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[Continued on next page]

(54) Title: HYDRATE INHIBITED LATEX FLOW IMPROVER

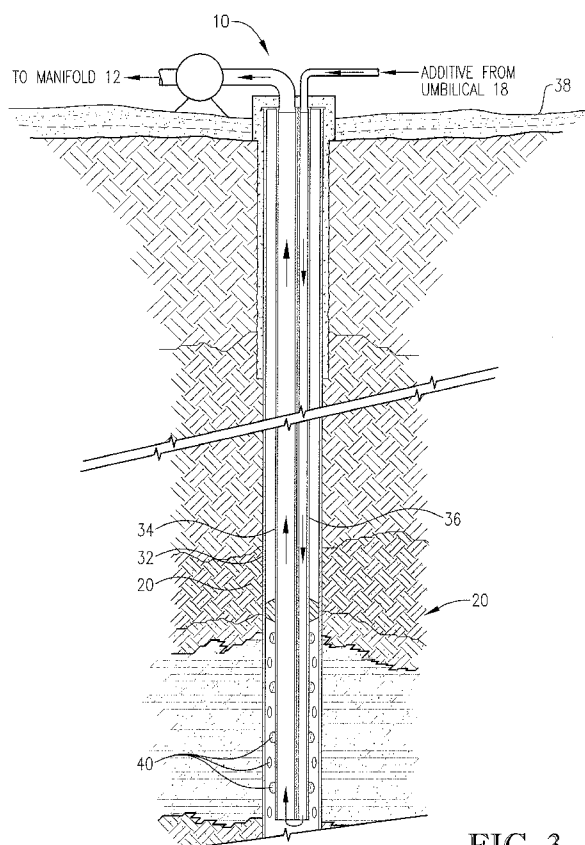


FIG. 3

(57) Abstract: A system for reducing pressure drop associated with turbulent fluid flow through subsea conduits. Such reduction in pressure drop is accomplished by transporting a hydrate inhibited drag reducer through a long conduit of small diameter, and thereafter injecting the drag reducer into a host fluid at the subsea location, to make a treated fluid. The treated fluid is then extracted from the subsea location via a production/transportation conduit. The presence of the drag reducer in the treated fluid reduces pressure drop associated with flow through the production/transportation conduit.



PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

— *as to the applicant's entitlement to claim the priority of the
earlier application (Rule 4.17(iii))*

Published:

— *with international search report*

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a
patent (Rule 4.17(ii))*

(88) Date of publication of the international search report:
30 October 2008

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US07/73990

A. CLASSIFICATION OF SUBJECT MATTER

IPC: F17D 1/16(2006.01);B05D 5/08(2006.01)

USPC: 137/13;523/175

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)

U.S. : 137/13; 523/175

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 practicable, search terms used)
EAST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2004/02167800A1 (HAMMONDS et al) 4 November 2004 (04.11.2004), paragraphs 5 and 27-30.	1-27
Y	US 5,639,925 A (SLOAN, JR. et al) 17 June 1997 (17.06.1997), col. 1 lines 30-49, col. 5 lines 20-29, col. 6 lines 22-29, col. 7 lines 5-9, and col. 15 lines 21-34.	1-27
Y	US 3,857,402 (SCHUH) 31 December 1974 (31.12.1974), col. 1 lines 36-37 and 54-59, col. 2 lines 28-49, col. 3 lines 11-16, and FIG 3.	1-27
Y	US 5,993,608 (ABRY et al) 30 November 1999 (30.11.1999), col. 7 lines 5-9.	8, 18, 25
Y	US 2003/0191030 (BLAIR et al) 9 October 2003 (09.10.2003), paragraph 42.	16, 22

☐ 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 application or patent 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

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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 July 2008 (18.07.2008)

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US07/73990

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

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

1. ☐ Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claim 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. ☐ Claim Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation Sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
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.

No protest accompanied the payment of additional search fees.

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-17, drawn to a method of using a latex drag reducer.

Group II, claim(s) 18-27, drawn to a latex drag reducer.

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The special technical features that the two groups have in common are shown to form part of the prior art by the combination of Hammonds, Schuh, Sloan, Abry and Blair, as discussed in the search report. Each Group has distinctive technical features as discussed in the Invitation to Pay Additional Fees.