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(54) **Remote actuation of downhole tools using fluid pressure from surface**

(57) An apparatus for and a method of transmitting signals from the surface of a well to a location downhole in the well utilize a downhole fluid pressure sensor (52), a signal processing means (54; 56; 58) located downhole in electrical connection with the pressure sensor (52) and a downhole programmable logic unit (60) capable of counting at least two signals received by the downhole pressure sensor (52). Typically, signals transmitted from

the surface comprise a peak in pressure of downhole fluid located in production tubing run into a well bore and these signals are sensed by the downhole fluid pressure sensor (52). The logic unit (60) outputs a signal to a tool to be actuated if it receives a number of signals within a particular time period, wherein the logic unit (60) actuates the tool by the frequency of signals received rather than the amplitude of the signals received.

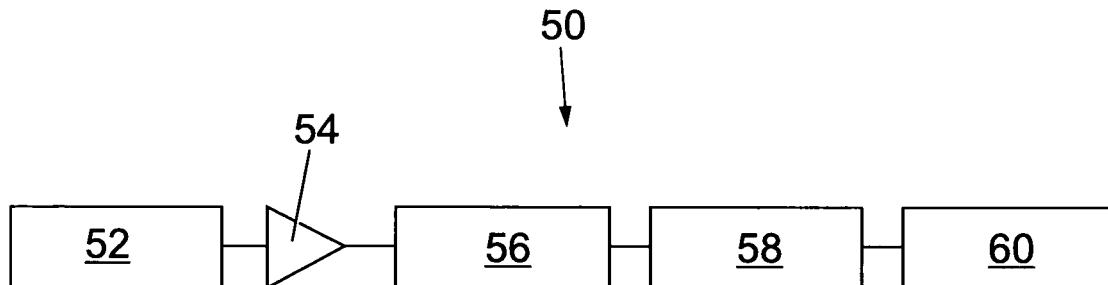


Fig. 4b



EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (IPC)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	WO 96/24752 A2 (BAKER HUGHES INC [US]) 15 August 1996 (1996-08-15) * page 39, line 11 - page 44, line 4 * -----	1-15	INV. E21B34/10 E21B47/18
X	WO 99/54591 A1 (SCHLUMBERGER TECHNOLOGY CORP [US]) 28 October 1999 (1999-10-28) * page 1, line 16 - line 26 * * page 4, line 9 - line 14 * -----	1,2,5-8, 13,15	
1			TECHNICAL FIELDS SEARCHED (IPC)
1			E21B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		23 August 2010	Ott, Stéphane
CATEGORY OF CITED DOCUMENTS <p> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document </p>			
<p> 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 & : member of the same patent family, corresponding document </p>			

ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

23-08-2010

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
WO 9624752	A2	15-08-1996	AU	716324 B2		24-02-2000
			CA	2187010 A1		15-08-1996
			GB	2344910 A		21-06-2000
			GB	2344911 A		21-06-2000
			GB	2302607 A		22-01-1997
			NO	964290 A		09-12-1996
			US	6021095 A		01-02-2000
<hr/>						
WO 9954591	A1	28-10-1999	AU	4542299 A		08-11-1999
			GB	2353308 A		21-02-2001
			NO	20005285 A		19-12-2000
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