Title (en)
Method and system for detecting bit-bounce

Title (de)
Vorrichtung und Verfahren zum detektieren von longitudinalen Bewegungen eines Bohrgestänges

Title (fr)
Méthode et système de détection du déplacement longitudinal d'un outil de forage

Publication
EP 1046781 B1 20050202 (FR)

Application
EP 00400557 A 20000302

Priority
FR 9904941 A 19990419

Abstract (en)

[origin: EP1046781A1] At least two values (Rf, Rwob) are calculated in real time. Rf is a function of the principal oscillating frequency of the weight at the bend WOH divided by the speed of rotation. Rwob is a function of the weight on the tool WOB estimated by the model reduce the measured signal of the weight at the bend WOH divided by the mean weight on the tool WOB0 . The method uses a physical model of the drilling process based on general equations for the mechanism and has the following stages: the parameters of the model are determined taking into account the characteristic parameters of the shaft and the drill string; the model is then reduced, keeping only some of the modes of the model matrix. The longitudinal behavior is calculated f the values of Rf and Rwob. The mean weight on the tool WOB0 is defined from the weight of the drill string and the weight at the mean bend. Rf is compared with an interval with milestones chosen so there is no dangerous longitudinal movement if Rf is in the defined interval. If Rf is in the interval, the danger is determined as a function of Rwob. Rf = 20 asterisk fWOH / RPM0, where fWOH is the principal oscillation frequency in Hertz over the interval (0, 10) Hz, and RPM0 is the mean instantaneous speed of rotation at the surface, in turns/min. The milestones for the interval are 0.95 and 0.99. Rwob = Swob/WOB0, where Swob is the weight on the tool estimated from the signal at the mean bend and the model, and WOB0 is the mean weight on the tool, defined from the mass of the drill string and mean bend. For Rwob less than 0.6 there is no danger; for Rwob between 0.6 and 0.8 there is a medium danger and for Rwob greater than 0.8 there is extreme danger. Independent claims are also included for a system for applying the above method and the application of the method to determining the danger of drill string dysfunction by jumping.

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IPC 8 full level
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CPC (source: EP US)
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Cited by
CN105258614A; GB2367843A; GB2367843B; US7899658B2; US7139689B2; US6635654B1; US6785641B1

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