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- (71) Applicant (for all designated States except US): **HAL-LIBURTON ENERGY SERVICES, INC.** [US/US]; P.O. Box 1431, Duncan, OK 73533 (US).
- (71) Applicant (for MW only): **WAIN, Christopher, Paul** [GB/GB]; A.A. Thornton & Co., 235 High Holborn, London WC1V 7LE (GB).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **CAVENY, William, J.** [US/US]; Route 2, Box 282, Rush Springs, OK 73082 (US). **MORGAN, Rickey, L.** [US/US]; 1494 East Elk, Duncan, OK 73533 (US).
- (74) Agents: **WAIN, Christopher, Paul** et al.; A A Thornton & Co, 235 High Holborn, London WC1V 7LE (GB).
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(54) Title: CEMENT COMPOSITIONS COMPRISING STRENGTH-ENHANCING LOST CIRCULATION MATERIALS AND METHODS OF CEMENTING IN SUBTERRANEAN FORMATIONS

(57) Abstract: The present invention provides cement compositions comprising a strength-enhancing lost circulation material, and methods for cementing using such cement compositions. Exemplary embodiments of the cement compositions comprise cement, water, and a strength-enhancing lost circulation material. Optionally, other additives suitable for inclusion in cement compositions may be added.



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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB2004/003839

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC 7 C04B14/10 C04B18/12 C04B24/26		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols) IPC 7 C04B		
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, PAJ		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	US 6 689 208 B1 (BROTHERS LANCE E) 10 February 2004 (2004-02-10) paragraphs '0013!', '0014!', '0018!'; examples 1,2 claims 1-33	1-94
X	CHEMICAL ABSTRACTS, vol. 111, no. 1, 3 July 1989 (1989-07-03), Columbus, Ohio, US; TIAN, GUANGSHU ET AL.: "Additives for underwater cement" page 285 XP000059547 abstract	48-94
X	-& CN 86 106 211 A (FAMING ZHUANLI SHENQING GONGKAI SHUOMINGSHU) 20 April 1988 (1988-04-20)	48-94
-/--		
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C. <span style="margin-left: 100px;"><input checked="" type="checkbox"/> Patent family members are listed in annex.</span>		
° 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	Date of mailing of the international search report	
4 May 2005	01/06/2005	
Name and mailing address of the ISA	Authorized officer	
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Burtan, M-M	

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB2004/003839

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 599 857 A (ALLEN ET AL) 4 February 1997 (1997-02-04) the whole document -----	1-94

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 1 - 9 and 48 - 56 (all partially)

Present claims 1 - 9 and 48 - 56 relate to an extremely large number of possible methods and products, respectively. Support within the meaning of Article 6 PCT and disclosure within the meaning of Article 5 PCT is to be found, however, for only a very small proportion of the methods and products claimed. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Consequently, the search has been carried out for those parts of the claims which appear to be supported and disclosed, namely those parts relating to the cementitious compositions comprising cement, a fluid loss control comprising vitrified shale and water, and the methods for cementing in subterranean formations using these cementitious compositions, together with a reasonable generalisation thereof.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

# INTERNATIONAL SEARCH REPORT

national application No.  
PCT/GB2004/003839

## Box 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.: 1 - 9 and 48 - 56 (all partially)  
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:  
see FURTHER INFORMATION sheet PCT/ISA/210
  
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 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:

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.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No PCT/GB2004/003839
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6689208	BI	10-02-2004	AU 2003269168 A1 WO 2004109056 A1 US 2004244650 A1
CN 86106211	A	20-04-1988	NONE
US 5599857	A	04-02-1997	US 5725906 A