049/10
ICO - S01N-011/00S
AB  - Methods and apparatus for downhole analysis of formation fluids by isolating
      the fluids from the formation and/or borehole in a pressure and volume
      control unit that is integrated with a flowline of a fluid analysis module
      and determining fluid characteristics of the isolated fluids. Parameters
      of interest may be derived for formation fluids in a static state and
      undesirable formation fluids may be drained and replaced with formation
      fluids that are suitable for downhole characterization or surface sample extraction.
       Isolated formation fluids may be circulated in a loop of the
      flowline for phase behavior characterization. Real-time analysis of the
      fluids may be performed at or near downhole conditions. (From US7461547 B2)
UP  - 2006-46

1/1 FAMPAT - (C) Questel- image
FAN - 20090121357759
PN  - MX2007013221 A 20080116 [MX2007013221]
TI  - (A) METHODS AND APPARATUS OF DOWNHOLE FLUID ANALYSIS.
PA  - (A) SCHLUMBERGER TECHNOLOGY BV  (NL)
PA0 - SCHLUMBERGER TECHNOLOGY B.V.  (NL)
PAH - (A) SCHLUMBERGER TECHNOLOGY BV (NL)
IN  - (A) MULLINS OLIVER C  (JP); TERABAYASHI TORU; KURKJIAN ANDREW L;
      YAMATE TSUTOMU; CHIKENJI AKIHITO
AP  - MX2007013221  20071023  [1920MX-7013221]
PAP - WOIB2006000919 20060419 [2006WO-IB00919]
PR  - US90816105  20050429  [2005US-0908161]
    - US20393205  20050815  [2005US-0203932]
    - WOIB2006000919  20060419  [2006WO-IB00919]
IC  - (A) E21B-049/00 E21B-049/10 G01N-007/00
ICAA- E21B-049/10 [2006-01 A F I B H MX]; G01N-007/00 [2006-01 A L I B H MX]
ICCA- E21B-049/00 [2006 C F I B H MX]; G01N-007/00 [2006 C L I B H MX]
EC  - G01N-009/36
    - E21B-049/10
ICO - S01N-011/00S
AB  - Methods and apparatus for downhole analysis of formation fluids by isolating
      the fluids from the formation and/or borehole in a pressure and volume
      control unit that is integrated with a flowline of a fluid analysis module
      and determining fluid characteristics of the isolated fluids. Parameters
      of interest may be derived for formation fluids in a static state and
      undesirable formation fluids may be drained and replaced with formation
      fluids that are suitable for downhole characterization or surface sample extraction.
       Isolated formation fluids may be circulated in a loop of the
      flowline for phase behavior characterization. Real-time analysis of the
      fluids may be performed at or near downhole conditions.
UP  - 2006-46

1/1 FAMPAT - (C) Questel- image
FAN - 20090121357759
PN  - EP1877646 A1 20080116 [EP1877646]
TI  - (A1) METHODS AND APPARATUS OF DOWNHOLE FLUID ANALYSIS
PA  - (A1) SCHLUMBERGER TECHNOLOGY BV  (NL); SCHLUMBERGER SERVICES PETROL
      (FR); PETROLEUM RES & DEV NV  (AN); SCHLUMBERGER HOLDINGS  (VG)
PA0 - Schlumberger Technology B.V.; Parkstraat 83-89; 2514 JG  The Hague
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       (NL) ( for : BG CZ DE DK GR HU IE IT LT PL RO SI SK TR)
    - Services Petroliers Schlumberger; 42, rue Saint Dominique; 75007 Paris
       (FR) ( for : FR)
    - Petroleum Research and Development N.V.; De Ruyterkade 62; Willemstad,
       Curacao (AN) ( for : AT BE CH CY EE ES FI IS LI LU LV MC PT SE)
    - SCHLUMBERGER HOLDINGS LIMITED; Craigmuir Chambers  Road Town; Tortola
       (VG) ( for : GB NL)
PAH - (A1) SCHLUMBERGER TECHNOLOGY BV (NL); SCHLUMBERGER SERVICES PETROL (FR);
       PETROLEUM RES & DEV NV (AN); SCHLUMBERGER HOLDINGS (VG)
RP  - (A1) Stoole, Brian David et al; Sensa; Gamma House Chilworth Science Park ; Southampton
       Hampshire SO16 7NS [GB]
IN  - (A1) TERABAYASHI TORU  (JP); CHIKENJI AKIHITO  (FR); YAMATE TSUTOMU
       (JP); MULLINS OLIVER C  (US); KURKJIAN ANDREW L  (US)
AP  - EP06744517  20060419  [2006EP-0744517]
PPN - WO2006117604 - 20061109 [WO2006117604]
PAP - WOIB2006000919 20060419 [2006WO-IB00919]
PR  - WOIB2006000919  20060419  [2006WO-IB00919]
    - US90816105  20050429  [2005US-0908161]
    - US20393205  20050815  [2005US-0203932]
IC  - (A1) E21B-049/00 E21B-049/10 G01N-007/00
ICAA- E21B-049/10 [2006-01 A F I B H EP]; G01N-007/00 [2006-01 A L I B H EP]
ICCA- E21B-049/00 [2006 C F I B H EP]; G01N-007/00 [2006 C L I B H EP]
EC  - G01N-009/36
    - E21B-049/10
ICO - S01N-011/00S
REF - Search Report references [Examiner]
    -See references of WO 2006117604A1
AB -  Methods and apparatus for downhole analysis of formation fluids by isolating
       the fluids from the formation and/or borehole in a pressure and volume
       control unit that is integrated with a flowline of a fluid analysis module
       and determining fluid characteristics of the isolated fluids. Parameters
       of interest may be derived for formation fluids in a static state and
       undesirable formation fluids may be drained and replaced with formation
       fluids that are suitable for downhole characterization or surface sample extraction.
       Isolated formation fluids may be circulated in a loop of the
       flowline for phase behavior characterization. Real-time analysis of the
       fluids may be performed at or near downhole conditions. (From US7461547 B2)
UP  - 2006-46

1/1 FAMPAT - (C) Questel- image
FAN - 20090121357759
PN  - CN101189409 A 20080528 [CN101189409]
TI  - (A) Methods and apparatus of downhole fluid analysis
PA  - (A) PETROLEUM RES & DEV NV  (AN)
PA0 - PETROLEUM RES AND DEV N. V.  (AN)
PAH - (A) PETROLEUM RES & DEV NV (AN)
IN  - (A) CLINTON MULLINS OLIVER  (AN); TORU TERABAYASHI  (AN); AKIHITO
       CHIKENJI  (AN); TSUTOMU YAMATE  (AN)
AP  - CN200680019958  20060419  [2006CN-80019958]
PPN - WO2006/117604 20061109 [WO2006117604]
PAP - PCT/IB2006/000919 20060419 [2006WO-IB00919]
PR  - US90816105  20050429  [2005US-0908161]
IC  - (A) E21B-049/00 E21B-049/10 G01N-007/00
ICAA- E21B-049/10 [2006-01 A F I B H CN]; G01N-007/00 [2006-01 A L I B H CN]
ICCA- E21B-049/00 [2006 C F I B H CN]; G01N-007/00 [2006 C L I B H CN]
EC  - E21B-049/10
AB  - The assembly has a chamber (60) defining an evaluation cavity for receiving
       a formation fluid. A fluid movement device has a force medium applying
       force to the formation fluid, which causes the fluid to be recirculated
       and optionally mixed within the evaluation cavity. A pressurization assembly changes the
       pressure of the fluid within a chamber in a continuous manner. Sensors (64a-64e)
       communicate with the fluid to sense one parameter of the
       fluid while the pressure of the fluid changes in the continuous manner.
       An independent claim is also included for a method of measuring a parameter
       of an unknown fluid. (From DE102006019813 A1)
UP  - 2006-46

1/1 FAMPAT - (C) Questel- image
FAN - 20090121357759
PN  - RU2007144207 A 20090610 [RU2007144207]
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 TI  - (C2) METHODS AND DEVICES FOR ANALYSIS OF FLUIDS IN WELL
 PA  - SCHLUMBERGER TECHNOLOGIES (NL)
 PA0 - ShLJuMBERGER TEKNOLODZhI B V (NL)
 PAH - (C2) SCHLUMBERGER TECHNOLOGY BV (NL)
 IN  - (C2) TERABAJASI TORU (JP); TIKENDZI AKIKHITO (JP); JAMATE TSUTOMU (JP); MALLINZ    OLIVER K
       (US); KERKDZHIAN EHNDRJU L (US)
 AP  - RU2007144207  20060419  [2007RU-0144207]
 PPN - WO2006/117604 - 20061109 [WO2006117604]
 PAP - PCT/IB2006/000919 20060419 [2006WO-IB00919]
 PR  - US90816105  20050429  [2005US-0908161]
     - US20393205  20050815  [2005US-0203932]
 IC  - (A) E21B-049/00 E21B-049/10
 ICAA- E21B-049/10 [2006-01 A - I B H RU]
 ICCA- E21B-049/00 [2009 C - I B H RU]
 EC  - G01N-009/36
     - E21B-049/10
 ICO - S01N-011/00S
 AB  - FIELD: measurement equipment. ^ SUBSTANCE: invention relates to analysis
       of the geological stratum fluids in the well for estimate and inspection
       of the stratum for the purposes of investigation and development of
       hydrocarbons production wells. The method and devices for analysis of
       stratum fluids in a well by way of separation (selection) of fluids from
       the stratum and/or borehole in the assembly for regulation of pressure
       and volume which is integrated into the flow line of the fluid analysis
       module and definition of isolated fluids characteristics. The required
       parametres may be deducted for stratum fluids in the static state and the undesirable
        stratum fluids may be drained and substituted with stratum
       fluids suitable for definition of characteristics or extraction of samples
       to the surface. The selected stratum fluids may be subject to circulation
       in the flow line circuit for definition of phase behaviour characteristics.
       Real time analysis of fluids may be performed under or almost under well conditions. ^
        EFFECT: creation of method for analysis of stratum fluids
       in well by way of selection of fluids from the stratum and/or borehole into
       the analyser module flow line. ^ 21 cl, 10 dwg
 UP  - 2006-46

 1/1 FAMPAT - (C) Questel- image
 FAN - 20090121357759
 PN  - DE602006007458 D1 20090806 [DE602006007458]
 PA  - (D1) PETROLEUM RES & DEV NV  (AN); SCHLUMBERGER TECHNOLOGY BV  (NL)
 PAH - (D1) PETROLEUM RES & DEV NV (AN); SCHLUMBERGER TECHNOLOGY BV (NL)
 IN  - (D1) TERABAYASHI TORU  (JP); CHIKENJI AKIHITO  (FR); YAMATE TSUTOMU
       (JP); MULLINS OLIVER C  (US); KURKJIAN ANDREW L  (US)
 AP  - DE602006007458T  20060419  [2006DE-60007458]
 PAP - WOIB2006000919 20060419 [2006WO-IB00919]
 PR  - US90816105  20050429  [2005US-0908161]
     - US20393205  20050815  [2005US-0203932]
     - WOIB2006000919  20060419  [2006WO-IB00919]
 IC  - (D1) E21B-049/00 E21B-049/10 G01N-007/00
 ICAA- E21B-049/10 [2006-01 A F I B H EP]; G01N-007/00 [2006-01 A L I B H EP]
 ICCA- E21B-049/00 [2009 C F I B H EP]; G01N-007/00 [2009 C L I B H EP]
 EC  - G01N-009/36
     - E21B-049/10
 ICO - S01N-011/00S
 AB  - Methods and apparatus for downhole analysis of formation fluids by isolating
       the fluids from the formation and/or borehole in a pressure and volume
       control unit that is integrated with a flowline of a fluid analysis module
       and determining fluid characteristics of the isolated fluids. Parameters of interest may be
        derived for formation fluids in a static state and
       undesirable formation fluids may be drained and replaced with formation
       fluids that are suitable for downhole characterization or surface sample extraction.
        Isolated formation fluids may be circulated in a loop of the
       flowline for phase behavior characterization. Real-time analysis of the
       fluids may be performed at or near downhole conditions. (From US7461547 B2)
 UP  - 2006-46
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Family - LEGE format

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 1/1 FAMPAT - (C) Questel- image
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  FAN - 20092450000875
  PN  - EP1220438           A2 20020703   [EP1220438]
      - BR0106457           A  20020820   [BR200106457]
      - US2002118555        A1 20020829   [US20020118555]
      - US6466467           B2 20021015   [US6466467]
      - EP1220438           A3 20030528   [EP1220438]
      - AR030511            A1 20030820   [AR--30511]
  TI  - Variable frequency resonant inverter
  PA  - PATRICIO LAGOS LEHUEDE
  PA0 - Lagos Lehuede, Patricio; Avda. Pajaritos 6030, Estacion Central;
        Santiago de Chile (CL)
  PAH - (EP1220438)
        (A2) LAGOS LEHUEDE PATRICIO (CL)
  PAH - (AR--30511)
        (A1) PATRICIO LAGOS LEHUEDE (CL)
  RP  - (EP1220438)
        (A2) Manzano Cantos, Gregorio; Cabinet Manzano Embajadores, 55 ; 28012 Madrid [ES]
  RP  - (US20020118555)
         (A1) SUGHRUE, MION, ZINN,; MACPEAK & SEAS, PLLC; 2100 Pennsylvania Avenue, N.W.,
         Washington, DC, 20037-3213 [US]
         (B2) Sughrue Mion, PLLC
  IN  - LAGOS LEHUEDE PATRICIO
  IN0 - Lehuede, Patricio Lagos; Santiago, [CL]
.../...
  AP  - 2001AR-0104107 20010829
        2001US-0984417 20011030
        2001BR-0006457 20011221
        2001EP-0500292 20011221
  PR  - CL35862000  20001222
  DS  - (EP1220438)
        AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR
  LGLE- 20011221 EP-API [POS; EXM]
        FILING DETAILS
        EP01500292 20011221 [2001EP-0500292]
        (EP1220438)
      - 20020703 EP-A2 [POS; EXM]
        Application published without search report
        EP1220438 A2 20020703 [EP1220438]
      - 20030528 EP-A3 [POS; EXM]
        Search report
        EP1220438 A3 20030528 [EP1220438]
      - 20020703 EP/AK-A [POS; ADM]
        DESIGNATED CONTRACTING STATES:
        AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR
      - 20020703 EP/AX-A [POS; ADM]
        EXTENSION OF THE EUROPEAN PATENT TO
        AL;LT;LV;MK;RO;SI
      - 20020828 EP/17P-A [POS; EXM]
        REQUEST FOR EXAMINATION FILED
        EFFECTIVE DATE: 20020617
      - 20030528 EP/AK-A [POS; ADM]
        DESIGNATED CONTRACTING STATES:
        AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR
      - 20030528 EP/AX-A [POS; ADM]
        EXTENSION OF THE EUROPEAN PATENT TO
        AL LT LV MK RO SI
      - 20031210 EP/17Q-A [POS; EXM]
        FIRST EXAMINATION REPORT
        EFFECTIVE DATE: 20031027
      - 20040218 EP/AKX-A [POS; ADM; PIF]
        PAYMENT OF DESIGNATION FEES
        AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR
      - 20060222 EP/18D-A [NEG; NIF]
        DEEMED TO BE WITHDRAWN
        EFFECTIVE DATE: 20050728
  LGLE- 20011030 US-API [POS; EXM]
        FILING DETAILS
        US98441701 20011030 [2001US-0984417]
        (US20020118555)
      - 20020829 US-A1 [POS; EXM]
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        First published patent application
        US2002118555 A1 20020829 [US20020118555]
      - 20021015 US-B2 [POS; PIF]
        Granted patent as second publication
        US6466467 B2 20021015 [US6466467]
      - 20061212 US/FP-A [NEG; NIF]
        EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE
        EFFECTIVE DATE: 20061015
      - 20070205 US/PRDP-A [POS; RES]
        PATENT REINSTATED DUE TO THE ACCEPTANCE OF A LATE MAINTENANCE FEE
        EFFECTIVE DATE: 20070206
  UP  - 2002-27
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Searching

Basic Index (/BI) and Key Content Super Index (/SA)

Search by	Index	Search Hints	Examples
Basic Index (BI) + Key Content Super Index (SA)	/BI /SA (default)	The search is conducted by default in the following fields: • Title in English language for all stages of publication (TI) • Original title in French for all stages of publication (FT) • Original title in German for all stages of publication (GT) • Original title in another language for all stages of publication (OTI) • Official English Abstract (AB) • Abstract in French (FAB) • Abstract in German (GAB) • Abstract in another language (OAB) • Abstract in English machine translation (MTAB) • English language descriptors of French documents(IW) • Patent Object (OBJ) • Advantages and drawbacks of the prior art (ADB) • Independent Claims (ICL\M) Search by: - Simple words using the operators - Phrases using implied adjacency - Drug name (MED) for EP & FR Use truncation. The left truncation is also available.	SPEECH RECOGNI+ AND +PHONE? PYRIPROLE
Basic Index (BI)	/BI	/BI Restricts the search to the TI, FT, GT, OTI, AB, FAB, OAB, MTAB, IW & MED fields.	/BI MEMORY MANAGEMENT AND SPEECH ??? RECOGNIZER?
Key Content Super Index (SA)	/SA	/SA Restricts the search to 3 fields: OBJ, ADB and ICLM (also known as Key Content).	/SA PORTABLE AND MEASUR+ AND FLEXIB+ AND ACCELER+ AND FREELY PIVOT+

**Details of the fields found in the Basic Index and the Key Content Super Index fields can be found on the following pages

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Basic Index (/BI) - Details

Search by	Index	Search Hints	Examples
Terms from the Basic Index	/BI (default)	The Basic Index incorporates: Title (TI), French Title (FT), German Title (GT) Original Title (OTI), Abstract (AB), French Abstract (FAB), German Abstract (GAB) Original language for abstracts (OAB) English Machine Translated Abstracts (MTAB) and Index Terms (IT) for Select French Patents only. All Basic Index terms may be searched without field qualifiers. For all these indexes, search by: Single terms using Boolean or proximity operators; Phrases using implied adjacency. Use truncation. Left-hand truncation is available.	SYNTHETIC AND AQUEOUS HYDROPHOB+ POLYMER? +SPHERE+
Title	/TI	**It is important to note that qualifying to /TI will search ONLY English Language Titles. Please Note:** English language Machine translations are included for the following publications, and are replaced with the official English translations when available: CN (A,B,C,U &Y), JP (A,B,T,U), FR A, DE (A1, B3 & U1), KRA, KRU and TWA. Search English language title by: Single terms using Boolean or proximity operators. Phrases using implied adjacency. Use truncation. Left-hand truncation is available.	/TI OSTEOGENIC PROTEIN? /TI +LITOGRA+
Title - French	/FT	French language titles are primarily available for the following publications: EP, FR, WO, CA, BE, CH. Search French language title by: Single terms using Boolean or proximity operators Phrases using implied adjacency. Use truncation. Left-hand truncation is available	/FT ROTATIF?
Title - German	/GT	German language titles are primarily available for the following publications: DE, EP, AT, CH, WO, DD Search German language title by: Single terms using Boolean or proximity operators. Phrases using implied adjacency. Use truncation. Left-hand truncation is available	/GT ELEKTRISCH+
Original Title (Languages other than English, French and German)	/OTI	Search original language title: Single terms using Boolean or proximity operators. Phrases using implied adjacency. Use truncation. Left-hand truncation is available.	/OTI FOTOINICIADORES FUNCIONALIZADOS

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Basic Index (/BI) Details (cont'd.)

Search by	Index	Search Hints	Examples
Abstract (English)	/AB	All Abstracts are searched using: Single terms using Boolean or proximity operators. Phrases using implied adjacency. Use truncation. Left-hand truncation is available. **Note: qualifying to /AB will search ONLY official English Language Abstracts, NOT Machine Translated Abstracts – see MTAB** English abstracts are available for 99 % of minimum PCT documents (EP, FR, DE, CH, GB, US, WO, JP and RU/SU). The other English abstracts are mainly from the CN, IT, FI, DK, NL, ES, SE, AT and PT publications.	/AB +ISOMER? /AB DNA AND VIRUS
Abstract (French)	/FAB	French abstracts are provided for WO, EP, FR, CA and BE publications from 1978.	/FAB TRANSMISSION 3d METRIQUE
Abstract (German)	/GAB	German abstracts are provided for DE from 1989, EP from 1978 and WO from 1995.	/GAB UBERTRAGUNGS PRIORITAT
Abstract (Other) Country of origin language abstracts are available for a small percentage of the records	/OAB	Use to search primarily for abstracts for following patent offices: - Russian * (SU, RU) - Japanese * (JP) - * Chinese (CN TW) - Korean * (KR) - Spanish (ES, MX, AR, CR, PA, PE, NI, SV, UY, GT, CO, EC, UC, CL, DO, WO) - Portuguese (BR, PT) - Italian (IT) - Turkish (TR) - Hungarian (HU) Mainly available from 1984. Especially useful for the visualization of references. * These languages are displayed in QWEB, QPAT and Orbit.com.	/OAB PLURALIDAD S TRAYECTORIA
Abstract (English machine translated)	/MTAB	This abstract (MTAB) is replaced by the official English abstract (AB) when available. Available currently for new CN (A-B-C-U-Y), DE (A1-B3-U1), FR (A-A1-A3), JP (A-B-B1-B2-T-U-U3), KR (A-B1) and TW (A). Machine translated Abstracts are replaced with office English language abstracts when they are available.	/MTAB GOLF
Index Terms	/IT	English Language Index Terms for select French Patent Records. Search using: Single terms using Boolean, proximity operators and/or truncation. Phrases using implied adjacency and/or truncation. **Please note: Left hand truncation is not supported.	/IT DISTANCE /IT ROBOT+ /IT DISTANCE MEASUREMENT

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Abstracts - Super Index

All Abstracts	/ABS	All abstracts may be searched in tandem with /AB /FAB/GAB/MTAB or by using the Super Index ABS	/ABS KEVLAR
No Machine Translated Abstracts	/NOMT	MTAB is included in the basic index, but may be excluded from the search, by using the field qualifier /NOMT (No Machine Translations)	/NOMT KEVLAR

Key Content Super Index (/SA) – Details:

Available for the following: EP published applications: 1980 to date (Euro-PCTs excluded), PCT published applications: Mid 2001 to date, US Granted Patents: 1971 to 2000, US Published applications: March~~,~~ 15, 2001 onwards

Search by	Index	Search Hints	Examples
Objective:	/OBJ	Search statements of objectives by: - Single terms using Boolean or proximity operators. - Phrases using implied adjacency. Use truncation. Left-hand truncation is available.	/OBJ NETWORK? 2D SECURITY /OBJ DISEASE RESISTANCE /OBJ +ASSAY+
Advantages & Drawbacks	/ADB	Search advantages and previous drawbacks text : - Single terms using Boolean or proximity operators. - Phrases using implied adjacency. Use truncation. Left-hand truncation is available.	/ADB SLOW+ DOWN /ADB INCREAS+ 2D CONCENTRATION /ADB +VIRAL
Independent Claims: Including Main or First Claim	/ICLM	Search independent claims using: - Single terms using Boolean or proximity operators. - Phrases using implied adjacency. Use truncation. Left-hand truncation is available.	/ICLM COLLAPS+ S KEYBOARD? /ICLM "3D" DATA /ICLM +VINYL P COATING?
Objective, Advantages & Drawbacks and Independent Claims	/SA	This Super Index groups together the contents of the OBJ (Objective), ADB (Advantages & Drawbacks) and ICLM (Independent Claims) fields. You are thus able to search without necessarily knowing in what area the terms are found in the publication. Search by single terms or phrases. Proximity operators, boolean operators and truncation may also be used.	/SA FILTRATION MEMBRANE?

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Concepts

Extracted from the full text of the following English language patent publications: EP published applications: 1980 to date (Euro-PCTs excluded), PCT published applications: Mid 2001 to date, US Granted Patents: 1971 to 2000, US Published applications: March, 15, 2001 onwards

Search by	Index	Search Hints	Examples
Concepts (Keywords)	/KEYW	Search by: - Single terms using Boolean or proximity operators. - Phrases using implied adjacency. Use truncation. Left-hand truncation is available.	/KEYW NETWORK? 2D SECURITY /KEYW DISEASE RESISTANCE /KEYW +ASSAY+

Claims and Descriptions (/TX)

Details of countries covered are found on page 3

Search by	Index	Search Hints	Examples
Claims in: - English - French - German - Other languages	 /ECLM /FCLM /GCLM /OCLM	Search by: - Simple words using the operators - Phrases using implied adjacency Use truncation.	 / ECLM PORTABLE MEASUR FLEXIBIL + AND + AND CLUB HEAD
Description	/DESC /ODES	Left truncation is available.	/ DESC ELECTRONIC? AND ACCELEROMETER +
All Claims	/CLMS	/ CLMS simultaneously searches the ECLM, FCLM, GCLM and OCLM fields.	/CLMS (COLLAPS + OR FOLDING OR COLLAPSIBLE) AND (KEYBOARD)
All Claims and Descriptions	/TX	/ TX simultaneously searches the ECLM, FCLM, GCLM, OCLM, ODES & DESC fields.	/ TX + PIVOT FREELY

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Publication Data

Search by	Index	Search Hints	Examples
Publication number	/PN (/PC, /PUB, IKD)	• Search all the patent publication stages using the patent/publication number in the format: 1) if patent authority uses a continuous series: CC-NNNNNN (if number is <7 digits, fill with a hyphen (-) after the country code) 2) if patent authority restarts number series each year: pre Y2K: CCYYNNNNN (if number is <5 digit, fill with 0 (zeros) after the series year CCYY) post Y2K: CCYYYYNNNNN CCYYYYNNNNNN • Search for all publications by ISO country code CC= ISO country code NNNNNNN= publication number • Search by publication country and kind code information: CCKK • Search by publication date: YYYYMMDD YYYYMM YYYY Search in Questel Standardized format:	/PN EP-982976 /PN EP--84665 /PN WO8909788 /PN WO9916958 /PN WO200016958 /PN JP2000077507 /PN US20010000001 /PN US /PN DE19743500 JPB2/PN EPA/PN EPB#/PN 19950625/PN 199506/PN 1995/PN
Related/Original PCT Publication number (present for following documents : EP, DE, US, CN, JP and KR)	/PPN	pre Y2K: CCYYNNNNN post Y2K: CCYYYYNNNNNN	WO9900001/PPN WO2004000006/PPN PPN=YES and JP/PN
Publication date Note: there is no date only for the first publication in Family. If there is more than one patent office member in family, then all First publication dates are Searched.	/PD	First publication date (incl. D0 date) for each patent authority member Search in the format: YYYY-MM-DD YYYY-MM YYYY Use numeric operators: =, <, >, <=, >=	PD=1985-10-19 PD=1997-04-01:1997-04-15 PD>=1997
Published application Date	/PDA	Publication date for disclosure of application (does not retrieve D0 date – date of announcement of application).	PDA>=2000 SDOC GB/PN
Granted Patent date	/PDG	Patent or grant date	PDG=2008 SDOC EP/PN
Other publication date	/OPD	Primarily relates to following dates: - coming into force for Utility Models - U.S.C. 371 National stage Date (US)	OPD=2007:2008 SDOC DEU1/PN
Internal Publication Kind (Kind of Document)	/IKD	Searchable CCKK where CC is the country code and KK is the kind code. Use IKD with NBR, MEM, MEMS and GET.	/IKD JPB2 /IKD EPB#
Standardized Patent Number	/XPN	To facilitate searching across patent databases, Questel has created a standardized patent number field. Use MEM /XPN to extract standardized patent numbers. Use *MEM /XPN to search the standardized patent numbers. To search as cited references.	MEM /XPN *MEM /XPN *MEM /XCT
Publication Number (Legal Status)	/PUB	Replaces PN when searching legal status	US/PUB

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Application Data

Search by	Index	Search Hints	Examples
Application number	/AP	Search application number using the number in the format: YYYYCC-NNNNNNN YYYY= 4-digit application year CC= ISO country code NNNNNNN= 7 digit application number (fill with 0 zero(s) if number contains less than 7 digits) Search by application date in the format: YYYYMMDD YYYYMM YYYY	/AP 1978EP-0100811 /AP 1989WO-US01505 /AP 1999US-0353402 19980615/AP 199806/AP 1998/AP
Related /Original PCT Application Number Provides the original PCT filing number for member patent office documents filed via the PCT.	/PAP	Search application number using the number in the format: YYYY**WO**-CCNNNNN YYYY= 4-digit application year CC= ISO country code WONNNNN= 5 digit application number (fill with 0 zero(s) if number contains less than 5 digits)	2007WO-JP59325/PAP 2007WO-CN01245/PAP PAP=YES AND KR/PN
Application country	/APC (or /AP)	Search by ISO country code.	/APC WO /APC DE
Application date	/APD	Search in the format: YYYY-MM-DD YYYY-MM YYYY Use numeric operators: =, <, >, <=, >=	APD=1999-03-09 APD=1999-01:1999-06 APD>=1996
Standardized Application Number	/XAP	To facilitate crossfile searching with other patent databases, Questel has created a standardized application number field: YYYYCC-NNNNNNN. Use MEM /XAP to extract standardized application numbers. Use *MEM /XAP to search the standardized application numbers.	MEM /XAP *MEM /XAP

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Priority Data

Search by	Index	Search Hints	Examples
Priority number	/PR	Search the priority number using the number in the format: YYYYCC-NNNNNNN YYYY= 4-digit application year CC= ISO country code NNNNNNN= 7 digit application number (fill with leading 0 zero(s) if number contains less than 7 digits) Search by priority date in the format: YYYYMMDD YYYYMM YYYY	/PR 1995DE-1020801 /PR 1998US-0179680 19970919/PR 199709/PR 1997/PR
Number of priorities	/NPR	Use numeric operators: =, <, >, <=, >	NPR=3 NPR>1
Priority country	/PRC (or /PR)	Search by ISO country code.	/PRC CA /PRC NL
Priority date Note :Many records have more than one priority date.	/PRD	Search in the format: YYYY-MM-DD YYYY-MM YYYY Use numeric operators: =, <, >, <=, >= Note: Priority date ranging is available for all priorities.	PRD=1998-04-07 PRD=1999-01:1999-06 PRD>=1998
First Priority Date	/PRD1	The first priority date in the family	PRD1=2000:2004
Standardized Priority Number	/XPR	To facilitate crossfile searching with other patent databases, Questel has created a standardized priority number field: YYYYCC-NNNNNNN. Use MEM /XPR to extract standardized priority numbers. Use *MEM /XPR to search the extracted priority numbers.	MEM /XPR *MEM /XPR

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Classification Data

Search by	Index	Search Hints	Examples
EPO Classification (ECLA) Note: ECLA codes are revised monthly and retrospectively applied	/EC	Search the ECLA codes in the following formats: SubClass: ANNA Group: ANNA-NNN SubGroup: ANNA-NNN/NN Subdivision: ANNA-NNN/NNN ANNA-NNN/NNA ANNA-NNN/NNAN ANNA-NNN/NNANA ANNA-NNN/NNANAN The generic levels are separately searchable without truncation. Use double quotes to search the complementary chemical codes that contain colon [:] separators. Note: To search the range of ECLA codes, use colon [:] between the first and last item specified in the range of codes. Auto posting of the subclasses may cause false hits, please use this feature with care.	 /EC A63F /EC E21B-001 /EC E21B-00? /EC E21B-003/02 /EC C21D-001/773 /EC C21D-006/00K /EC B25G-001/06S1 /EC B25F-005/02B2B /EC C12Q-001/68D2E1 /EC A63F /EC E21B-001 /EC “C07C-025:08” /EC "C07C-025:125" /EC A63F-001/00:A63F-001/16
EPO Classification ICO (In Computer Only) Classification Note: Applied by the EPO examiners	/ICO	ICO classification is based on the ECLA classification system. The ICO codes are used in the following cases: - non-inventive aspects; - when one group takes precedence over another group; - for additional characteristics (if there is no specific group). ICO symbols are derived from classification symbols, with a different 1st letter: instead of A,B,C,D,E,F,G,H the letters K,L,M,N,P,R,S,T are used. The ICO codes maybe either entirely or partially derived from the ECLA codes (there are also codes that are not derived from an existing code).	 /ICO K61M /ICO K61M-016 /ICO K61M-016/00M8 /ICO L65D-019/00Y4B1 /ICO L65G-812/02F4D2D4B
International Patent Classification (IPC v 8) Note: 1. Not all attributes will be available for all codes. Questel will output what is delivered to us by the patent offices: 2. One must use Questel format for IC searching: ANNA-NNN/NNNN Use padding zeros at : Group level = 3 chars Subgroup min of 2 chars	/IC /ICAA /ICAI /ICAN /ICCA /ICCI /ICCN	IPC All IPC v 8 and historical IPC Advanced All IPC Advanced Inventive IPC Advanced Non-Inventive IPC Core All IPC Core Inventive IPC Core non-Inventive IPC codes can be searched at different levels : full code (ANNA-NNN/NNNN) group (ANNA-NNN) sub-class (ANNA) class (ANN#) – use pound /hash sign section (A###) – use pound /hash sign	 /IC A43B-005/04 /IC A43B-005 /IC A43B /IC A43# /IC A63B-043 /IC B25B-001 /IC F###

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Classification Data (cont'd)

Search by	Index	Search Hints	Examples
FI and F-terms : Developed by Japanese Patent Office		*See IPDL and PATOLIS websites for more info and FI / F-term lookup. JP documents from 1980 onwards(not complete for JPU and JPT docs) **http://www.ipdl.inpit.go.jp/homepg_e.ipdl**	
FI (File Index)	/FI	** Note: FI terms are displayed and searched in the JPO format facilitating lookups in the online thesauri, FI IPC class format (no padding zeros) is different to the standard IC OO format (with padding zeros). Classification derived from the IPC 6th edition.** It is an extension of the IPC (similar to ECLA classification). The classifications are cascaded with discrimination section and then subdivision but without intervening spaces between the original IPC. **Searching with** the spaces allows retrieval of **exactly** what the office indexed, **searching without** the spaces retrieves more **broadly**. Format of FI classes is as follows : - an IPC class: ANNA[N]N/NN[N] - an IPC code followed by a file discrimination symbol (1 letter): ANNA[N]N/NN[N] A - an IPC code followed by a subdivision symbol (3 chars): ANNA[N]N/NN[N] NNN - an IPC code followed by both subdivision and file discrimination symbols: ANNA[N]N/NN[N] NNNA - an IPC code with facet (3 letters) ANNA[N]N/NN[N] ZNN	JP/PN and (/FI=YES) /FI A01B1/16 /FI G10L9/20 A /FI G11B11/105 506 /FI G11B11/105 506A /FI G11B11/08 ZNM
F-term (File Forming Term)	/FTM	Classification based on different technical viewpoints. Format : Theme code (5 digits): NANNN Theme code and technical viewpoint indicator (2 letters): NANNN AA+ Theme code, technical viewpoint and "figure" indicator (2 digits): NANNN AANN	/FTM 4C206 /FTM 4C206 CB+ /FTM 4C206 CB23
USPTO Classification (PCL) Note: US Classes are revised and retrospectively applied	/PCL	Search the Main (Primary) and Cross Reference (Secondary) classes simultaneously Search the original US classification with 9 or 12 characters in the format: MMMSSSDDDAAA. - MMM= three digit main class - SSS= three digit subclass or DIG for digest - DDD= three digits - AAA= 1-3 alpha characters To search the PCL by: - the class (3 characters), - the "digest" including the DIG notice, - the full code (ending with 3 digits (DDD) and 3 alphanumeric characters (AAA).	/PCL 714777000 /PCL 714 /PCL 714005
	/PCLO	Search the Main US Class	/PCLO 714
EPO Classification (Dutch)	/IDT	Search the old EPO Dutch classification	/IDT 124PA2F4B3B /IDT 42K18C
EPO Classification (Berlin)	/BC	Search the old EPO Berlin Classification	/BC F02C-007/264 /BC B41J-021/02

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Applicant, Inventor and Representative Data

Search by	Index	Search Hints	Examples
Patent Assignee	/PA	The /PA index searches the following: **PA1, PA2, PA3 ... PA9**: Name of applicant at each stage of publication (EPO format) **PA0:** Name of applicant as published by the patenting office at the published application stage, but the field also contains PA0 addresses for the following publications: U.S. (since 1971), EP and WO (since 1978), DE (since 1987) and FR (since 1991). **OPA**: Name of applicant in the original language of publication, for CN,JP, KR, TW, RU / SU and PCT applications published Russian, Korean, Japanese and Chinese **PAH:** History of applicants names with changes in for various stages of publication. Also contains US Reassignment data as provided by the USPTO **PA:** Contains the standardized name of applicant (see NPA).If it is not available, contains the name at the last stage publication Machine translated English PA names are found for the following publications: CN (A-B-C-U-Y),JP (A-B-B1-B2-T-U-U3), KR (A-B1) and TW (A). The data is replaced once the official English translated name is received. Search by: - single terms using search operators and truncation - full name using implied adjacency With MEM and MEMS commands, use the /PAN index **Please note (MEM) and statistical analysis (MEMS) is performed on the applicants name **only** for the 1st publication stage.	/PA MAX S PLANCK? /PA MAX PLANCK NBR /PAN KIMBERLY CLARK
Normalized Patent Assignee Name	/NPA	This field provides the name of applicant standardized by Questel. This standardization includes corrections of typographical errors, the removal non meaningful parts of the name (INC CORP GMbH, etc.) removing spaces and periods in acronyms. The field will supply, if possible, the latest name of the company. Search by: - single terms using search operators and truncation - full name using implied adjacency With NBR MEM and MEMS commands, use the /NPAN index	/NPA PANASONIC
Patent Assignee - Country	/PAC	Search by patent assignee country using the two letter country code or country name. Note: not all the records include the PAC field.	/PAC JP /PAC JAPAN /PAC NL

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Inventor

Search by	Index	Search Hints	Examples
Inventor	/IN	The /IN index searches the following: **IN, IN2, IN3, ... IN9:** Name of the inventor at each stage of publication (EPO format) Machine translated English IN names are found for the following publications: CN (A-B-C-U-Y),JP (A-B-B1-B2-T-U-U3), KR (A-B1) and TW (A). The data is replaced once the official English translated name is received. **IN0:** Present for JP applications since 1989, KR applications since 1979, and U.S. applications since 2001. Provides information such as the city and state for U.S. inventors in U.S. publications. Transliterated inventor names for JP and KR publications **ISO:** Name of the inventor in the original language of publication, for CN,JP, KR, TW, RU / SU and PCT applications published Russian, Korean, Japanese and Chinese Search by: - Single terms or groups of words from the inventor name. - Full name using implied adjacency. Use the D or W proximity operators to combine the Family Name and First Name. Note: First names or may appear as initials only, so try both. Multiple initials may be separated by spaces, e.g. GUNTHER C J With the NBR, MEM MEMS use /INN	/INN NAGANUMA D KATSUYOSHI (KAO? 1D (YO W HONG))/IN NBR /INN GUNTHER C J
Inventor Country	/INC	Search by ISO country code or country name Note: not all the records include the INC field.	/INC US /INC JAPAN
Inventor State	/INS	For US publications only. Search by state name in full or by two letter code	VIRGINIA/INS /INS VA

Representative

Representative	/RP	Representative information for: U.S. documents since 1971, EP since 1978, WO since 1978 and FR since 1966 Search by single (operators) or groups, words (implied adjacency) using truncation. Use the D or W proximity operators to combine Names. When using NBR, MEM and MEMS commands, use the /RPN index	/RP OBLON W SPIVAK NBR /RPN OBLON SPIVAK
Representative Country	/RPC	Representative information for: U.S. documents since 1971, EP since 1978, WO since 1978 and FR since 1966 Search by two letter country code	/RPC US

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Citations

Citations (patent and non patent literature references) are available for the following publications:

AP - from 1984	AU - from 1974	BE - from 1988	CH - from 1963
CZ - from 1997	DE - from 1943	DK - from 1956	EP - from 1978
ES - from 1993	FR - from 1969	GB - from 1983	GR - from 1988
JP - from 1972	LU - from 1999	NL - from 1947	SG - from 2001
TR - from 1987	US - from 1971	WO - from 1978	

Search by	Index	Search Hints	Examples
Cited Patents	/CT	Patents cited in search reports are displayed under the title "Search Report" or "Cited References" for all the countries listed above. For US, EP, WO, FR, DE, NL, BE, GR, CH, GB, TR, LU and DK publications this field also contains applicant citations For EP publications this field also contains opposition and applicant citations. For JP publications citations are listed in 4 categories: Opposition citations (reason for opposition), Opposition citations (reason for decision), Examiner citations (reason for refusal) and Citations in registration report. Format is the same as the PN field: CCNNNNNNN. <u>Search patent citations using:</u> - Standardized patent number - Two letter country code - Presence of the field	/CT US4352588 /CT GB-222937 /CT JP CT=YES
Non Patent Literature Citations	/REF	References to literature are displayed under the title "Search Report" or "Literature Citations" for all the countries listed above. For US, EP, WO, FR, DE, NL, BE, GR, CH, GB, TR, LU and DK publications the field also contains applicant literature citations. For EP publications the field also contains opposition and examiner references Search using single words or phrases (implied adjacency), using truncation on: - Title - Authors - Source - The XP number assigned by the EPO examiners.	/REF RECOGNITION SYSTEM? /REF DESHMUKH /REF SIGNAL 1W MAGAZINE /REF XP 002058560
Standardized Publication/Patent Numbers in the CT Field	/XCT	To facilitate cross file searching with other patent databases, Questel has created a standardized citation number field: CCNNNNNNN. Use MEM /XCT to extract standardized citation numbers. Use *MEM /XCT to search the standardized citation numbers. Use *MEM /XPN to search the extracted citation numbers as the standardized patent/publication numbers.	MEM /XCT *MEM /XCT *MEM /XPN
Relevancy Category Codes	/XCTX /XCTY /XCTA /XCTO /XCTP /XCTT /XCTE /XCTD /XCTL	Relevancy Category Codes, also known as relevance indicators, are used by the EPO in their Search Reports. Relevancy Category Codes are found in EP, FR and PCT search reports. Search: - For the presence of the field - In the standardized Questel format Definitions: X - Particularly relevant if taken alone Y - Particularly relevant if combined with another document in the same family A - Technology background P - Intermediate document T - Theory or principle underlying the invention E - Earlier patent document, but published on, or after, the filing date D - Document cited in the application L - Document cited for other reasons	XCTX=YES /XCTX US4567890 /XCTX US6000222 /XCTY GB2000029 /XCTA JP01003342 /XCTP FR1135933 /XCTT EP1225025 /XCTE US20030235175 /XCTD WO200000477 /XCTL TW-296405

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Legal Status

Country coverage for Legal Status actions is found on page 5

Search by	Index	Search Hints	Examples
Publication Number (Legal Status)	/PUB	Replaces PN when searching legal status	US/PUB
Owner – Current and Previous Available for some US, EP, BE, DE, FI CN, AU, NL, CH & BR family members	/OWR	The field is present when there have been changes in ownership. Search by: - single words (operators) or - phrases (implied adjacency) Truncation may be used. Addresses are not included When using NBR, MEM and MEMS commands, use the /OWRN index	/OWR QUADRANT DRUG DELIVERY /OWR (INT+ BUS+ MAC+) OR IBM MEM /OWRN
Inventor Available for a small amount of EP & DE members	/INV	The field is present when there have been changes or corrections to an inventor's name or address. /INV contains the surname, first name, city and country code of the inventors. Search by: -single words (operators) or -phrases using the W operator or implied adjacency Truncation may be used. When using NBR, MEM and MEMS commands, use the /INVN index	/INV (PEREIRA W ALEXANDRE) AND FR
Representative Available for some EP, DE, CH family members	/REP	The field is present when there have been changes to the representative. Search by: -single words (operators) or -phrases (implied adjacency) Truncation may **not** be used. Addresses are not included When using NBR, MEM and MEMS commands, use the /REPN index	/REP OBLON W SPIVAK
Opponent Available for some EP family members & small amount of AU, FI & NO members	/OPP	Search opponent name by: -single words (operators) or -phrases using the W operator or implied adjacency Truncation may be used. When using NBR, MEM and MEMS commands, use the /OPPN index	/OPP AKZO
Requestor Available for AU, NZ	/REQ	The field is present when there are: mortgages, licenses, cancellation of financial interests. Search requestor name by: -single words (operators) or -phrases using the W operator or implied adjacency Truncation may **not** be used. When using NBR, MEM and MEMS commands, use the /REQN index	/REQ HSBC BANK
Names	/NAM	The Names Super Index simultaneously searches the OWR, INV, REP, OPP and REQ fields.	/NAM (INT+ BUS+ MAC+) OR IBM

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Legal Status (cont'd.)

Search by	Index	Search Hints	Examples
Event Groups	/EG	Questel has introduced 13 event groups, which combine together similar event codes from different patent authorities. Search by single terms or with Boolean operators. **NIF** - Not in force, lapses, expiries, refusals, withdrawals, revocations, suspensions & other similar events that negatively affect the applicant's claim for protection. **PIF** - Payment of fees, In force **COR** - Corrections, amendments, modifications **RES** - Restitution, reinstatements and restorations: in-force **OPP** - Opposition, Re-examination **ADM** - Administrative actions, official notifications, miscellaneous office actions, errata **NMC** - Name change applicants, owners, inventors; others: opponents, requestors **SPC** - Actions concerning complementary or supplementary certificates of protection. **EXM** - Examination requests, examination procedures and processes, search reports **LIC** - Rights related to Licensing and exploitation **RGR** - Registrations, Grants, In force **ENP** - Entry into national phase, translations (EP, PCT) **RLW** - Refusals, Lapses, expiries, withdrawals from national offices (EP)	/EG PIF /EG EXM AND SPC
	/LEG	Search using the event groups above or by the following: The most recent Event Group is displayed along with the status indicator ALIVE or DEAD.	OPP/LEG /LEG ALIVE DEAD/LEG
Action	/ACT	This field contains three types of information: - a standardized explanation of the action in English - a standardized explanation of the action in the language of the application country - a complementary text, which may contain dates, designated states, inventor or patent assignee, change of IPC codes, etc.	/ACT +ASSIGNMENT /ACT REQUEST 1W EXAMINATION
Action Code	/CO	In the legal status records the action code appears in the 1st line, following the date. Search by the code corresponding to the standardized text in the ACT field in the format: CC/NNNN CC : country code NNNN : 2 – 4 character alphanumeric code	/CO EP/17Q /CO EP/AK
Latest/Last Action Code	/LCO	Search in the format described above, this limits the results to the most recent action(s). You may view the contents of these indexes using the NBR /CO or NBR /LCO command The list of legal status codes is available on the EPO website at the following address: http://www.epo.org/patents/patent-information/raw-data/useful-tables.html	/LCO US/356

SDOC OPERATOR: The SDOC operator allows you to link searches in the Event Group (EG) field with specific countries in the FamPat family record. Use /PUB to specify Patent Authority/Country

Example: **US/PUB SDOC LIC/EG**
Finds US family records that have corresponding licensing information in the legal status record Event Group (EG).

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Other Indexes

Search by	Index	Search Hints	Examples
Designated states for European Patents (EP) and PCT applications (WO)	/DS	Search by ISO country code using the two letter format CC. The EP designated states are from the last EP publication stage.	/DS AT /DS GB AND FR
Filing Details	/FD	Available for US Records ONLY Provides information such as whether one patent is based upon another or is a division of another. Search using: Standardized Questel format: YYYYCC-NNNNNNN Please Note: The USPTO Series Code is not used, infill with zeroes as necessary. The exception is provisional applications beginning with series code 60. Replace 60 with **P**. Search by the US publication number using format USNNNNNNN Search by the presence of the field.	/FD 2000US-0730246 /FD 2001US-**P**132684 /FD US5105599 FD=yes
Original language	/LA	Language is provided for EP and WO documents and in all other cases where the language is not the sole official language of the country. Search LA using the ISO three letter language code: CHI Chinese CZE Czech DAN Danish DUT Dutch ENG English FIN Finnish FRE French GER German ICE Icelandic ITA Italian JPN Japanese KOR Korean NOR Norwegian POR Portuguese RUS Russian SER Serbian SLV Slovenian SPA Spanish SWE Swedish	/LA ENG ENGLISH/LA /LA GER OR FRE
Notes (US EP WO only)	/NO	For U.S. documents /NO contains examiner names and company representative names. For EP and WO documents /NO contains information on divisions, changes or corrections. Search by simple words or phrases Search for the presence of the field	/NO BANNER WITCOFF /NO RAMIEREZ W CYNTHIA NO=YES

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Other Indexes (cont'd)

Search by	Index	Search Hints	Examples
Numbers (US Only) Number of Drawings, Claims, etc	/NUM	For US documents only. Search for: - Number of drawings (NDR) - Number of figures (NFG) - Number of claims (NCL) - Number of independent claims (ICL) - Number of exemplary claims (ECL) - Art Unit (ART) - Number of pages (NPS) - Days of extension (EXTD) - Term of patent (TRMT)	 NDR>=20 NFG<=50 NCL=10:15 ICL=4 ECL=1 ART=271 NPS=10:50 EXTD=134 TRM=14
Case ID Number	/CID	Available for US documents only, Litigation filed in the 94 US District courts. Use in conjunction with MaxVal IP Litigation, available in Orbit.com. Search for the presence of the field	CID=YES
Family Accession Number Previous Family Accession Number	/FAN /PFAN	Producer number assigned to a record. If a family has been recomposed, the previously-assigned producer number is found by searching PFAN.	/FAN/PFAN 20042802935754

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Update Codes

Search by	Index	Search Hints	Examples
New references to the database Weekly: Monthly:	 /UP /UP4	Use the relevant update code in the following format: YYYY-WW (weekly) YYYY-MM (monthly) Truncation may be used YYYY+	 2010-52 /UP 2010-12 /UP4
Addition of equivalents or changes to publication stage Weekly Monthly Addition of Citations	 /UE /UE4 /UCT	Use the relevant update code in the following format: YYYY-WW (weekly) YYYY-MM (monthly) Truncation may be used YYYY+	 2010-50 /UE 2010-12 /UE4 2010+ /UCT
Addition of Human produced English Abstracts 1st time Weekly Monthly Addition of Machine or Human produced English Abstract 1st time Weekly Monthly Addition of any* Human abstract 1st time. Weekly Monthly English French German Spanish, Portuguese, Dutch, Russian, Japanese, Chinese	 /UAB /UAB4 /UMTA /UMT4 /UABA /UAA4	Use the relevant update code in the following format: YYYY-WW (weekly) YYYY-MM (monthly) Truncation may be used YYYY+	 2010-14 /UAB 2010-04 /UAB4 2010-14 /UMTA 2010-04 /UMT4 2010-14 /UABA 2010-04 /UAA4
New records with ECLA codes and existing records receiving ECLA codes for the 1st time..	/UEC	Use the relevant update code in the following format: YYYY-WW (weekly) Truncation may be used YYYY+	2010+ /UEC
New references or changes to records already present in the database Weekly Monthly	 /QW /QM	New documents except, Documents published before 2006 and D0 documents. - modified documents by 1, adding one of 6 fields TI, AB, PA, FI, FT, EC Use the relevant update code in the following format: YYYY-WW (weekly) YYYY-MM (monthly) Truncation may be used YYYY+	 2010-52 /QW 2010-12 /QM 2010+ /QW

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Document Displays

Field/Index catalogues

ABS	<---	AB	MTAB	FAB	GAB	OAB	IW			
NA	<---	IN	PA	RP						
NAN	<---	INN	PAN	RPN						
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		OAB									

File formats

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The APD, PD and PRD fields are included respectively in the AP, PN and PR fields.

(1) When the TI and AB fields are not present, then the FTI field (or if not present then GTI or OTI) and the MTAB field (or if not present then FAB or GAB or OAB) is displayed.

(2) When the FTI and FAB fields are not present, then the TI field (or if not present then GTI or OTI) and the AB field (or if not present MTAB or GAB or OAB) is displayed.

(3) When the ECLM field is not present, then the FCLM field (or default or OCLM GCLM) is displayed.

The non-Latin characters contained in the fields OTI, OAB and OCLM are viewable only with QWEB3, QPAT or Orbit.com.

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Field Displays & Options

PN and AP: Publication and Filing dates apply to all members, all stages of publication and are by default sorted in ascending chronological order.
The order can be modified with the user option **PSORT**.
(P) OP PSORT LAST For a descending chronological order
(P) OP FIRST PSORT To return to the ascending chronological order

For the TI, OTI, IT, AB, OBJ, ADB, ICLM, IN, PA0, ICAA, CICA, ICO, PCL, FI, FTM, and ECLM DESC fields, the content will be extracted from a single publication for the family, based on information listed in the user options.

DOCLA Option: Sets the preferred language for the title, abstract, claims and description. You can specify up to 3 languages.
By default, the option is set to DOCLA EN LA if the search language preference is set to 1 or DOCLA FR LA if the option is set to 2.
To disable DOCLA: (P) OP DOCLA OFF
When DOCLA is disabled: If the English title is not available in TI, the contents of the field FT (or GT or OTI) will be displayed in the TI field. If the abstract English AB is not available, the field content MTAB (or FAB or GAB or OAB) will be displayed in the field AB. If English claims are not available, the ECLM field will be replaced by FCLM or GCLM or OCLM. The DOCLA option supersedes/overrides the MFAM option.

MFAM Option: Set a list of preferred countries (up to 7).If no selection is made, the default is set as the PCT minimum documentation collection with the order as follows: EP, US, WO, GB, FR, DE, CH, BE, JP, SU/RU. This means that title, Assignee, Inventor, and Abstract data will be selected from the EP record as a basis for building the record. If there is no EP record in the family, title, assignee, inventor and abstract data will be selected from the US record. If there is no US record in the family, data from the WO record will be used, and so on.

For the AB, OBJ, ADB and ICLM fields, the content is retrieved from all family members when information is available in display formats ALL and TAB, regardless of the MFAM preferences.

The order of priority for displays is DOCLA then MFAM. If the DOCLA option is disabled, the display is managed by MFAM only.

Two other user options are available:

FTSTG Option: By default, for EP and US documents, claims and description are displayed from the application (A stage)
The order can be modified to display granted patent claims and descriptions (when available):
(P) OP FTSTG TSO To view the description and claims of EP or US granted patents
(P) OP APP FTSTG To return to the display of claims and the description of the application

HITS Option: Displays the title, abstract, claims and descriptions that contain the search terms, which may give a composite view of the family, such as the title of one member, the abstract of a second member and the claims and the description of a third member.
If the search terms appear in the same field of several family members, the display of the hits is based on the DOCLA and MFAM selections. By default, HITS is disabled.
(P) OP HITS ON To enable
(P) OP HITS OFF To re-disable

The FTSTG and HITS options are mutually exclusive. If the HITS option is enabled, the FTSTG option is ignored.

PA, PR, IC and EC fields: The names of the applicant, the priority data, IPCs (excluding ICAA and ICCA) and ECLA are extracted from all members at all stages of publication and are duplicate values. They are sorted alphabetically for applicants and classification codes, in ascending chronological order for priority data.

-

L Option:

These displays will show the corresponding stage, application and filing detail information after each publication number in the family.

ABST	--------→	ABSL	PAGE	--------→	PAGL
ALL	--------→	ALLL*	MAX (or FU)	--------→	MAXL (or FUL)
BIB	--------→	BIBL	PDFR	--------→	PDFL
BRF	--------→	BRFL	STDR	--------→	STDL
DOC	--------→	DOCL	TAB	--------→	TABL

*Unlike the ALL format the ALLL format contains all abstracts (AB + FAB + GAB+ OAB + MTAB) of all members and all claims (ECLM + FCLM + GCLM + OCLM) of all members.

The FAML format will display only the stages information for the PN, AP and FD fields.

Legal Status Displays:

Formats	**Fields**																
LEGL	FAN	PN	TI	PA	PA0	PAH	RP	IN	IN0	AP	PPN	PAP	FD	PR	DS	LGL	UP
LEGE	FAN	PN	TI	PA	PA0	PAH	RP	IN	IN0	AP	PPN	PAP	FD	PR	DS	LGLE	UP

Detail Option:

The DETAIL option gives you the ability to display the record contents of each family member. The records are grouped by patent family to keep the context, **with the first publication stage displayed.** The DETAIL option gives you the ability to drill down to see the detail of each family member, including titles, assignees, inventors, classification and abstracts.

Images Feature:

To display the image in a reference, use the IMG parameter:
PRT IMG <N-N> <FORMAT> ***Please note: IMG must directly follow PRT statement***
PRT IMG 1-10 MSTA

Crossfile Displays

In FamPat, you can get the display information from other patent databases.

Display including corresponding Legal Status record(s):

Legal Feature	**Displays Legal Status Records from the following databases**
LEGALEP	EPPATENT (European Patents)
LEGALIFI	CRXX (Claims Current Legal Status)
LEGALERT	LITA (LitAlert)
LEGALUS	CRXX (Claims Current Legal Status), LITA (LitAlert)
LEGALALL	LGST (Legal Status), CRXX (Claims Current Legal Status), and LITA (LitAlert)

Display contents of a field or format to another database:

PRT MAXL PLUS TI (DWPI) **Displays the FamPat record in MAXL followed by the Derwent Title**

*The display options above may only be used in single file mode and may not be used with the ID command.

-

Extended Family Searching

In FamPat, the FAM or Family command should be used to find the extended family.

1. Extended Family search based on the patent

To create an extended patent family for a particular invention, use the FAM command with the known patent number. Note*:* the XPN, XAP, and XPR fields may also be used for family searching as long as the Questel standardized format is used.

Command Syntax:	**FAM CCNNNNNNN/PN**	using patent/publication number
	FAM YYYYCC-NNNNNNN/AP	using application number
	FAM YYYYCC-NNNNNNN/PR	using priority number

Examples:

-	Publication number:	FAM EP---1234/PN	Standardized Format
-	Application number:	FAM 1978EP-0100811/AP	Standardized Format
-	Priority number:	FAM 1997DE-1020719/PR	Standardized Format

2. Extended Family Search based on the set of documents

To create an extended patent family on a set of documents, use the FAM command followed by the search set number. (SS N, where N is the number of the search set). Use HIS command to determine the search set number. Note: family search based on the SS number is limited to 1000 documents in the search set

Command Syntax: **FAM SS N** (where N is a search set number in a strategy)

Example: FAM SS 1 (perform family search based on the results of search set number 1)

After performing a family search, by using a number or a search statement, Questel will respond by showing the total number of patent groups and the total number of FAMPAT records in the search statement.

After the extended family result set has been created, use the ID command. Records from the FAMed set of results can then be arranged and displayed as patent groups. Patent groups are records from a set that are grouped together because they belong to the same extended family. Groups can contain related records. Related records are those which share related priority information but contain additional patent number information.

Displaying Family Records

After performing a family search, by using a number or a search statement, Questel will respond by showing the total number of FAMPAT records and the number of family records in the search statement.

Use the **L Option** to display the corresponding stage, application, and filing details information after each patent number in the family, for each family record.

```
File : FAMPAT

SS  Results
   1         3  (1) ..FAM US20050010034/PN

prt fabl set

  1/3 FAMPAT - (C) QUESTEL
  FAN - 20091700018719
  PN  - US20050010034   A1 20050113   [US20050010034]
            STG: Utility Patent Application published on or after January 2,
            2001
            AP : 2004US-0914665 20040809
            FD : Cont. of: US 09308329 - 19990519 [1999US-0308329] GRANTED
            FD : Cont. of: US 6193008 - 0 [US6193008]
            FD : Cont. of: US 09336036 - 19990618 [1999US-0336036] GRANTED
            FD : Cont. of: US 6774218 - 0 [US6774218]
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          FD : Provisional: US 60091864 - 19980706 [1998US-P091864]
TI  - Mutants of streptococcal toxin C and methods of use
PA  - Regents of the University of Minnesota
PA0 - Regents of the University of Minnesota; Minneapolis, MN [US]
PAH - (US20050010034)
      (A1) UNIV MINNESOTA (US)
RP  - US20050010034)
      (A1) MERCHANT & GOULD PC; P.O. BOX 2903, MINNEAPOLIS, MN, 55402-0903 [US]
IN  - SCHLIEVERT PATRICK M; OHLENDORF DOUGLAS; MITCHELL DAVID T; GAHR PAMALA J
PR  - 1998US-P091864 19980706
      1999US-0308329 19990519
      1999US-0336036 19990618
      2004US-0914665 20040809
IC  - A61K-038/00
      A61K-039/00
      A61K-039/09
      C07K-001/00
      C07K-014/00
      C07K-014/195
      C07K-014/315
      C07K-017/00
ICAA- C07K-014/315 [2006-01 A - I R M EP]
      A61K-038/00 [2006-01 A - N R M EP]
      A61K-039/00 [2006-01 A - N R M EP]
ICCA- C07K-014/195 [2006 C - I R M EP]
      A61K-038/00 [2006 C - N R M EP]
      A61K-039/00 [2006 C - N R M EP]
EC  - C07K-014/315
ICO - K61K-038/00
      K61K-039/00
      M07K-207/00
PCL - 530350000
AB  - (US20050010034])
      This invention is directed to mutant SPE-C toxins or fragments thereof, vaccine and
      pharmaceutical compositions, and methods of using the vaccine and pharmaceutical
      compositions. The preferred SPE-C toxin has at least one amino acid change and is
      substantially non-lethal compared with the wild type SPE-C toxin. The mutant SPE-C
      toxins can form vaccine compositions useful to protect animals against the
      biological activities of wild type SPE-C toxin.
NO  - (US20050010034)
      (A1) Legal Rep. Firm: MERCHANT & GOULD PC
      Number of Drawings/Images: NDR=11
      Number of Figures: NFG=10
      Number of Claims: NCL=16
OBJ - (US20050010034)
      This invention is directed to mutant SPE-C toxins or fragments thereof, vaccine and
      pharmaceutical compositions, and methods of using the vaccine and pharmaceutical
      compositions. The preferred SPE-C toxin has at least one amino acid change and is
      substantially non-lethal compared with the wild type SPE-C toxin. The mutant SPE-C
      toxins can form vaccine compositions useful to protect animals against the biological
     activities of wild type SPE-C toxin.
ADB - (US20050010034)
      [0013] Thus, there is a need to localize sites on the SPE-C molecule responsible for
      different biological activities. Fragments are also useful in vaccine and
      pharmaceutical compositions. Vectors are useful to provide template DNA to generate
      DNA encoding a mutant SPE-C toxin.
      [0001] Streptococcus pyogenes, also known as beta -hemolytic group A streptococci (GAS)
      is a pathogen of humans which can cause mild infections such as pharyngitis and impetigo.
      GAS also causes severe acute diseases such as scarlet fever and streptococcal toxic
      Shock syndrome (STSS). The elevated levels of TNF-alpha and -beta cause several
      effects typically found in Gram negative induced shock, among which is damage to
      endothelial cells and capillary leak.
ICLM- (US20050010034)
      1. A mutant SPE-C toxin or fragment thereof, wherein the mutant has at least one
      amino acid change and is substantially nonlethal compared with a protein substantially
      corresponding to wild type SPE-C toxin. and wherein at least one of the substituted
      amino acids is positioned in a beta -barrel of a B-subunit, in an N-terminal alpha
      helix, in a diagonal alpha helix, or in a surface groove between subunit A and subunit B.
      and wherein at least one of the substituted amino acids is aspartic acid-12, tyrosine-15,
      tyrosine-17, histidine-35, asparagine-38, lysine-135, lysine-138, tyrosine-139, or
      aspartic acid-142.
      the substitution of tyrosine-15 to phenylalanine, alanine, glycine, serine, or threonine;
      the substitution of tyrosine-17 to phenylalanine, alanine, glycine, glutamic acid,
      lysine, arginine, aspartic acid, serine, or threonine; the substitution of histidine-35
      to phenylalanine, alanine, glycine, glutamic acid, lysine, arginine, aspartic acid,
      tyrosine, phenylalanine, serine, or threonine; the substitution of asparagine-38 to
      alanine, aspartic acid, glutamic acid, lysine or arginine; the substitution of lysine-135
      to glutamic acid or aspartic acid; the substitution of lysine-138 to glutamic acid
      or aspartic acid; the substitution of tyrosine-139 to phenylalanine, alanine, glycine,
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      glutamic acid, lysine, arginine, aspartic acid, serine, or threonine; or the substitution
      of aspartic acid-142 to alanine, glutamic acid, asparagine, glutamine, serine, threonine,
      lysine or arginine. the substitution of lysine-138 to aspartic acid; the substitution
      of tyrosine-139 to alanine, or the substitution of aspartic acid-142 to asparagine.
  UP  - 2005-02


  2/3 FAMPAT - (C) QUESTEL
  FAN - 20091700018719
  PN  - US2002018781    A1    20020214    [US20020018781]
            STG: First published patent application
            AP : 1999US-0336036 19990618
        US6774218    B2    20040810    [US6774218]
            STG : Granted patent as second publication
            FD  : Provisional Appl: US60091864 19980706 [1998US-P091864]
            FD  : Provisional Appl: US60033251 19961206 [1996US-P033251]
            FD  : CIP of: US09308829
        US2005010033    A1    20050113    [US20050010033]
            STG : First published patent application
            AP  : 2004US-0914417 20040809
            FD  : Continuation of: US30822999A 19990520 [1999US-0308229]
            FD  : Continuation of: US33603699A 19990618 [1999US-0336036]
            FD : Cont. of: US 09308229 - 19990520 [1999US-0308229] GRANTED
  TI  - Mutants of streptococcal toxin C and methods of use
  PA  - Regents of the University of Minnesota
  PA0 - Regents of the University of Minnesota; Minneapolis, MN [US]
  PAH - (US20020018781)
        (A1) MERCHANT AND GOULD (US)
        (B2) UNIV MINNESOTA (US)
  PAH - (US20050010033)
        (A1) UNIV MINNESOTA (US)
  RP  - (US20020018781)
        (A1) MERCHANT & GOULD PC; P.O. BOX 2903, MINNEAPOLIS, MN, 55402-0903 [US]
        (B2) Merchant & Gould P.C.
  RP  - (US20050010033)
        (A1) MERCHANT & GOULD PC; P.O. BOX 2903, MINNEAPOLIS, MN, 55402-0903 [US]
  IN  - Gahr Pamala J; Mitchell David T; Ohlendorf Douglas; Schlievert Patrick M
  PR  - 1996US-P033251 19961206
        1997WO-US22125 19971205
        1998US-P091864 19980706
        1999US-0308229 19990520
        1999US-0336036 19990618
        2004US-0914417 20040809
  IC  - A01N-063/00
        A61K-038/00
        A61K-039/00
        A61K-039/02
        A61K-039/09
        A61K-039/38
        A61K-039/40
        A61K-039/44
        C07K-001/00
        C07K-014/00
        C07K-014/195
        C07K-014/315
        C07K-017/00
  ICAA- C07K-014/315 [2006-01 A - I R M EP]
        A61K-038/00 [2006-01 A - N R M EP]
        A61K-039/00 [2006-01 A - N R M EP]
  ICCA- C07K-014/195 [2006 C - I R M EP]
        A61K-038/00 [2006 C - N R M EP]
        A61K-039/00 [2006 C - N R M EP]
  EC  - C07K-014/315
  ICO - K61K-038/00
        K61K-039/00
        M07K-207/00
        M07K-209/00
  PCL - 424093440
        424165100
        424183100
        424184100
        424190100
        435007340
.../...
  AB  - (US20020018781)
        This invention is directed to mutant SPE-C toxins or fragments
        thereof, vaccine and pharmaceutical compositions, and methods of using
        the vaccine and pharmaceutical compositions. The preferred SPE-C toxin
        has at least one amino acid change and is substantially non-lethal
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       compared with the wild type SPE-C toxin. The mutant SPE-C toxins can
       form vaccine compositions useful to protect animals against the
       biological activities of wild type SPE-C toxin.
 NO  - (US20020018781)
        (A1) Legal Rep. Firm: MERCHANT & GOULD PC
       Number of Drawings/Images: NDR=13
       Number of Figures: NFG=10
       Number of Claims: NCL=16
        (B2) Legal Rep. Firm: Merchant & Gould P.C.
       Primary examiner: Navarro, Mark
       Assistant examiner: Hines, JaNa
       Number of Drawings: NDR=10
       Number of Figures: NFG=12
       Number of Claims: NCL=17
       Exemplary Claim Number: ECL=1
       Art Unit: ART=1645
 NO  - (US20050010033)
        (A1) Legal Rep. Firm: MERCHANT & GOULD PC
       Number of Drawings/Images: NDR=11
       Number of Figures: NFG=10
       Number of Claims: NCL=16
 OBJ  - (US20020018781)
       This invention is directed to mutant SPE-C toxins or fragments thereof, vaccine and
       pharmaceutical compositions, and methods of using the vaccine and pharmaceutical
       compositions. The preferred SPE-C toxin has at least one amino acid change and is
       substantially non-lethal compared with the wild type SPE-C toxin. The mutant SPE-C
       toxins can form vaccine compositions useful to protect animals against the biological
       activities of wild type SPE-C toxin.
 ADB - (US20020018781)
        [0014] Thus, there is a need to localize sites on the SPE-C molecule responsible for
        different biological activities. Fragments are also useful in vaccine and pharmaceutical
        compositions. Vectors are useful to provide template DNA to generate DNA encoding a
        mutant SPE-C toxin.
        [0002] Streptococcus pyogenes, also known as beta -hemolytic group A streptococci
        (GAS) is a pathogen of humans which can cause mild infections such as pharyngitis and
        impetigo. GAS also causes severe acute diseases such as scarlet fever and streptococcal
        toxic shock syndrome (STSS). The elevated levels of TNF-alpha and -beta cause several
        effects typically found in Gram negative induced shock, among which is damage to
        endothelial cells and capillary leak.
 ICLM- (US20020018781)
        1. A mutant SPE-C toxin or fragment thereof, wherein the mutant has at least one amino
        acid change and is substantially nonlethal compared with a protein substantially
        corresponding to wild type SPE-C toxin.
        and wherein at least one of the substituted amino acids is positioned in a beta
        -barrel of a B-subunit, in an N-terminal alpha helix, in a diagonal alpha helix,
        or in a surface groove between subunit A and subunit B.
        and wherein at least one of the substituted amino acids is aspartic acid-12,
        tyrosine-15, tyrosine-17, histidine-35, asparagine-38, lysine-135, lysine-138,
        tyrosine-139, or aspartic acid-142.
        the substitution of tyrosine-15 to phenylalanine, alanine, glycine, serine, or
        threonine; the substitution of tyrosine-17 to phenylalanine, alanine, glycine,
        glutamic acid, lysine, arginine, aspartic acid, serine, or threonine; the substitution
        of histidine-35 to phenylalanine, alanine, glycine, glutamic acid, lysine, arginine,
        aspartic acid, tyrosine, phenylalanine, serine, or threonine; the substitution of
        asparagine-38 to alanine, aspartic acid, glutamic acid, lysine or arginine; the
        substitution of lysine-135 to glutamic acid or aspartic acid; the substitution of
        lysine-138 to glutamic acid or aspartic acid; the substitution of tyrosine-139 to
        phenylalanine, alanine, glycine, glutamic acid, lysine, arginine, aspartic acid,
        serine, or threonine; or the substitution of aspartic acid-142 to alanine, glutamic
        acid, asparagine, glutamine, serine, threonine, lysine or arginine.
        the substitution of lysine-138 to aspartic acid; the substitution of tyrosine-139
        to alanine, or the substitution of aspartic acid-142 to asparagine.
 UP  - 2000-08

 3/3 FAMPAT - (C) QUESTEL- image
 FAN - 20091700018719
 PN  - WO9824910    A2    19980611    [WO9824910]
          STG : International publication without international search report
          AP  : 1997WO-US22125 19971205
       CA2273824    A1    19980611    [CA2273824]
          STG : Application laid open
          AP  : 1997CA-2273824 19971205
       AU7625698    A    19980629    [AU9876256]
          STG : Open to public inspection
          AP  : 1998AU-0076256 19971205
       WO9824910    A3    19980903    [WO9824910]
          STG : International search report
          FD  : CIP of : US3325196 19961205 [1996US-0033251]
          FD  : CIP of: US3325196P 19961206 [1996US-P033251]
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        EP0946730    A2    19991006    [EP-946730]
           STG : Application published without search report
           AP  : 1997EP-0949733 19971205
        CN1240001    A     19991229    [CN1240001]
           STG : Unexamined application for a patent for inv.
           AP  : 1997CN-0180372 19971205
        AU734597     B2    20010621    [AU-734597]
           STG : Patent preceeded by OPI
        BR9713679    A     20010717    [BR9713679]
           STG : Patent application
           AP  : 1997BR-0013679 19971205
        US2002039585    A1    20020404    [US20020039585]
           STG : First published patent application
           AP  : 1999US-0308829 19990714
        JP2002513278    T     20020508    [JP2002513278]
           STG : Unexam. pat appl. on foreign appl.
           AP  : 1998JP-0525766 19971205
        CN1148449    C     20040505    [CN1148449C]
           STG : Granted patent for invention
        HK1024265    A1    20041112    [HK1024265]
           STG : Granted standard patent
           AP  : 2000HK-0103559 20000614
        US6835818    B2    20041228    [US6835818]
           STG : Granted patent as second publication
           FD  : Provisional Appl: US60033251 19961206 [1996US-P033251]
        EP0946730    B1    20060308    [EP-946730]
           STG : Patent specification
        AT319830     T     20060315    [ATE319830]
           STG : EP Patent valid in AT
           AP  : 1997AT-0949733 19971205
        DE69735439    D1    20060504    [DE69735439]
           STG : Granted EP number in Bulletin
           AP  : 1997DE-6035439 19971205
        PT946730     E     20060630    [PT-946730]
           AP  : 1997PT-0949733 19971205
        DK0946730    T3    20060710    [DK-946730T]
           STG : Translation of European patent specification
           AP  : 1997DK-0949733 19971205
        DE69735439    T2    20060907    [DE69735439]
           STG : Trans. of EP patent
        ES2260804    T3    20061101    [ES2260804]
           STG : Translation of granted European patent (former B3)
           AP  : 1997ES-0949733 19971205
        CA2273824    C     20070508    [CA2273824]
           STG : Patent (second level)
TI  - MUTANTS OF STREPTOCOCCAL TOXIN C AND METHODS OF USE
PA  - UNIVERSITY
       UNIVERSITY OF MINNESOTA
PA0 - REGENTS OF THE UNIVERSITY OF MINNESOTA; Morrill Hall, 100 Church Street S.E.;
      Minneapolis MN  55455 (US)
PAH - EP-946730)
      (A2) UNIV MINNESOTA (US)
PAH - (US20020039585)
      OHLENDORF DOUGLAS; FROM 19980407 TO 19980407
      SCHLIEVERT PATRICK M; FROM 19980407 TO 19980407
      REGENTS OF THE UNIVERSITY OF MINNESOTA; FROM 19980407
      GAHR PAMALA J; FROM 19980408 TO 19980408
      MITCHELL DAVID T; FROM 19980414 TO 19980414
PAH - (WO9824910)
      (A2) UNIV MINNESOTA (US); SCHLIEVERT PATRICK M (US); OHLENDORF DOUGLAS (US);
      MITCHELL DAVID T (US); GAHR PAMALA J (US)
PAH - (DE69735439)
      (D1) UNIV MINNESOTA (US)
PAH - (CA2273824)
      (A1) UNIV MINNESOTA (US)
PAH - (AU9876256)
      (A) UNIV MINNESOTA
PAH - (CN1240001)
      (A) UNIV MINNESOTA (US)
PAH - (BR9713679)
      (A) UNIV MINNESOTA (US)
PAH - (HK1024265)
      (A1) UNIV MINNESOTA (US)
PAH - (ATE319830)
      (T) UNIV MINNESOTA (US)
PAH - (PT-946730)
      (E) UNIV MINNESOTA (US)
PAH - (DK-946730T)
      (T3) UNIV MINNESOTA (US)
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PAH - (ES2260804)
      (T3) UNIV MINNESOTA
RP  - (EP-946730)
      (A2) Desaix, Anne; Ernest Gutmann - Yves Plasseraud S.A.; 3, rue Chauveau-Lagarde ;
      75008 Paris
RP  - (US20020039585)
      (A1) MERCHANT & GOULD PC; P.O. BOX 2903, MINNEAPOLIS, MN, 55402-0903 [US]
      (B2) Merchant & Gould P.C.
RP  - (WO9824910)
      (A2) BRUESS, Steven, C.;; Merchant, Gould, Smith, Edell, Welter & Schmidt, P .A.;
      3100 Norwest Center; 90 South Seventh Street; Minneapolis, MN 55402-4131 [US]
IN  - SCHLIEVERT PATRICK M; OHLENDORF DOUGLAS; MITCHELL DAVID T; GAHR PAMALA J
PR  - 1996US-P033251 19961206
      1997WO-US22125 19971205
      1999US-0308829 19990714

IC  - A01N-063/00
      A61K
      A61K-038/00
      A61K-039/00
      A61K-039/02
      A61K-039/09
      A61K-039/38
      A61K-039/40
      A61K-039/44
      A61P-031/00
      A61P-031/04
      A61P-037/00
      A61P-037/04
      C07K
      C07K-014/195
      C07K-014/315
      C12N
      C12N-001/15
      C12N-001/19
      C12N-001/21
      C12N-005/10
      C12N-015/09
      C12N-015/31
ICAA- C12N-015/09 [2006-01 A F I R M JP]
      C12N-015/31 [2006-01 A F I B H EP]
      A61K-039/09 [2006-01 A L I B H EP]
      A61P-031/04 [2006-01 A L I R M JP]
      A61P-037/04 [2006-01 A L I R M JP]
      C07K-014/315 [2006-01 A L I B H EP]
      C12N-001/15 [2006-01 A L I R M JP]
      C12N-001/19 [2006-01 A L I R M JP]
      C12N-001/21 [2006-01 A L I B H EP]
      C12N-005/10 [2006-01 A L I B H EP]
      A61K-038/00 [2006-01 A - N R M EP]
      A61K-039/00 [2006-01 A - N R M EP]
ICCA- C12N-015/09 [2006 C F I R M JP]
      A61K-039/09 [2006 C L I B H EP]
      A61P-031/00 [2006 C L I R M JP]
      A61P-037/00 [2006 C L I R M JP]
      C07K-014/195 [2006 C L I B H EP]
      C12N-001/15 [2006 C L I R M JP]
      C12N-001/19 [2006 C L I R M JP]
      C12N-001/21 [2006 C L I B H EP]
      C12N-005/10 [2006 C L I B H EP]
      C12N-015/31 [2006 C L I B H EP]
      A61K-038/00 [2006 C - N R M EP]
      A61K-039/00 [2006 C - N R M EP]
EC  - C07K-014/315
ICO - K61K-038/00
      K61K-039/00
      M07K-207/00
      M07K-209/00
PCL - 424093440
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        A61P31/04
        A61P37/04
        C07K14/315
        C12N1/15
        C12N1/19
        C12N1/21
        C12N15/00 ZNAA
        C12N5/00 101
        C12N5/00 A
  FTM - 4B024 AA01
        4B024 BA31
        4B024 BA38
        4B024 CA06
        4B024 DA06
        4B024 EA04
        4B024 HA01
        4B065 AA26.X
        4B065 AA49.Y
.../...
  AB  - (US20020018781)
        This invention is directed to mutant SPE-C toxins or fragments
        thereof, vaccine and pharmaceutical compositions, and methods of using
        the vaccine and pharmaceutical compositions. The preferred SPE-C toxin
        has at least one amino acid change and is substantially non-lethal
        compared with the wild type SPE-C toxin. The mutant SPE-C toxins can
        form vaccine compositions useful to protect animals against the
        biological activities of wild type SPE-C toxin.
  NO  - (US20020039585)
         (A1) Legal Rep. Firm: MERCHANT & GOULD PC
        Number of Drawings/Images: NDR=11
        Number of Figures: NFG=10
        Number of Claims: NCL=16
         (B2) Legal Rep. Firm: Merchant & Gould P.C.
        Primary examiner: Smith, Lynette R. F.
        Assistant examiner: Hines, J.
        Number of Drawings: NDR=10
        Number of Figures: NFG=10
        Number of Claims: NCL=21
        Exemplary Claim Number: ECL=1
        Art Unit: ART=1645
  NO  - (WO9824910)
         (A2) Published: Without international search report and to be republished upon receipt
         of that report
  OBJ - (US20020039585)
        This invention is directed to mutant SPE-C toxins or fragments thereof, vaccine and
        pharmaceutical compositions, and methods of using the vaccine and pharmaceutical
        compositions. The preferred SPE-C toxin has at least one amino acid change and is
        substantially non-lethal compared with the wild type SPE-C toxin. The mutant SPE-C
        toxins can form vaccine compositions useful to protect animals against the biological
        activities of wild type SPE-C toxin.
  ADB - (US20020039585)
         [0013] Thus, there is a need to localize sites on the SPE-C molecule responsible for
         different biological activities. Fragments are also useful in vaccine and pharmaceutical
         compositions. Vectors are useful to provide template DNA to generate DNA encoding
         a mutant SPE-C toxin.
         [0001] Streptococcus pyogenes, also known as beta -hemolytic group A streptococci
         (GAS) is a pathogen of humans which can cause mild infections such as pharyngitis
         and impetigo. GAS also causes severe acute diseases such as scarlet fever and
         streptococcal toxic shock syndrome (STSS). The elevated levels of TNF-alpha and -beta
         cause several effects typically found in Gram negative induced shock, among which is
         damage to endothelial cells and capillary leak.
  ICLM-  (US20020039585)
        1. A mutant SPE-C toxin or fragment thereof, wherein the mutant has at least one
        amino acid change and is substantially nonlethal compared with a protein substantially
        corresponding to wild type SPE-C toxin. and wherein at least one of the substituted
        amino acids is positioned in a beta -barrel of a B-subunit, in an N-terminal alpha
        helix, in a diagonal alpha helix, or in a surface groove between subunit A and subunit B.
        and wherein at least one of the substituted amino acids is aspartic acid-12, tyrosine-15,
        tyrosine-17, histidine-35, asparagine-38, lysine-135, lysine-138, tyrosine-139, or
        aspartic acid-142.
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       the substitution of tyrosine-15 to phenylalanine, alanine, glycine, serine, or threonine;
       the substitution of tyrosine-17 to phenylalanine, alanine, glycine, glutamic acid,
       lysine, arginine, aspartic acid, serine, or threonine; the substitution of histidine-35 to
       phenylalanine, alanine, glycine, glutamic acid, lysine, arginine, aspartic acid,
       tyrosine, phenylalanine, serine, or threonine; the substitution of asparagine-38 to
       alanine, aspartic acid, glutamic acid, lysine or arginine; the substitution of
       lysine-135 to glutamic acid or aspartic acid; the substitution of lysine-138 to
       glutamic acid or aspartic acid; the substitution of tyrosine-139 to phenylalanine,
       alanine, glycine, glutamic acid, lysine, arginine, aspartic acid, serine, or threonine;
       or the substitution of aspartic acid-142 to alanine, glutamic acid, asparagine,
       glutamine, serine, threonine, lysine or arginine.
       the substitution of lysine-138 to aspartic acid; the substitution of tyrosine-139 to
       alanine, or the substitution of aspartic acid-142 to asparagine.
  UP   - 2002-08
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Use the **DETAIL** option, which will allow you to drill-down into the family records, to display the individual bibliographic information for each patent authority record. After FAMing use the following syntax:

PRT <format> DETAIL SET

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fam EP1276233/pn

  1 Patent Groups
  ** SS 1: Results 1

  Search statement  2

prt ful detail set

  << Patent family      1 >>

  1/1 FAMPAT - (C) QUESTEL- image
  FAN - 20090110485097
  PN  - GB0216065 D0 20020821 [GB200216065]
  TI  - (D0) Apparatus and method for controlling transmission power in a
        mobile communication system
  PA  - (D0) SAMSUNG ELECTRONICS CO LTD
  PA0 - SAMSUNG ELECTRONICS CO., LTD.
  PAH - (D0) SAMSUNG ELECTRONICS CO LTD
        (A) SAMSUNG ELECTRONICS CO LTD (KR)
  IN  - (A) JO SUNG-KWON  (KR); OH JEONG-TAE  (KR); YANG SANG-HYUN  (KR)
  PR  - KR2001042312  20010713  [2001KR-0042312]
  IC  - (A) H03G-003/20
  ICAA- H04L-027/36 [2006-01 A F I R M JP]
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        H04B-007/005 [2006-01 A - I R M EP]
        H04B-007/26 [2006-01 A L I R M JP]
        H04W-052/52 [2009-01 A - I R M EP]
        H04W-052/26 [2009-01 A - N R M EP]
        H04W-052/36 [2009-01 A - N R M EP]
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        H04B-007/005 [2006 C - I R M EP]
        H04B-007/26 [2006 C L I R M JP]
        H04W-052/00 [2009 C - I R M EP]
  EC  - H04B-007/005B6
  ICO - T04B-007/005B2Q
  CT  - Cited in the search report
      - US5930299(A);US2001000456(A)
  AB  - An apparatus and method for maximizing the efficiency of a power
        amplifier by reducing the PAPR of a BS in a mobile communication
        system. A power controller between I and Q channel pulse shaping
        filters and a frequency converter calculates cancellation signals for
        signal pulses that increase the PAPR at each sampling period,
        pulse-shape-filters cancellation signals at the highest levels among
        the cancellation signals, and adds the filtered cancellation signals
        to the original signals. Thus, spectral regrowth outside a signal
        frequency band is suppressed. In the case of a system supporting
        multiple frequency allocations, the PAPR is controlled for each FA
        according to its service class. Therefore, minimum system performance
        is ensured and power use efficiency is increased.
  UP  - 2002-38

  1/1 FAMPAT - (C) QUESTEL
  FAN - 20090110485097
  PN  - EP1276233 A2 20030115 [EP1276233]
  TI  - (A2) Apparatus and method for controlling transmission power in a
        mobile communication system
  PA  - (A2) SAMSUNG ELECTRONICS CO LTD  (KR)
  PA0 - SAMSUNG ELECTRONICS CO., LTD.; 416, Maetan-dong, Paldal-gu; Suwon-City, Kyungki-do (KR)
  PAH - (A2) SAMSUNG ELECTRONICS CO LTD (KR) IN  - (A2) JO SUNG-KWON  (KR); OH JEONG-TAE  (KR);
        YANG SANG-HYUN  (KR)
  RP  - (A2) Grünecker, Kinkeldey, Stockmair & Schwanhäusser Anwaltssozietät; Maximilianstrasse 58 ;
        80538 München [DE]]
  IN  - (A2) JO SUNG-KWON (KR); YANG SANG-HYUN (KR); OH JEONG-TAE (KR)
  PR  - KR20010042312 20010713 [2001KR-0042312] IC  - (A2) H03G-003/30
  ICAA- H03G-003/30 [2006-01 A F I B H EP]
        H04L-027/36 [2006-01 A F I R M JP]
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H04B-001/707 [2006-01 A L I R M JP]
H04B-007/005 [2006-01 A L I B H EP]
H04B-007/26 [2006-01 A L I R M JP]
H04W-052/52 [2009-01 A - I R M EP]
H04W-052/26 [2009-01 A - N R M EP]
H04W-052/36 [2009-01 A - N R M EP]
ICCA- H03G-003/30 [2006 C F I B H EP]
H04L-027/34 [2006 C F I R M JP]
H04B-001/707 [2006 C L I R M JP]
H04B-007/005 [2006 C L I B H EP]
H04B-007/26 [2006 C L I R M JP]
H04W-052/00 [2009 C - I R M EP]
EC - H04B-007/005B6
ICO - T04W-052/26
T04W-052/36
T04W-072/04S14D
DS - DE FI IT SE
CT - Search Report [Examiner]
US6236864(B1)(Cat. X) [US6236864]
WO9953625(A1)(Cat. Y) [WO9953625]
US5991262(A)(Cat. A) [US5991262]
AB - Abstract in publication language
- An apparatus and method for maximizing the efficiency of a power amplifier by reducing the PAPR of a BS in a mobile communication system. A power controller between I and Q channel pulse shaping filters and a frequency converter calculates cancellation signals for signal pulses that increase the PAPR at each sampling period, pulse-shape-filters cancellation signals at the highest levels among the cancellation signals, and adds the filtered cancellation signals to the original signals. Thus, spectral regrowth outside a signal frequency band is suppressed, In the case of a system supporting multiple frequency allocations, the PAPR is controlled for each FA according to its service class. Therefore, minimum system performance is ensured and power use efficiency is increased.
OBJ - The present invention relates generally to a mobile communication system, and in particular, to an apparatus and method for reducing the peak-to-average power ratio (PAPR) of a base station (BS) in a mobile communication system. 2. It is, therefore, an object of the present invention to provide a method and apparatus for increasing the use efficiency of an RF power amplifier to realize a stable, feasible mobile communication system.
It is another object of the present invention to provide a method and apparatus for stably operating a power amplifier in a linear amplification area in a high PAPR system.
…/… **(record truncated in this example due to length)**
ADB - The RF amplifier is the most expensive device in the entire system and thus a significant component to be considered to reduce system cost.
It is very difficult to design a power amplifier satisfying these requirements because the former requires high input power and the latter requires low input power.
However, optimum distortion compensation cannot be achieved with this pre-distortion adjusting circuit due to its shortcomings associated with efficiency, speed, and complexity.
ICLM 1. A transmission power controlling apparatus in a mobile communication system supporting a single FA (Frequency Allocation), comprising: a channel device group for generating an I (In phase) channel baseband signal and a Q (Quadrature phase) channel baseband signal from each channel data; a pulse shaping filter for pulse-shape-filtering the baseband signals; a power controller for controlling the PAPRs (Peak-to-Average power Ratio) of the pulse-shape-filtered signals according to a threshold power required for linear power amplification; and a firequency converter for upconverting the power-controlled signals to RF (Radio Frequency) signals and outputting the RF signals.
…/… 14. A transmission power controlling apparatus in a mobile communication system supporting a plurality of FAs (Frequency Allocations), comprising: a plurality of channel device groups for generating I (In phase) channel baseband signals and Q (Quadrature phase) channel baseband signals from each channel data for the FAs; a plurality of pulse shaping filters connected to the channel device groups, for pulse-shape-filtering the FA baseband signals; and an FA power controller for controlling the PAPRs (Peak-to-Average power Ratio) of the pulse-shape-filtered signals according to a threshold power required for linear power amplification.
…/… 25. A method of controlling transmission power in a mobile communication system supporting a plurality of FAs (Frequency Allocations), comprising the steps of: generating I (In phase) channel baseband signals and Q (Quadrature phase) channel baseband signals from each channel data for the FAs ; pulse-shape-filtering the FA baseband signals; and controlling the PAPRs (Peak-to-Average power Ratio) of the pulse-shape-filtered signals according to a threshold power required for linear power amplification, and outputting the PAPR-controlled signals in an RF band. receiving the original pulse-shape-filtered signals of each FA, measuring the instant power of the original pulse-shape-filtered signals at each sampling period, and determining a scale value for the FA by comparing the instant power with a threshold power;
…/…
UP - 2002-38

1/1 FAMPAT - (C) QUESTEL
FAN - 20090110485097
PN - FR2827445 A1 20030117 [FR2827445]
PA - (A1) SAMSUNG ELECTRONICS CO LTD (KR)
PA0 - SAMSUNG ELECTRONICS CO LTD; 416 MAETAN DONG PALDAL KU SUWON CITY KYUNGKI DO COREE
PAH - (A1) SAMSUNG ELECTRONICS CO LTD (KR)
RP - (A1) SANTARELLI
IN - (A1) JO SUNG KWON; OH JEONG TAE; YANG SANG HYUN
PR - KR2001042312 20010713 [2001KR-0042312]
IC - (A1) H04B-007/005 H04Q-007/30
ICAA- H04L-027/36 [2006-01 A F I R M JP]
H04B-001/707 [2006-01 A L I R M JP]
H04B-007/005 [2006-01 A - I R M EP]
H04B-007/26 [2006-01 A L I R M JP]
H04W-052/52 [2009-01 A - I R M EP]
H04W-052/26 [2009-01 A - N R M EP]
H04W-052/36 [2009-01 A - N R M EP]
ICCA- H04L-027/34 [2006 C F I R M JP]
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EC  - H04W-052/52
ICO - T04W-052/26
       T04W-052/36
       T04W-072/04S14D
CT  - Search Report [Examiner]
       US6236864(B1)(Cat. A) [US6236864]
       US5991262(A)(Cat. A) [US5991262]
REF - Search Report references [Examiner]
       -HARVATIN D T ET AL: "Multi-rate modulation scheme with controlled peak-to-average
       power ratio using balanced incomplete block designs" ICC 2001. 2001 IEEE INTERNATIONAL
       CONFERENCE ON COMMUNICATIONS. CONFERENCE RECORD. HELSINKY, FINLAND, JUNE 11 - 14,
       2001, IEEE INTERNATIONAL CONFERENCE ON COMMUNICATIONS, NEW YORK, NY : IEEE, US, vol.
       VOL. 1 OF 10, 11 juin 2001 (2001-06-11), pages 1028-1032, XP010553485 ISBN: 0-7803-7097-1
       (Cat. A)   AB  - Publication abstract in french.
     - Une unité de commande de puissance (2-8) intercalée entre des filtres
       de mise en forme d'impulsions de canal I et Q (2-3, 2-4) et un
       convertisseur de fréquence (2-5), calcule des signaux d'annulation
       pour des impulsions de signal qui augmentent le rapport entre la
       puissance de crête et la puissance moyenne à chaque période
       d'échantillonnage, applique un filtrage de mise en forme d'impulsions
       à des signaux d'annulation ayant les niveaux les plus élevés, et
       additionne aux signaux originaux les signaux d'annulation filtrés. Une
       recroissance spectrale à l'extérieur d'une bande de fréquence de
       signal est ainsi atténuée. Dans le cas d'un système supportant de
       multiples allocations de fréquence, le rapport entre la puissance de
       crête et la puissance moyenne est commandé pour chaque allocation de
       fréquence conformément à sa classe de service. Ceci permet de garantir
       des performances de système minimales et d'augmenter l'efficacité
       d'utilisation de la puissance.
AB -  An apparatus and method for maximizing the efficiency of a power amplifier by reducing
       the PAPR of a BS in a mobile communication system. A power controller between I and
       Q channel pulse shaping filters and a frequency converter calculates cancellation
      signals for signal pulses that increase the PAPR at each sampling period, pulse-shape-
      filters cancellation signals at the highest levels among the cancellation signals, and
      adds the filtered cancellation signals to the original signals. Thus, spectral regrowth
      outside a signal frequency band is suppressed, In the case of a system supporting multiple
      frequency allocations, the PAPR is controlled for each FA according to its service class.
      Therefore, minimum system performance is ensured and power use efficiency is increased.
      <IMAGE>(From EP1276233 A2)
UP  - 2002-38

1/1 FAMPAT - (C) QUESTEL
FAN - 20090110485097
PN  - KR2003006512 A 20030123 [KR2003006512]
TI  - (A) APPARATUS AND METHOD FOR CONTROLLING TRANSMISSION POWER IN MOBILE
       COMMUNICATION SYSTEM
PA  - (A) SAMSUNG ELECTRONICS CO LTD  (KR)
PA0 - SAMSUNG ELECTRONICS CO., LTD. (KR)
PAH - (A) SAMSUNG ELECTRONICS CO LTD (KR)
IN  - (A) CHO SEONG GWON  (KR); OH JEONG TAE  (KR); YANG SANG HYEON  (KR)
IN0 - (A) CHO SEONG GWON; OH JEONG TAE; YANG SANG HYEON
PR  - KR2001042312  20010713  [2001KR-0042312]
ICAA- H04L-027/36 [2006-01 A F I R M JP]
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       H04B-007/26 [2006-01 A L I R M JP]
       H04W-052/52 [2009-01 A - I R M EP]
       H04W-052/26 [2009-01 A - N R M EP]
       H04W-052/36 [2009-01 A - N R M EP]
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       H04B-007/005 [2006 C - I R M EP]
       H04B-007/26 [2006 C L I R M JP]
       H04W-052/00 [2009 C - I R M EP]
EC  - H04W-052/52
ICO - T04W-052/26
       T04W-052/36
       T04W-072/04S14D
AB  - PURPOSE: An apparatus and a method for controlling a transmission power in a mobile
       communication system are provided to secure the minimum function according to the
       characteristic of each FA(Frequency Allocation) signal and maximize the efficiency
       of the entire use power when transmitting a multi-FA by controlling a scale value as
       to each FA in the mobile communication system which transmits the multi-FA.
       CONSTITUTION: A channel element group(2-1) encodes and modulates channel data to be
       transmitted according to each channel, and generates a baseband signal for classifying
       the channel data into an I(In-phase) signal component and a Q(Quadrature-phase) signal
       component. I and Q pulse shaping filters(2-3,2-4) filters the baseband signal. A power
       adjusting block(2-8) adjusts a PAR(Peak-to-Average Ratio) of the filtered signal
       according to a threshold power requested for a linear power amplification. A frequency
       converter(2-5) up-converts the adjusted signal into an RF(Radio Frequency) band signal.
       A power amplifier(2-6) amplifies the RF band signal.
UP 2002-38


1/1 FAMPAT - (C) QUESTEL
FAN - 20090110485097
PN  - CA2421235 A1 20030123 [CA2421235]
TI  - (A1) APPARATUS AND METHOD FOR CONTROLLING TRANSMISSION POWER IN
       AMOBILE COMMUNICATION SYSTEM
PA  - (A1) SAMSUNG ELECTRONICS CO LTD  (KR)
PA0 - SAMSUNG ELECTRONICS CO., LTD. (KR)
PAH - (A1) SAMSUNG ELECTRONICS CO LTD (KR)
IN  - (A1) JO SUNG-KWON  (KR); OH JEONG-TAE  (KR); YANG SANG-HYUN  (KR)
PR  - KR2001042312  20010713  [2001KR-0042312]
     - WOKR0201304  20020710  [2002WO-KR01304]
IC  - (A1) H04B-007/216 H04B-007/26 H04L-027734 H04Q-007/36
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      H04B-007/005 [2006-01 A L I B H CA]
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      H04L-027/34 [2006-01 A L I B H CA]
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      H04B-007/005 [2006 C L I B H CA]
      H04B-007/204 [2006 C L I B H CA]
      H04B-007/26 [2006 C L I R M JP]
      H04W-052/00 [2009 C - I R M EP]
EC  - H04W-052/52
ICO - T04W-052/26
      T04W-052/36
      T04W-072/04S14D
AB  - An apparatus and method for maximizing the efficiency of a power
      amplifier b y reducing the PAPR of a BS in a mobile communication
      system. A power controll er between I and Q channel pulse shaping
      filters and a frequency converter calculates cancellation signals for
      signal pulses that increase the PAPR at each sampling period,
      pulse-shape-filters cancellation signals at the highes t levels among
      the cancellation signals, and adds the filtered cancellation signals
      to the original signals. Thus, spectral regrowth outside a signal
      frequency band is suppressed. In the case of a system supporting
      multiple frequency allocations, the PAPR is controlled for each FA
      according to its service class. Therefore, minimum system performance
      is ensured and power us e efficiency is increased.
UP  - 2003-28

1/1 FAMPAT - (C) QUESTEL
FAN - 20090110485097
PN  - DE20211598 U1 20030123 [DE20211598]
PA  - SAMSUNG ELECTRONICS (KR)
PAH - (U1) SAMSUNG ELECTRONICS CO LTD (KR)
PR  - KR2001042312  20010713  [2001KR-0042312]
IC  - (U1) H04B-007/005
ICAA- H04L-027/36 [2006-01 A F I R M JP]
      H04B-001/707 [2006-01 A L I R M JP]
      H04B-007/005 [2006-01 A - I R M EP]
      H04B-007/26 [2006-01 A L I R M JP]
      H04W-052/52 [2009-01 A - I R M EP]
      H04W-052/26 [2009-01 A - N R M EP]
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ICCA- H04L-027/34 [2006 C F I R M JP]
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      H04B-007/005 [2006 C - I R M EP]
      H04B-007/26 [2006 C L I R M JP]
      H04W-052/00 [2009 C - I R M EP]
EC  - H04W-052/52
ICO - T04BT04W-052/26
      T04W-052/36
      T04W-072/04S14D
AB -  An apparatus and method for maximizing the efficiency of a power amplifier by reducing
      the PAPR of a BS in a mobile communication system. A power controller between I and
      Q channel pulse shaping filters and a frequency converter calculates cancellation
      signals for signal pulses that increase the PAPR at each sampling period, pulse-shape-
      filters cancellation signals at the highest levels among the cancellation signals, and
      adds the filtered cancellation signals to the original signals. Thus, spectral regrowth
      outside a signal frequency band is suppressed, In the case of a system supporting multiple
      frequency allocations, the PAPR is controlled for each FA according to its service class.
      Therefore, minimum system performance is ensured and power use efficiency is increased.
      <IMAGE>(From EP1276233 A2)
UP  - 2003-28

1/1 FAMPAT - (C) QUESTEL
FAN - 20090110485097
PN  - WO03007507 A1 20030123 [WO200307507]
TI  - (A1) APPARATUS AND METHOD FOR CONTROLLING TRANSMISSION POWER IN A
      MOBILE COMMUNICATION SYSTEM
PA  - (A1) SAMSUNG ELECTRONICS CO LTD  (KR)
PA0 - SAMSUNG ELECTRONICS CO., LTD; 416, Maetan-dong, Paldal-gu, Suwon-shi,
      442-370 Kyonggi-do (KR)
PAH -(A1) SAMSUNG ELECTRONICS CO LTD (KR)
RP  -(A1) LEE, Keon-Joo; Mihwa Bldg. 110-2, Myongryun-dong 4-ga, Chongro-gu, 110-524 Seoul [KR]
IN  - (A1) JO SUNG-KWON; OH JEONG-TAE; YANG SANG-HYUN
PR  - KR2001042312  20010713  [2001KR-0042312]
IC  - (A1) H04B-007/26
ICAA- H04L-027/36 [2006-01 A F I R M JP]
      H04B-001/707 [2006-01 A L I R M JP]
      H04B-007/005 [2006-01 A - I R M EP]
      H04B-007/26 [2006-01 A L I R M JP]
      H04W-052/52 [2009-01 A - I R M EP]
      H04W-052/26 [2009-01 A - N R M EP]
      H04W-052/36 [2009-01 A - N R M EP]
ICCA- H04L-027/34 [2006 C F I R M JP]
      H04B-001/707 [2006 C L I R M JP]
      H04B-007/005 [2006 C - I R M EP]
      H04B-007/26 [2006 C L I R M JP]
      H04W-052/00 [2009 C - I R M EP
EC  - H04W-052/52
ICO - T04B-007/005B2Q
DS  - AU; BR; CA; CN; IN; JP; RU
CT  - Cited in the search report
    - US5302914(A)(Cat. A);US5991262(A)(Cat. A)
    - "Multi-rate modulation scheme with controlled peak-to-average power
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        ration using balanced incomplete block design", Harvatin, D.T.,
        Ziemer, R.E. (Univ. of Colorado), IEEE ICC 2001, Vol. 4, 11-14 June
        2001, Pages 1028-1032(Cat. A)
  REF - Search Report references [Examiner]
        -"Multi-rate modulation scheme with controlled peak-to-average power ration using
        balanced incomplete block design", Harvatin, D.T., Ziemer, R.E. (Univ. of Colorado),
        IEEE ICC 2001, Vol. 4, 11-14 June 2001, Pages 1028-1032 (Cat. A)
  AB  - An apparatus and method for maximizing the efficiency of a power
        amplifier by reducing the PAPR of a BS in a mobile communication
        system. A power controller between I and Q channel pulse shaping
        filters and a frequency converter calculates cancellation signals for
        signal pulses that increase the PAPR at each sampling period,
        pulse-shape-filters cancellation signals at the highest levels among
        the cancellation signals, and adds the filtered cancellation signals
        to the original signals. Thus, spectral regrowth outside a signal
        frequency band is suppressed. In the case of a system supporting
        multiple frequency allocations, the PAPR is controlled for each FA
        according to its service class. Therefore, minimum system performance
        is ensured and power use efficiency is increased.
  NO  - (A1) Published: With international search report Before the expiration of the time
        limit for amending the claims and to be republished in the event of receipt of amendments.
  OBJ - It is another object of the present invention to provide a method and apparatus for
        stably operating a power amplifier in a linear amplification area in a high PAPR system.
        It is a further object of the present invention to provide a method and apparatus
        for reducing the PAPR of an input signal of a power amplifier without influencing
        the performance of an entire system. It is still another object of the present
        invention to provide a method and apparatus for reducing the PAR of a power amplifier
        and maximizing suppression of spectral regrowth outside a signal frequency band in
        order to maximize the efficiency of the power amplifier for transmission in a mobile
        communication system. It is also still another object of the present invention to
        provide a method and apparatus for simultaneously transmitting signals using a plurality
        of FAs, using power amplifiers efficiently.
…/…

  ICLM- 1. A transmission power controlling apparatus in a mobile communication system supporting
        a single FA (Frequency Allocation), comprising: a channel device group for generating
        an I (In phase) channel baseband signal and a Q (Quadrature phase) channel baseband
        signal from each channel data; a pulse shaping filter for pulse-shape-filtering the
        baseband signals; a power controller for controlling the PAPRs (Peak-to-Average power
        Ratio) of the pulse-shape-filtered signals according to a threshold power required for
        linear power amplification; and a frequency converter for upconverting the power-
        controlled signals to RF (Radio Frequency) signals and outputting the RF signals.
…/…
        5 ; threshold power, then scale value =1 if instant power threshold power, then
        scale EMI21.1 ,) threshold power value N ins tan t power 6.
        7. A method of controlling transmission power in a mobile communication system
        supporting a single FA (Frequency Allocation), comprising the steps of : generating
        an I (In phase) channel baseband signal and a Q (Quadrature phase) channel baseband
        signal from each channel data; pulse-shape-filtering the baseband signals ; controlling
        the PAPRs (Peak-to-Average power Ratio) of the pulseshape-filtered signals according
        to a threshold power required for linear power amplification; and upconverting the
        power-controlled signals to RF (Radio Frequency) signals and outputting the RF signals.
…/…     (record truncated in this example due to length)
        EMI24.1 where Pj (i=1, 2,..., N) is the instant power of an ith FA signal, Pth is the
        threshold power, and Si is a scale value for the ith FA.
        EMI24.2 ..... (8) where Si is the scale value of an ith FA (i=1, 2,..., N), (xi is a
        weighting factor assigned to the ith FA, P is the threshold power, and Pi is the instant
        power of the ith FA signal.
        EMI24.3 where Pi is the instant power (i=l, 2,..., N), P, h is a threshold power for
        the service class of an ith FA, and Si is a scale value for the ith FA signal.
        25. A method of controlling transmission power in a mobile communication system
        supporting a plurality of FAs (Frequency Allocations), comprising the steps of :
        generating I (In phase) channel baseband signals and Q (Quadrature phase) channel
        baseband signals from each channel data for the FAs ; pulse-shape-filtering the FA
        baseband signals; and controlling the PAPRs (Peak-to-Average power Ratio) of the
        pulseshape-filtered signals according to a threshold power required for linear power
        amplification, and outputting the PAPR-controlled signals in an RF band.
        controlling the PAPRs of the original FA signals using the scale value; and combining
        the PAPR-controlled FA signals.
…/…
  UP -  2002-38

 (full record not shown here due to extensive material)
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- The original source family
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- The cited patent families (families with a patent cited by a member of the source family)

The results in all three sections show complete families. These fields are included for each family in the citation report :

- PN Number and date of publication of all members
- TI English title of the first member
- OTI Non-English title of the first member
- PA Applicant of the first member

-

- IN Inventor of the first member
- AP Application numbers and dates of all members
- PR Priority numbers and dates of all members
- CT Citations
- AB Summary of first member

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FAMCITE IMG
The maximum initial set size for both commands is 1,000 records.

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File : FAMPAT

  SS  Results
    1         1  (1) ..FAM US5898235/PN

  << Citation Report >>

  << Source Patent Family >>

  1/1 FAMPAT - (C) Questel- image
  PN  - US5898235           A  19990427   [US5898235]
      - JP10214487          A  19980811   [JP10214487]
  TI  - Integrated circuit with power dissipation control
  PA  - ST MICROELECTRONICS INC
  PA0 - STMicroelectronics, Inc., Carrollton TX [US]
  IN  - MCCLURE DAVID C
  AP  - 1996US-0775611 19961231; 1997JP-0354340 19971224
  PR  - 1996US-0775611 19961231
  CT  - (US5898235)
        Unspecified source
        US4683382 [US4683382] 365227000
        US5167024 [US5167024] 364273100
        US5483464 [US5483464] 307064000
        US5513361 [US5513361] 395750030
  CT  - (JP10214487)
        (A) Examiner citations - reason for refusal [19]
        JP (U1) 1985164237 [JP60164237U]
        JP (A) 1991046193 [JP03046193]
        JP (A) 1994012876 [JP06012876]
        JP (A) 1994131876 [JP06131876]
  AB  - (US5898235)
        An integrated circuit device such as an SRAM operating in a battery
        backup mode, or operating in a quiescent mode when deselected in the
        operation of a portable electronic device, includes a power
        dissipation control circuit that reduces the voltage on an internal
        power supply node so that the memory array is powered at a minimum
        level sufficient to retain the data stored therein intact.

  << Citing Patents: Subsequent Patents Citing Source Family >>

  1/8 FAMPAT - (C) Questel- image
  PN  - JP2005165716        A  20050623   [JP2005165716]
  TI  - REGULATOR UNIT AND BACKWARD FLOW PREVENTION DIODE CIRCUIT USING THE
        SAME
  PA  - TOSHIBA CORP
  PA0 - TOSHIBA CORP
  IN  - NAKAGAWARA TOMOMASA
  AP  - 2003JP-0404241 20031203
  PR  - 2003JP-0404241 20031203
  CT  - (JP2005165716)
        (A) Examiner citations - reason for refusal [19]
        JP (A) 2001326535 [JP2001326535]
        JP (A) 1998214487 [JP10214487]
        JP (A) 2002169618 [JP2002169618]
        JP (A) 2002312044 [JP2002312044]
        JP (A) 2003198346 [JP2003198346]
        JP (A) 1987276908 [JP62276908]
        JP (A) 1991021114 [JP03021114]
        JP (A) 1996314553 [JP08314553]
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       JP (A) 2001282372 [JP2001282372]
       JP (A) 1991186909 [JP03186909]
       JP (A) 2000039923 [JP2000039923]
       JP (A) 1996106331 [JP08106331]
       JP (A) 1999176948 [JP11176948]
       JP (A) 1998341141 [JP10341141]
       JP (A) 2002344251 [JP2002344251]
       JP (A) 2001166837 [JP2001166837]
AB  - (JP2005165716)
      PROBLEM TO BE SOLVED: To provide a regulator unit and a backward flow
      prevention diode circuit capable of miniaturizing and saving its
      space.
    - SOLUTION: The backward flow prevention diode circuit comprises a MOS
      transistor M1 connecting a source with an input terminal IN and
      connecting a drain with an output terminal OUT, a differential
      amplifier 13 comparing output voltage divided with a voltage dividing
      circuit 12 and outputting current proportional to its difference, a
      MOS transistor M2 forming a current mirror circuit 14 by means of the
      MOS transistor M1 and feeding current with times of a mirror ratio to
      the MOS transistor M1 on the basis of output current of the
      differential amplifier 13, and a MOS transistor M3 monitoring drain
      current of the MOS transistor M1 by forming a current mirror circuit
      24 by means of the MOS transistor M2. Further, a MOS transistor M4
      being a short circuit between a gate and a source and connecting a
      backgate with the source is set to be a backward flow prevention diode
      circuit 41.
    - COPYRIGHT: (C)2005,JPO&NCIPI

2/8 FAMPAT - (C) Questel
PN  - US2003057429        A1 20030327   [US20030057429]
    - US6710424           B2 20040323   [US6710424]
TI  - RF chipset architecture
PA  - AIRIP
PA0 - AirIP, Palo Alto CA [US]
IN  - SCHMIDT DOMINIK J
AP  - 2001US-0962717 20010921
PR  - 2001US-0962717 20010921
CT  - (US20030057429)
      Examiner citations
      US5898235 [US5898235] 307064000
      US6087198 [US6087198] 438051000
      US6125268 [US6125268] 455168100
      US6380835 [US6380835] 336200000
      US6400001 [US6400001] 257601000
      US6407441 [US6407441] 257531000
      US6477606 [US6477606] 710305000
      US6484038 [US6484038] 455552100
      US6548942 [US6548942] 310364000
      US6627507 [US6627507] 257531000
      US6627992 [US6627992] 257728000
AB  - (US20030057429)
      A set of radio frequency (RF) integrated circuits includes a transmit
      chip having a power amplifier and a receive chip adapted to work with
      the transmit chip. The receive chip has one or more low noise
      amplifiers to receive RF signals, and a processor coupled to the low
      noise amplifiers, the processor transmitting data through the transmit
      chip and receiving data from the on-chip low noise amplifiers.

3/8 FAMPAT - (C) Questel- image
PN  - US2002071330        A1 20020613   [US20020071330]
    - US6560157           B2 20030506   [US6560157]
    - JP2002176143        A  20020621   [JP2002176143]
    - KR20020045498       A  20020619   [KR20020045498]
TI  - Semiconductor device
PA  - MITSUBISHI ELECTRIC CORP
PA0 - Mitsubishi Denki Kabushiki Kaisha, Tokyo [JP]
IN  - SUGITA MITSURU; HASHIMOTO HIROYUKI
IN0 - HASHIMOTO HIROYUKI; SUGITA MITSURU
AP  - 2000JP-0373966 20001208; 2001US-0860429 20010521; 2001KR-0047470
      20010807
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PR  - 2000JP-0373966 20001208
CT  - (US20020071330)
      Unspecified source
      US4683382 [US4683382] 365227000
      US5612920 [US5612920] 365226000
      US5898235 [US5898235] 307064000
      US6426908 [US6426908] 365226000
      JP11119844 A [JP11119844]
      JP11213667 A [JP11213667]
AB  - (US20020071330)
      A semiconductor device of one chip has a first power supply terminal
      allowing connection with an external power supply IC, a second power
      supply terminal allowing connection with the external power supply IC,
      a main voltage dropping circuit connected with the first power supply
      terminal, a secondary voltage dropping circuit connected with the
      second power supply terminal, and an internal circuit connected with
      the main voltage dropping circuit and the secondary voltage dropping
      circuit. A high voltage of the external power supply IC is received in
      the main voltage dropping circuit through the first power supply
      terminal and is dropped. The high or low voltage of the external power
      supply IC is received in the secondary voltage dropping circuit
      through the second power supply terminal and is dropped. The internal
      circuit is operated by using the dropped voltage obtained in the main
      or secondary voltage dropping circuit.

4/8 FAMPAT - (C) Questel- image
PN  - US6651176           B1 20031118   [US6651176]
    - US2005198538        A1 20050908   [US20050198538]
    - US7281147           B2 20071009   [US7281147]
TI  - Systems and methods for variable control of power dissipation in a
      pipelined processor
PA  - HEWLETT PACKARD DEVELOPMENT CO
PA0 - Hewlett-Packard Development Company, L.P., Houston TX [US]
IN  - SOLTIS JR DONALD C; COLON-BONET GLENN T
AP  - 1999US-0457169 19991208; 2003US-0644184 20030820
PR  - 1999US-0457169 19991208; 2003US-0644184 20030820
CT  - (US6651176)
      Search Report [Examiner]
      US4644466(A) [US4644466]
      US5559458(A) [US5559458]
      US5941991(A) [US5941991]
      US6122728(A) [US6122728]
      US6182232(B1) [US6182232]
      US6195756(B1) [US6195756]
      US6219723(B1) [US6219723]
      US6275928(B1) [US6275928]
      US6357016(B1) [US6357016]
      US6367023(B2) [US6367023]
    - Applicant citations
      US5452215(A) [US5452215]
      US5521834(A) [US5521834]
      US5557531(A) [US5557531]
      US5666506(A) [US5666506]
      US5684422(A) [US5684422]
      US5751984(A) [US5751984]
      US5859999(A) [US5859999]
      US5860017(A) [US5860017]
      US5884061(A) [US5884061]
      US5898235(A) [US5898235]
      US5903768(A) [US5903768]
      US5938755(A) [US5938755]
CT  - (US20050198538)
      Search Report [Examiner]
      US5719800(A) [US5719800]
      US5740417(A) [US5740417]
      US6564332(B1) [US6564332]
    - Applicant citations
      US4644466(A) [US4644466]
      US5452215(A) [US5452215]
      US5521834(A) [US5521834]
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       US5557531(A) [US5557531]
       US5559458(A) [US5559458]
       US5666506(A) [US5666506]
       US5684422(A) [US5684422]
       US5751984(A) [US5751984]
       US5859999(A) [US5859999]
       US5860017(A) [US5860017]
       US5884061(A) [US5884061]
       US5898235(A) [US5898235]
       US5903768(A) [US5903768]
       US5938755(A) [US5938755]
       US5941991(A) [US5941991]
       US6122728(A) [US6122728]
       US6195756(B1) [US6195756]
       US6275928(B1) [US6275928]
       US6357016(B1) [US6357016]
       US6367023(B2) [US6367023]
 REF - (US6651176)
       Applicant references
       -Alexander Wolfe, "Patents shed light on Merced", Electronic
       Engineering Times, Feb. 15, 1999, pp. 43-44.
 REF - (US20050198538)
       Applicant references
       -Wolfe, Alexander; "Patents Shed Light On Merced"; Electronic
       Engineering Times; Feb. 15, 1999; pp. 43-44.
 AB  - (US6651176)
       The invention controls maximum average power dissipation by stalling
       high power instructions through the pipeline of a pipelined processor.
       A power dissipation controller stalls the high power instructions in
       order to control the processor's maximum average power dissipation.
       Preferably, the controller is modeled after a capacitive system with a
       constant output rate and a throttled input rate: the output rate
       represents the steady state maximum average power dissipation; while
       the input rate is stalled based upon current capacity, representing
       thermal response time. At start-up, the capacity is initialized. Yet
       for each high power instruction, the capacity increases by a weighted
       value. Each clock capacity is also decreased by a variable output
       rate. In particular, a low power operation is inserted to the stage
       execution circuit where the stall is desired, creating a low power
       state for that circuit. This stall effectively creates a "hole" at
       that pipeline stage, thus temporarily reducing power dissipation. The
       invention takes advantage of the fact that the presence of an
       instruction at any stage execution circuit dissipates power and that
       the absence (i.e., a "hole") of an instruction at any stage dissipates
       less power. By controlling where and when a hole occurs within the
       pipeline, the maximum average power dissipation of the processor is
       controlled.

 5/8 FAMPAT - (C) Questel- image
 PN  - US6294404           B1 20010925   [US6294404]
     - JP2001155487        A  20010608   [JP2001155487]
     - TW527596            B  20030411   [TW-527596]
 TI  - Semiconductor integrated circuit having function of reducing a power
       consumption and semiconductor integrated circuit system comprising
       this semiconductor integrated circuit
 PA  - MITSUBISHI ELECTRIC CORP
 PA0 - Mitsubishi Denki Kabushiki Kaisha, Tokyo [JP]
 IN  - SATO HIROTOSHI
 AP  - 1999JP-0339609 19991130; 2000US-0568058 20000510; 2000TW-0116902
       20000821
 PR  - 1999JP-0339609 19991130
 CT  - (US6294404)
       Unspecified source
       US5265060 [US5265060] 365208000
       US5543649 [US5543649] 257355000
       US5898235 [US5898235] 307064000
       US5955904 [US5955904] 327156000
       JP10-214487 [JP10214487]
 AB  - (US6294404)
       A semiconductor integrated circuit according to the present invention
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       comprises a synchronous SRAM, a signal generation circuit generating a
       chip selection signal, a clock signal etc. supplied to the synchronous
       SRAM, a voltage set circuit setting the voltage of a system power
       supply line and a controller controlling the signal generation circuit
       and the voltage set circuit. When setting the synchronous SRAM in a
       power down mode, the chip selection signal is set in a nonselective
       state and the power supply voltage of the system power supply line is
       stepped down to a standby potential. Thus, the synchronous SRAM enters
       a standby state having extremely low power consumption.

  6/8 FAMPAT - (C) Questel
  PN  - US2001028270        A1 20011011   [US20010028270]
      - US6396336           B2 20020528   [US6396336]
      - US6333671           B1 20011225   [US6333671]
  TI  - Sleep mode VDD detune for power reduction
  PA  - IBM
  PA0 - International Business Machines Corporation, Armonk NY [US]
  IN  - ROBERTS ALAN L; WISTORT REID A
  AP  - 1999US-0433279 19991103; 2001US-0883048 20010615
  PR  - 1999US-0433279 19991103; 2001US-0883048 20010615
  CT  - (US20010028270)
        Unspecified source
        US4130899 [US4130899] 365222000
        US4683382 [US4683382] 327544000
        US4691123 [US4691123] 327546000
        US4716463 [US4716463] 348730000
        US5077518 [US5077518] 323275000
        US5477279 [US5477279] 348730000
        US5511026 [US5511026] 365189010
        US5530398 [US5530398] 327545000
        US5663919 [US5663919] 365226000
        US5747977 [US5747977] 323284000
        US5773966 [US5773966] 323284000
        US5898235 [US5898235] 307064000
        US6049245 [US6049245] 327544000
        US6118267 [US6118267] 323364000
        JP6-175956 [JP06175956]
  CT  - (US6333671)
        Unspecified source
        US4130899 [US4130899] 365226000
        US4683382 [US4683382] 327306000
        US4691123 [US4691123] 327546000
        US4716463 [US4716463] 348730000
        US5077518 [US5077518] 323275000
        US5477279 [US5477279] 348730000
        US5511026 [US5511026] 365189090
        US5530398 [US5530398] 327545000
        US5663919 [US5663919] 365226000
        US5747977 [US5747977] 323284000
        US5773966 [US5773966] 323284000
        US5898235 [US5898235] 307064000
        US6049245 [US6049245] 327544000
        US6118267 [US6118267] 323364000
        JP6-175956 [JP06175956]
  REF - (US6333671)
        - "Leakage Current Reduction/Minimization through Substrate and/or
        Well Bias Control Coupled with Clock Power Management", IBM Technical
        Disclosure Bulletin, vol. 41 No. 01, Jan. 1998, pp. 547-549.
  AB  - (US20010028270)
        The leakage current on a semiconductor is reduced while the
        semiconductor is in a sleep mode. This is accomplished by (1) placing
        the semiconductor in the sleep mode; (2) providing the semiconductor
        an internal supply voltage derived from an external supply voltage
        applied to the semiconductor chip (where the internal supply voltage
        is less in quantity than the external supply voltage); and (3)
        reducing the internal supply voltage when the semiconductor enters the
        sleep mode from an activated mode and returning the internal supply
        voltage to an activated mode level when the semiconductor returns to
        the activated mode. The reducing step includes supplying the external
        supply voltage to a reference circuit which outputs therefrom a
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       reference voltage; and supplying the reference voltage to a regulator,
       where the regulator attempts to match the reference voltage and
       outputs therefrom the internal supply voltage. The reference circuit
       reduces the reference voltage when the semiconductor enters the sleep
       mode from an activated mode and returns the reference voltage to the
       activated mode level when the semiconductor returns to the activated
       mode. The reducing step can be performed by reducing the current flow
       to one or more diodes in the reference circuit when the semiconductor
       enters the sleep mode from the activated mode, and increasing the
       current flow to the diodes when the semiconductor reenters the
       activated mode from the sleep mode.

 7/8 FAMPAT - (C) Questel- image
 PN  - JP2000163141        A  20000616   [JP2000163141]
 TI  - STEP-DOWN POWER SOURCE CIRCUIT
 PA  - NEC CORP
 PA0 - (A) NEC CORP
 IN  - NARAHARA TETSUYA
 AP  - 1998JP-0335418 19981126
 PR  - 1998JP-0335418 19981126
 CT  - (JP2000163141)
       (A) Examiner citations - reason for refusal [19]
       JP (A) 1993088765 [JP05088765]
       JP (A) 1985039219 [JP60039219]
       JP (A) 1998214487 [JP10214487]
       JP (A) 1991214212 [JP03214212]
 AB  - (JP2000163141)
       PROBLEM TO BE SOLVED: To reduce current consumption at the time of
       stand-by in a battery driving system.
     - SOLUTION: This is a step-down power source circuit operated by an
       outside power source and provided with a regulator circuit for
       stepping-down an outside power supply voltage to an inside power
       supply voltage. A simple step-down circuit 7 is added between the
       outside power source and an inside power source line, and the
       regulator circuit is stopped by an STOP signal when a system clock is
       stepped, and the outside power supply voltage is stepped-down to the
       inside power supply voltage by the simple step-down circuit 7. The
       simple step- down circuit 7 is constituted by serially connecting a
       transistor which is turned on when the system clock is stopped with
       plural diode-connected transistors.
     - COPYRIGHT: (C)2000,JPO
 8/8 FAMPAT - (C) Questel- image
 PN  - US6377681           B1 20020423   [US6377681]
 TI  - Signal line driving circuit with self-controlled power dissipation
 PA  - NAT SEMICONDUCTOR CORP
 PA0 - National Semiconductor Corporation, Santa Clara CA [US]
 IN  - BREMNER DUNCAN JAMES
 AP  - 1998US-0053110 19980401
 PR  - 1998US-0053110 19980401
 CT  - (US6377681)
       Unspecified source
       US5138658 [US5138658] 379378000
       US5323461 [US5323461] 379399000
       US5428682 [US5428682] 379413000
       US5881129 [US5881129] 379005000
       US5898235 [US5898235] 307064000
       US5912513 [US5912513] 379413000
       US6005934 [US6005934] 379398000
 AB  - (US6377681)
       A signal line driving circuit with power control for selectively
       reducing internal power dissipation when driving an external load.
       While driving the external load with a constant current the output
       voltage generated across such load is monitored. If the load impedance
       decreases sufficiently to cause the output voltage to fall below a
       predetermined threshold value and, therefore, cause the voltage across
       the signal line driving circuit to increase, the magnitude of the
       power supply voltage is automatically reduced, thereby reducing the
       voltage across the signal line driving circuit. Such a signal line
       driving circuit is particularly advantageous as a subscriber line
       interface circuit (SLIC). As the subscriber goes from an on-hook
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condition to an off-hook condition and if the subscriber loop is sufficiently short (or low in impedance), a lower power supply voltage is used to minimize the power dissipation of the SLIC while still maintaining the required subscriber loop current.

<< Cited Patents: Previous Patents Cited by Source Family >>

1/8 FAMPAT - (C) Questel- image
PN - US5513361 A 19960430 [US5513361]
TI - Method and apparatus for reducing power consumption of a fan in a computer system
PA - INTEL CORP
PA0 - Intel Corporation, Santa Clara CA [US]
IN - YOUNG BRUCE A
AP - 1994US-0279544 19940725
PR - 1994US-0279544 19940725
CT - (US5513361)
Unspecified source
US4151611 [US4151611] 365227000
US4279020 [US4279020] 395750000
US4293927 [US4293927] 395750000
US4381552 [US4381552] 364707000
US4615005 [US4615005] 395550000
US4642441 [US4642441] 392365000
US4698748 [US4698748] 395750000
US4712196 [US4712196] 365229000
US4809163 [US4809163] 395750000
US4842431 [US4842431] 400719000
US4980836 [US4980836] 364483000
US5247805 [US5247805] 062184000
AB - (US5513361)
A circuit for controlling power consumption of a fan within a computer system having a central processing unit (CPU) is described. The circuit includes a filter circuit coupled to receive a periodical pulse signal for detecting duty cycle of the periodical pulse signal by converting the periodical pulse signal into an analog signal. The analog signal has a voltage level proportional to the duty cycle of the periodical pulse signal. The periodical pulse signal is generated to control the CPU to be operational between predetermined intervals when the CPU is in an inactive state. A comparator circuit is coupled to the filter circuit for comparing the voltage level of the analog signal with a predetermined voltage level. When the voltage level of the analog signal is below the predetermined voltage level, the comparator circuit generates a switching signal. A switching circuit is coupled to (1) a power supply, (2) the fan, and (3) the comparator circuit for disconnecting the power supply from the fan when the switching signal is generated by the comparator circuit so as to substantially reduce the power consumption of the fan in the computer system when the CPU is in the inactive state. A computer system having the circuit for controlling power consumption of a fan in the system and a method for controlling power consumption of a fan in a computer system are also described.

2/8 FAMPAT - (C) Questel- image
PN - US5483464 A 19960109 [US5483464]
- KR950005216 B1 19950522 [KR9505216]
TI - Power saving apparatus for use in peripheral equipment of a computer
PA - SAMSUNG ELECTRONICS CO LTD
PA0 - SamSung Electronics Company, Ltd., Kyungki-do [KR]
IN - SONG MOON-JONG
AP - 1993KR-0005332 19930331; 1993US-0176450 19931230
PR - 1993KR-0005332 19930331
CT - (US5483464)
Unspecified source
US4365290 [US4365290] 364707000
US4591914 [US4591914] 307064000
US4593349 [US4593349] 364492000
US4667289 [US4667289] 364707000
US4674031 [US4674031] 364492000
US4677566 [US4677566] 364492000

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       US4747041 [US4747041] 364707000
       US5059961 [US5059961] 345010000
       US5163124 [US5163124] 395750000
       US5175845 [US5175845] 364707000
       US5214785 [US5214785] 395800000
       US5237692 [US5237692] 395725000
       US5249298 [US5249298] 395750000
       US5251320 [US5251320] 395750000
       US5293494 [US5293494] 395275000
       US5347167 [US5347167] 364493000
       US5375245 [US5375245] 395750000
       US5384721 [US5384721] 364707000
       US5408668 [US5408668] 395750000
 AB  - (US5483464)
       An apparatus for use in the peripheral equipment of a computer reduces
       the needless consumption of power. Once it has been determined that
       the computer has not been used for a predetermined period of time, an
       operation control signal indicative of a specific control mode is
       supplied for controlling the supply of power to the computer's
       peripheral equipment and the computer's operating state. The operation
       of a power supply means for generating operating power to a computer's
       peripheral equipment is controlled in response to a detected control
       mode. Accordingly, energy is conserved by controlling the supply of
       power and the operating state of a computer's peripheral equipment
       according to the peripheral equipment's operational state.
 3/8 FAMPAT - (C) Questel- image
 PN  - US5367487           A  19941122   [US5367487]
     - JP6131876           A  19940513   [JP06131876]
     - JP2752304           B2 19980518   [JP2752304]
 TI  - Semiconductor memory device
 PA  - TOSHIBA KK
 PA0 - Kabushiki Kaisha Toshiba, Kawasaki [JP]
 IN  - YOSHIDA MUNEHIRO
 AP  - 1992JP-0283004 19921021; 1993US-0101701 19930804
 PR  - 1992JP-0283004 19921021
 CT  - (US5367487)
       Search Report [Examiner]
       US4691123(A) [US4691123]
       US5046052(A) [US5046052]
       US5222044(A) [US5222044]
 CT  - (JP06131876)
       (A) Examiner citations - reason for refusal [19]
       JP (A) 1990306492 [JP02306492]
       JP (A) 1985045997 [JP60045997]
       JP (A) 1992015949 [JP04015949]
       JP (A) 1991230389 [JP03230389]
       JP (A) 1982172761 [JP57172761]
     - (B2) Search Report [Examiner]
       JP57172761(A) [JP57172761]
       JP3230389(A) [JP03230389]
       JP4015949(A) [JP04015949]
       JP60045997(A) [JP60045997]
       JP2306492(A) [JP02306492]
 AB  - (US5367487)
       An external source voltage is received by a semiconductor memory chip.
       A first source voltage corresponding to the external source voltage
       and a second source voltage which is lower than the first source
       voltage are supplied to an internal circuit of the semiconductor
       memory chip. The memory chip includes a memory cell array section,
       having at least a sense amplifier, and a peripheral circuit. The first
       source voltage is supplied to the memory cell array section when data
       is transferred between the semiconductor memory chip and an external
       device, and the second source voltage is supplied thereto to read and
       write data within the semiconductor memory chip when data is
       maintained only. The first source voltage is supplied to the
       peripheral circuit, when the second source voltage is supplied to the
       memory cell array section to maintain data.

 4/8 FAMPAT - (C) Questel- image
 PN  - JP6012876           A  19940121   [JP06012876]
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     - JP3195052           B2 20010806   [JP3195052]
  TI  - CHANGEOVER CIRCUIT FOR POWER SOURCE
  PA  - ROHM CO LTD
  PA0 - (A) ROHM CO LTD
  IN  - TANAKA TOSHIMASA
  AP  - 1992JP-0167502 19920625
  PR  - 1992JP-0167502 19920625
  CT  - (JP06012876)
        (A) Examiner citations - reason for refusal [19]
        JP (U) 1993008800 [JP05008800U]
  AB  - (JP06012876)
        PURPOSE: To eliminate a voltage loss caused by a switching element and
        to stabilize the voltage by operating a MOS transistor by means of a
        controlling circuit and performing switching operation.
      - CONSTITUTION: MOS transistors P1 and P2 are provided between a main
        power source 1 and an output terminal 3 and between a backup power
        source 2 and the output terminal 3, respectively, and switching
        operation is executed. When a load SRAM 4 is allowed to operate, a low
        level and a high level voltages are applied on the gates of P1 and P2
        from a switching control circuit 5, respectively, P1 is turned on, P2
        is turned off and SRAM 4 is connected to the main power source. When
        SRAM 4 is set to be the backup state, a high and a low voltages are
        given to the gates of P1 and P2, respectively, P1 is turned off, P2 is
        turned on and the backup power source 2 is connected to the SRAM.
        Thus, by using the MOS transistors as a switching means, a voltage
        loss approaches zero, the allowable range of voltages is extended and
        the voltage is stably supplied.
      - COPYRIGHT: (C)1994,JPO&Japio

  5/8 FAMPAT - (C) Questel- image
  PN  - US5167024           A  19921124   [US5167024]
      - AU6016890           A  19910314   [AU9060168]
      - AU629019            B2 19920924   [AU-629019]
      - CA2024552           A1 19910309   [CA2024552]
      - DE4028175           A1 19910321   [DE4028175]
      - GB9018259           D0 19901003   [GB9018259]
      - GB2235797           A  19910313   [GB2235797]
      - GB2235797           B  19930818   [GB2235797]
      - HK36394             A  19940429   [HK9400363]
      - JP3171317           A  19910724   [JP03171317]
      - SE9002838           D0 19900906   [SE9002838]
      - SE9002838           L  19910309   [SE9002838]
      - SE9002838           A  19910309   [SE9002838]
      - SG7294              G  19940610   [SG9400072]
  TI  - Power management for a laptop computer with slow and sleep modes
  OTI - POWER MANAGEMENT FOR A LAPTOP COMPUTER
  PA  - APPLE COMPUTER
  PA0 - Apple Computer, Inc., Cupertino CA [US]
  IN  - SMITH R STEVEN; HANLON MIKE S; BAILEY ROBERT L
  IN0 - SMITH R STEVEN; HANLON MIKE S; BAILEY ROBERT L
  AP  - 1990AU-0060168 19900803; 1990GB-0018259 19900820; 1990CA-2024552
        19900904; 1990DE-4028175 19900905; 1990SE-0002838 19900906;
        1990JP-0237294 19900910; 1992US-0845781 19920305; 1994SG-0000072
        19940117; 1994HK-0000363 19940421
  PR  - 1989US-0405637 19890908; 1992US-0845781 19920305; 1994SG-0000072
        19940117
  CT  - (US5167024)
        Unspecified source
        US4019068 [US4019068] 307205000
        US4074351 [US4074351] 364200000
        US4151611 [US4151611] 365227000
        US4279020 [US4279020] 364900000
        US4293927 [US4293927] 364900000
        US4317181 [US4317181] 364707000
        US4381552 [US4381552] 364900000
        US4409665 [US4409665] 364707000
        US4611289 [US4611289] 364492000
        US4615005 [US4615005] 364200000
        US4698748 [US4698748] 395750000
        US4712196 [US4712196] 365229000
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       US4747041 [US4747041] 364707000
       US4809163 [US4809163] 364200000
       US4851987 [US4851987] 364200000
       US4907150 [US4907150] 364200000
       US4980836 [US4980836] 364200000
       EP1723394 [EP1723394] 364707000
CT  - (GB9018259)
       Search Report [Examiner]
       US4698748(A) [US4698748]
CT  - (AU9060168)
       Search Report [Examiner]
       US4698748(A) [US4698748]
AB  - (US5167024)
       A power manager within a portable laptop computer provides power and
       clocking control to various units within the computer in order to
       conserve battery power. Transistor switches controlled by the power
       manager control the distribution of power and/or clock signals to the
       various units within the computer. The power manager includes a
       software routine for continually monitoring the various units and when
       these units are either not needed and/or not currently in use, power
       and/or clock signals are removed from a given unit.

6/8 FAMPAT - (C) Questel- image
PN  - US5079744           A  19920107   [US5079744]
    - DE4022157           A1 19910124   [DE4022157]
    - DE4022157           C2 19920305   [DE4022157]
    - JP3046193           A  19910227   [JP03046193]
    - KR930009544         B1 19931006   [KR9309544]
TI  - TEST APPARATUS FOR STATIC-TYPE SEMICONDUCTOR MEMORY DEVICES
PA  - MITSUBISHI ELECTRIC CORP
PA0 - Mitsubishi Denki Kabushiki Kaisha, Tokyo [JP]
IN  - TOBITA YOUICHI; KIHARA YUJI
AP  - 1989JP-0180969 19890713; 1990US-0547251 19900703; 1990DE-4022157
       19900712; 1990KR-0010671 19900713
PR  - 1989JP-0180969 19890713
CT  - (US5079744)
       Unspecified source
       US4267583 [US4267583] 365201000
       US4553225 [US4553225] 365201000
       EP0192121 [EP-192121]
       DE2947764 [DE2947764]
       JP61-280095 [JP61280095]
CT  - (DE4022157)
       Search Report [Examiner]
       DE2947764(C2) [DE2947764]
       US4553225(A) [US4553225]
       EP0192121(A2) [EP-192121]
       JP61280095(A) [JP61280095]
REF - (US5079744)
       - 1977 Mitsubishi Integrated Circuit Databook (LSI), vol. 5, pp. 3-6.
AB  - (US5079744)
       A static type semiconductor memory device is provided with a power
       circuit for a disturb test, in which MOS transistors constituting a
       memory cell are examined for an abnormal threshold voltage. A
       P-channel MOS transistor is provided between a power supply, and the
       memory cells. The P-channel MOS transistor is rendered conductive in
       the normal mode, allowing the voltage to the memory cells as under
       normal circumstances. In addition, between the power supply and the
       memory cells, there is provided a series-connection of a
       diode-connected N-channel MOS transistor and a P-channel MOS
       transistor. In the disturb test, this P-channel MOS transistor is
       rendered conductive. As a result, the supply voltage reduced by the
       N-channel MOS transistor, or a voltage lower than the supply voltage
       by the threshold voltage of this N-channel MOS transistor is supplied
       to the memory cells. By configuring the static type semiconductor
       memory device in this manner, the time required for the potential
       difference between the two storage nodes in a memory cell to become
       small enough, due to a defective transistor in the memory cell, to
       cause malfunction of the device is reduced. Thus, the time required
       for the disturb test is shortened.
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7/8 FAMPAT - (C) Questel
PN  - JP60164237          U  19851031   [JP60164237U]
AP  - 1984JP-U046639 19840330
PR  - 1984JP-U046639 19840330

8/8 FAMPAT - (C) Questel- image
PN  - EP0157905           A2 19851016   [EP-157905]
    - EP0157905           A3 19870729   [EP-157905]
    - EP0157905           B1 19900411   [EP-157905]
    - DE3481957           D1 19900517   [DE3481957]
    - JP60176121          A  19850910   [JP60176121]
    - JP5047848           B  19930719   [JP93047848]
    - JP1838072           C  19940411   [JP1838072]
    - US4683382           A  19870728   [US4683382]
TI  - Semiconductor device.
PA  - TOSHIBA KK
PA0 - KABUSHIKI KAISHA TOSHIBA; 72, Horikawa-cho, Saiwai-ku; Kawasaki-shi,
      Kanagawa-ken 210 (JP)
IN  - SAKURAI TAKAYASU C O PATENT DI; IIZUKA TETSUYA C O PATENT DIVI
AP  - 1984JP-0032068 19840222; 1984DE-3481957 19841030; 1984EP-0113078
      19841030; 1984US-0667417 19841101
PR  - 1984JP-0032068 19840222
CT  - (EP-157905)
      Search Report [Examiner]
      US4054830(A)(Cat. A) [US4054830]
      US4390833(A)(Cat. A) [US4390833]
      GB2034937(A)(Cat. A) [GB2034937]
      EP0063483(A2)(Cat. A) [EP--63483]
      JP56153415(A)(Cat. X) [JP56153415]
      JP54137246(A)(Cat. A) [JP54137246]
CT  - (US4683382)
      Search Report [Examiner]
      US4580063(A) [US4580063]
      US4581551(A) [US4581551]
REF - (EP-157905)
      Search Report references [Examiner]
      -PATENT ABSTRACTS OF JAPAN, vol. 6, no. 34 (P-104)[912], 2nd March
      1982; & JP-A-56 153 415 (SHINDENGEN KOGYO K.K.) 27-11-1981 (Cat. X)
      -PATENT ABSTRACTS OF JAPAN, vol. 3, no. 156 , 21st December 1979, page
      43 E 161; & JP-A-54 137 246 (OKI DENKI KOGYO K.K.) 24-10-1979 (Cat. A)
      -MOTOROLA TECHNICAL DEVELOPMENTS, vol. 2, January 1982, page 30,
      Motorola, Schaumburg, Illinois, US; LAL SOOD: "Circuit for reducing
      standby power for a memory device" (Cat. A)
REF - (US4683382)
      Search Report references [Examiner]
      -Mano et al., Submission VLSI Memory Circuits, ISSCC Digest of
      Technical Papers, pp. 234 235, Feb. 1983.
      -Itoh et al., An Experimental IBM DRAW with On Chip Voltage Limiter,
      ISSCC Digest of Technical Papers, pp. 282 283, Feb. 1983.
AB  - (EP-157905)
      In a semiconductor device according to the invention,  first and
      second voltage dropping circuits (100, 200) for  generating voltages
      (Vin1, Vin2) respectively having smaller  values than that of an
      external power supply voltage (Vext)  are provided. The first voltage
      dropping circuit (100) which  consumes relatively less power is always
      in an operative  mode, and the second voltage dropping circuit (200)
      which  consumes more power than that of the first voltage dropping
      circuit is operated during an interval other than a standby  interval.
      The voltages (Vin1, Vin2) generated by the first and  second voltage
      dropping circuits (100, 200) are supplied to  an internal power supply
      line (12) in parallel with each other.
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Extended Family Display

It is possible to display extended family results in one record. This “virtual” record contains the following:

- Publication, application and priority numbers and dates for all members.

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- Title, Assignee, and Inventor data elements are selected from a specific patent country / authority (see default order below).
- Abstract data may be provided from one preferred patent country/authority or from all family member records with abstracts.
- Cited references.
- Designated States will appear for every EP and PCT publication. The EP designated states are from the last EP publication stage.
- Classification Codes: ECLA, US PCL, IPC, and ICO. All the classification codes will be displayed for all members of the family.

Basis for Selecting Title, Assignee, Inventor and (first-listed) Abstract data:

The Patent authority default is set as the PCT minimum documentation collection with the order as follows:

EP, US, WO, GB, FR, DE, CH, BE, JP, SU/RU

This means that title, assignee, inventor, and abstract data will be selected from the EP record as a basis for building the record. If there is no EP record in the family, title, assignee, inventor and abstract data will be selected from the US record. If there is no US record in the family, data from the WO record will be used, and so on.

Selecting MFAM Patent Country/Authority Preference

A specific Patent Country or Authority may be selected as the basis for the building the merged record.
This is controlled by the POP or OP options.

Example: POP MFAM US

In this example, the Title, Assignee, Inventor, and Abstract for the US member will be used for creating the records and the US numbers will appear first in the merged record. If there is not a US family member, then the default display will be used.

To set POP/OP to the default, use POP MFAM EP

Order for Patent Country/Authority Publication Numbers in a merged record:

POP/OP MFAM preference then Publication stages in alpha order, e.g.: AT , AU - ZW

Merged Family Display Formats

Examples: PRT MABS 1-5 PRT SS 2 MTST SET

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MTST        TI    OTI   IC    ICAA  ICCA  EC    ICO    PCL   FI    FTM   IDT   BC

MINI        PN    TI    PA    PA0   PAH   RP    IN     IN0   AP    PR

MMSS        PN    TI    OTI   PA    PA0   PAH    RP    IN    IN0   AP    PR    DS

MSTD        PN    TI    OTI   PA    PA0   PAH    RP    IN    IN0   AP    PR    IC
            ICAA  ICCA  EC    ICO   PCL   FI     FTM   IDT   BC    DS

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            IC    ICAA  ICCA  EC    ICO   PCL    FI    FTM   IDT   BC    DS

MASE        PN    TI    PA    PA0   PAH    RP    IN    IN0   AP    PR    MED    AB

MSTE        PN    TI    PA    PA0   PAH    RP    IN    IN0   AP    PR    IC
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MSTA        PN    TI    OTI   PA    PA0   PAH    RP    IN    IN0   AP    PR    IC
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            MED   AB

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            PR    MED   AB    DS

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            MED    REF    AB

MALL        PN     TI     OTI    PA     PA0    PAH     RP     IN    IN0    AP     PR     IC
            ICAA   ICCA   EC     ICO    PCL    FI     FTM    IDT    BC     DS     CT     REF
            MED     AB     CLMS   DESC
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Family Identifier
Simple Family

The Family Identifier allows identification of the simple family - (ESP@CENET family)

The Simple Patent Family

All documents having exactly the same priority or combination of priorities belong to one patent family.
In the case below, document D1 is the only document in family P1,
D2 and D3 belong to family P1-P2,
D4 belongs to family P2-P3, and
D5 to family P3.

Document D1	Priority P1			FAMILY P1
Document D2	Priority P1	Priority P2		FAMILY P1-P2
Document D3	Priority P1	Priority P2		FAMILY P1-P2
Document D4		Priority P2	Priority P3	FAMILY P2- P3
Document D5			Priority P3	FAMILY P3

If all the priorities of two documents are the same, they are referred to as "equivalents". This definition is used in *esp@cenet* for listing the documents under "also published as" on the bibliographic data view.
Note: The Simple Family, Extended or INPADOC Family and FAMPAT family are different family definitions and may provide different results (sometimes a search for Simple, Extended and FamPat families may provide the same results at some point in time but may well provide different results over time).

- The Simple Family, use MEM SFM /*MEM SFM (see below)
- Extended or INPADOC family, use FAM or FAM SS command
- FAMPAT family, use FamPat database

FID Family Identification Number
This field contains the unique family identification number attributed by the EPO.
Format : NNNNNNNN and the designation of rep
Note: Not all documents have FID numbers and SFM numbers. Among the documents without these numbers are: US designs, very recent documents and back file documents added uniquely by Questel (no DocDB record yet).

SFM Simple Family Member
This field contains the simple family member numbers attributed by the EPO – format of number is based on patent numbers with a kind code. (Note: not exactly the same as patent number format).
Searching with the FID and SFM:

MEM /FID RK 1	To select the FID number from relevant document
*MEM /FID	To search for all simple family member documents with this FID number
MEM /SFM	To select all the Simple Family Member numbers from relevant document
*MEM /SFM	To search for all simple family member documents by the SFM numbers

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List of Fields

AB	Abstract - (EAB)
ADB	Advantages and Drawbacks
AN	Accession Number
AP	Application Number (APC)
APD	Application Date (DDP)
BC	Berlin Class
CT	Citations
DEF	ECLA Definition
DS	Designated States
DT	Document Type
EC	ECLA Class (ECLA)
FAB	Abstract in French
FD	Filing Details - US Only
FI	FI-Terms
FID	Family ID
FPR	Family Priority
FT	French Title
FTM	F-Terms (File forming terms) - JP Only
GAB	Abstract in German
GT	German Title
IAB	Reference for Abstract
IC	Intl Patent Class
ICA	Additional IPC
ICAA	IPC Advanced All
ICAI	IPC Advanced Inventive
ICAN	IPC Advanced Non-inventive
ICCA	IPC Core All raised
ICCI	IPC Core Inventive
ICCN	IPC Core Non-inventive
ICLM	Independent Claim
ICM	Main IPC
ICO	In Computer Only Class
ICS	Secondary IPC
ICT	Reference for Citation
IDT	Dutch Class
IKD	Patent Kind Code
IN	Inventor(s)
IN0	Inventor(s)
INC	Inventor Country
INN	Inventor Name
INN0	Inventor Name
IT	Index Terms
IW	Index Words
KEW	Concepts
LA	Language
MTAB	Machine Translated Abstract
NPA	Normalized patent assignee
NPR	Number of Priority Numbers
OAB	Other Abstracts
OBJ	Patent Object
OPD	Other Publication Dates
OTI	Other Title

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List of Fields (cont'd)

PA	Patent Assignee
PA0	Patent Assignee
PAC	Patent Assignee Country
PAH	Patent Assignee History
PAN	Patent Assignee Name
PAN0	Patent Assignee Name
PAP	PCT Application Number
PCL	US Class
PCLO	US Original PCL
PD	Publication Date
PDA	First Date of Publication
PDG	First Date of Issue
PDL	Patent Date Last
PN	Patent Number
PPN	PCT Patent Number
PR	Priority Details
PRD	Priority Date
PRI	Priority Indicator
PUB	Publication country (from legal status only)
QM	Questel Month
QW	Questel Week
REF	Non Patent Citation References
SFM	Simple Family
STG	Stage
TI	Title - English
UA	Update Amendments
UAA4	Monthly UABA
UAB	Abstract Update
UAB4	Monthly UAB
UABA	All Abstracts - Human
UCL	Classification Code Update
UCT	Citation Update
UE	Update Equivalents / Stages
UE4	Monthly UE
UMT4	Monthly UMTA
UMTA	MTAB Update
UP	Update Code
UP4	Monthly Update
XAP	Standardized Application Number
XCT	Standardized Citation Number
XCTA	Cited Document Category from EP, WO Search Reports–Technology Background
XCTD	Cited Document Category from EP, WO Search Reports–Document Cited in Application
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XPN	Standardized Patent Number
XPR	Standardized Priority Number
XR	Basic – Cross Reference Number