



- (51) International Patent Classification:  
E21B 34/10 (2006.01) E21B 34/08 (2006.01)
- (21) International Application Number:  
PCT/US2008/072198
- (22) International Filing Date:  
5 August 2008 (05.08.2008)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
11/836,576 9 August 2007 (09.08.2007) US
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- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ,

EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))
- (88) Date of publication of the international search report:  
25 February 2010

(54) Title: SUBSURFACE SAFETY VALVE FOR ELECTRIC SUBSEA TREE

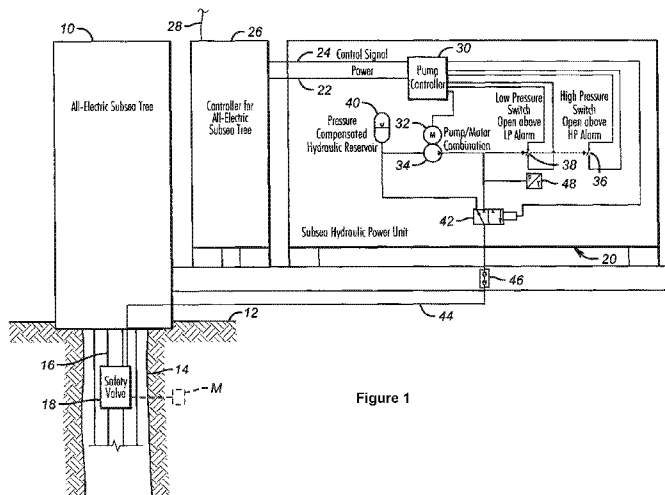


Figure 1

(57) Abstract: An all electric subsea tree can be coupled with a hydraulic pressure unit that is fed off electrical and control lines that are in the umbilical from the surface. In that way hydraulic lines do not need to be separately run from the surface to the tree. Alternatively hydraulic pressure can be generated at a downhole tool using power and control lines running from the tree to the downhole equipment. As another alternative, the downhole equipment can be run by electric motor located downhole adjacent the downhole equipment and powered and controlled by lines running from the tree to the downhole location.

WO 2009/154641 A3

## INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/US2008/072198****A. CLASSIFICATION OF SUBJECT MATTER***E21B 34/10(2006.01)i, E21B 34/08(2006.01)i*

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)

E21B 34/10

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models since 1975.  
Japanese utility models and applications for utility models since 1975.

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) &amp; Keywords:electric, subsea, tree, hydraulic, pressure, module, control, system and similar terms

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 7137450 B2 (JOHN A. JOHANSEN et al.) 21 November 2006 See the abstract; Column 1, line 12 - Column 2, line 14; Claims 1-56 and Figures 1-7.	1-5,7,9-12,14
X	See the abstract; Column 1, line 12 - Column 2, line 14; Claims 1-56 and Figures 1-7.	6,8,13,15
Y	See the abstract; Column 1, line 12 - Column 2, line 14; Claims 1-56 and Figures 1-7.	17-19
X	US 6698520 B2 (FENTON; STEPHEN P. et al.) 02 March 2004 See the abstract; Column 2, line 7 - Column 3, line 60 and Figures 1-2.	1,9
X	US 7201229 B2 (PAUL W. WHITE et al.) 10 April 2007 See the abstract; Column 2, line 16 - Column 4, line 35 and Figure 1.	1,9,16
Y	See the abstract; Column 2, line 16 - Column 4, line 35 and Figure 1.	17-19

 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 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 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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

28 DECEMBER 2009 (28.12.2009)

Date of mailing of the international search report

**30 DECEMBER 2009 (30.12.2009)**

Name and mailing address of the ISA/KR

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**INTERNATIONAL SEARCH REPORT**

International application No.

**PCT/US2008/072198****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:

Independent claims 1, 9 and 16 are directed to a control system for a downhole tool.

The only common technical feature between claims 1, 9 and 16 is the system, comprising an electric subsea tree and a hydraulic pressure generating module. This feature lacks a novelty with respect to the documents US 07137450 B2 or US 06698520 B2 or US 07201229 B2 cited in the ISR. Thus, there is no technical relationship left over the prior art among the claimed inventions, leaving the claims without a single general inventive concept.

Hence, there is a lack of unity of invention "a posteriori" (PCT Rule 13.1 and 13.2).

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 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.

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2008/072198**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date		
US 7137450 B2	21.11.2006	AU 2005-216010 A1	09.09.2005		
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US 7201229 B2	10.04.2007	BR 0415841 A	27.03.2007		
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