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(54) Title: SYSTEMS, COMPUTER IMPLEMENTED METHODS, AND COMPUTER READABLE PROGRAM PRODUCTS TO COMPUTE APPROXIMATE WELL DRAINAGE PRESSURE FOR A RESERVOIR SIMULATOR

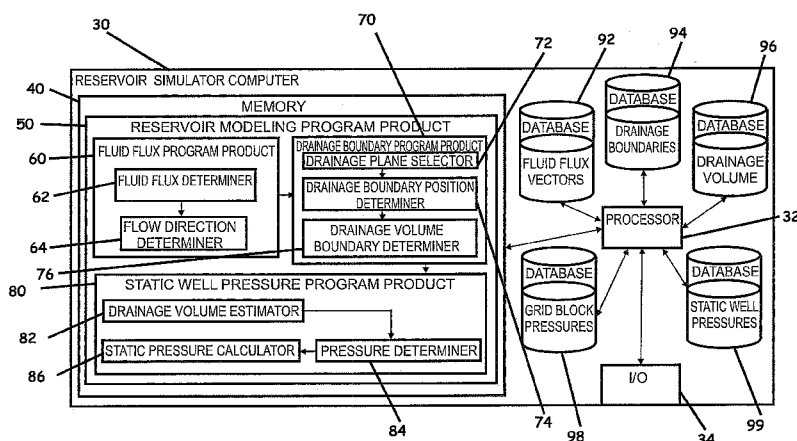


FIG. 1.

(57) Abstract: Systems, computer implemented methods, and program products to determine approximate static well pressures for one or more arbitrary shaped wells (119) by estimating the drainage volume (111) of the one or more wells (119), are provided. The drainage volume (111) of the one or more wells (119), for example, can be estimated from the one or more computed fluid flow flux vectors (107), and the approximate static well pressures for the one or more wells (119) can be subsequently calculated by taking the pore volume average of the dynamic grid block pressures within the drainage volume (111) of the one or more wells (119). The one or more fluid flow flux vectors (107) can be calculated at each iteration in a numerical reservoir simulator as a part of standard simulator computations, negating a need for additional, extraneous computations to calculate effective drainage volume (111) of the one or more wells (119).

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## INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER  
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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)  
 G06F G01V

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

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>USUF MIDDYA, ALI H. DOGRU: "Computation of Average Well Drainage Pressure for a Parallel Reservoir Simulator", PAPER PREPARED FOR PRESENTATION AT THE 2008 SPE SAUDI ARABIA SECTION TECHNICAL SYMPOSIUM HELD IN ALKHOBAR, SAUDI ARABIA, 10-12 MAY 2008, no. SPE 120816, 12 May 2008 (2008-05-12), pages 1-6, XP002662882, * the whole document, in particular page 1, 2nd column, and page 2, 1st column *</p> <p style="text-align: center;">----- -/--</p>	1-50



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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>DOGRU A H ET AL: "A Parallel Reservoir Simulator for Large-Scale Reservoir Simulation", PROCEEDINGS OF THE SPE RESERVOIR SIMULATION SYMPOSIUM, XX, XX, 14 February 2002 (2002-02-14), pages 11-23, XP002364342, * the whole document *</p> <p style="text-align: center;">-----</p>	1-50