



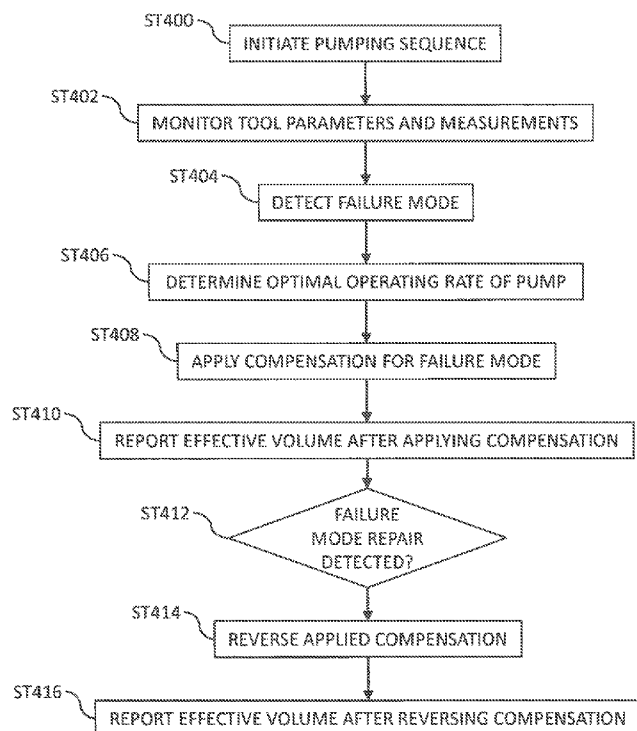
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[Continued on next page]

- (54) **Title:** ADAPTIVE PUMP CONTROL FOR POSITIVE DISPLACEMENT PUMP FAILURE MODES



(57) **Abstract:** Detecting a failure mode of a fluid flow controller configured to control fluid flow between first and second chambers of a downhole positive displacement pump and a flow line, wherein the positive displacement pump comprises a piston moving in an axial reciprocating motion, and subsequently adjusting operation of the downhole positive displacement pump based on the detected failure mode such that the downhole positive displacement pump piston operates differently in different axial directions.



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A. CLASSIFICATION OF SUBJECT MATTER		<i>E21B 47/008 (2012.01)</i> <i>F04B 47/12 (2006.01)</i> <i>F04B 49/22 (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 47/00, 47/008, 47/009, F04B 3/00, 5/00, 5/02, 7/00, 7/02, 9/00, 9/08, 47/00-47/12, 49/00, 49/02, 49/12, 49/16, 49/22, 51/00													
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)													
PatSearch (RUPTO internal), Esp@cenet, PAJ, USPTO													
C. DOCUMENTS CONSIDERED TO BE RELEVANT													
Category*	Citation of document, with indication, where appropriate, of the relevant passages		Relevant to claim No.										
A	EA 015138 B1 (SCHLUMBERGER TECHNOLOGY B.V.) 30.06.2011		1-20										
A	US 2004/0117132 A1 (STANLEY V. STEPHENSON et al.) 17.06.2004		1-20										
A	US 4705459 A (DOWELL SCHLUMBERGER INCORPORATED) 10.11.1987		1-20										
A	US 2005/0022589 A1 (HONGLIU DU) 03.02.2005		1-20										
☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.													
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“P” document published prior to the international filing date but later than the priority date claimed													
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