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(54) Title: METHOD OF ENHANCING OIL RECOVERY

(57) Abstract: The invention provides a method of enhancing oil recovery from a subterranean hydrocarbon reservoir, said method comprising injecting into said reservoir through a matrix injection section of a well a microorganism capable of digesting oil, and recovering oil from an oil receiving section of a production well, where said injection section is in said production well or is in an injection well and is above or adjacent said oil receiving section, and wherein microorganism injection is preceded by another oil extraction enhancing procedure.



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INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2008/002209

A. CLASSIFICATION OF SUBJECT MATTER INV. C09K8/592 C09K8/582 C12N1/00		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) C09K C12N		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 163 510 A (SUNDE EGIL [NO]) 17 November 1992 (1992-11-17) column 2, line 34 - line 60 column 3, line 55 - line 62	1-8
A	EP 1 235 974 B1 (STATOIL ASA [NO]; REES DAVID CHRISTOPHER [GB]) 12 January 2005 (2005-01-12) paragraph [0017] - paragraph [0018] paragraph [0033] - paragraph [0041]	1-8
X	KR 2003 0071279 A (BIORIGIN INC [KR]) 3 September 2003 (2003-09-03) see derwent EN abstract	9-11
A	KR 2002 0044733 A (CHUNG WOOK JIN [KR]) 19 June 2002 (2002-06-19) see derwent EN abstract	9-11
☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
* Special categories of cited documents : *A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *&* document member of the same patent family		
Date of the actual completion of the international search 18 February 2009		Date of mailing of the international search report 04/03/2009
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer Zimpfer, Emmanuel

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2008/002209

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-8

Method of enhancing oil recovery from a subterranean hydrocarbon reservoir, said method comprising injecting into said reservoir through a matrix injection section of a well a microorganism capable of digesting oil, and recovering oil from an oil receiving section of a production well, where said injection section is in said production well or is in an injection well and is above or adjacent said oil receiving section, and wherein microorganism injection is preceded by another oil extraction enhancing procedure.

2. claims: 9-11

Microorganism mixture for hydrocarbon reservoir treatment, said mixture comprising microorganisms of at least two, preferably three, of the following species : Shingomonas sp., Pseudomonas sp., Burkholderia sp., Thermovirga lienii, Archaeoglobus fulgidus, Acinebacter venetianus, Thermosiphon geolii and Symbiobacterium sp.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2008/002209

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