

Title (en)

ESTIMATING FORMATION STRESSES USING RADIAL PROFILES OF THREE SHEAR MODULI

Title (de)

BEWERTUNG VON FORMIERUNGSBELASTUNGEN MITHILFE VON RADIALPROFILIEN DREIER SCHUBMODULI

Title (fr)

ESTIMATION DE CONTRAINTES DE FORMATION À L'AIDE DE PROFILS RADIAUX DE TROIS MODULES DE CISAILLEMENT

Publication

EP 2488722 A1 20120822 (EN)

Application

EP 09847452 A 20090720

Priority

US 2009051146 W 20090720

Abstract (en)

[origin: WO2011010989A1] Maximum and minimum horizontal stresses, and horizontal to overburden stress ratio, are estimated using radial profiles of shear moduli. Inversion enables estimation of maximum and minimum horizontal stresses using radial profiles of three shear moduli associated with an orthogonal set of axes defined by the three principal stress directions. Differences in the far-field shear moduli are inverted together with two difference equations obtained from the radial profiles of the dipole shear moduli C44 and C55, and borehole stresses in the near-wellbore region. The horizontal to overburden stress ratio is estimated using differences in the compressional, dipole shear, and Stoneley shear slownesses at two depths in the same lithology interval where the formation exhibits azimuthal isotropy in cross-dipole dispersions, implying that horizontal stresses are nearly the same at all azimuths. The overburden to horizontal stress ratio in a formation with axial heterogeneity may also be estimated using the far-field Stoneley shear modulus C66 and dipole shear modulus C55 together with the radial variation of the dipole shear modulus C55 caused by near-wellbore stress concentrations.

IPC 8 full level

E21B 47/06 (2012.01); **G01V 1/40** (2006.01)

CPC (source: EP GB)

E21B 49/006 (2013.01 - EP); **G01V 1/50** (2013.01 - EP GB)

Cited by

CN112965100A

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR

DOCDB simple family (publication)

WO 2011010989 A1 20110127; BR 112012001198 A2 20160301; BR 112012001198 B1 20190115; CA 2731780 A1 20110127; CA 2731780 C 20160216; EP 2488722 A1 20120822; EP 2488722 A4 20171108; GB 201201975 D0 20120321; GB 2484247 A 20120404; GB 2484247 B 20150603; MX 2012000832 A 20120411

DOCDB simple family (application)

US 2009051146 W 20090720; BR 112012001198 A 20090720; CA 2731780 A 20090720; EP 09847452 A 20090720; GB 201201975 A 20090720; MX 2012000832 A 20090720