

MODELLING OF WAIT AND WEIGHT WELL CONTROL METHOD FOR DUAL STRING DRILLING: A NOVELTY APPROACH FOR SAFER DEEP WATER DRILLING

Vivek Thakar, Manan Shah, Samip Umaretiya, Rajeshbhai Tundiya, Chandan Sahu, Sachin Nambiar and Anirbid Sircar

Pandit Deendayal Petroleum University, India

Since oil and gas reserves in onshore fields are depleting fast, the oil and gas industry is investing heavily on offshore exploration and production (E&P) which apparently is costlier. As a result, new unconventional drilling technologies are implemented to bring down costs needed to effectively exploit such reservoirs. Dual string drilling (DSD) is one such technology which suffices the deep waters drilling requirement at minimal costs with better operational safety. However, every drilling technology requires robust well control design to tackle the kicks from formation in well bore during drilling. Conventional riser drilling is full of predicaments and also the risks of having blowouts increases due to narrow operational window between fracture pressure and pore pressure which leads to the difficulties related to kick detection and lesser kick tolerance. Due to constant gradient of equivalent circulation density (ECD) is suitable for narrow pressure windows. Apart from this, it also has efficient cutting removal capacity, better annular clearance, elimination of differential sticking, better well stability, reduction of torque and drag and better extended reach drilling. The novelty of this model sees the application of wait and weight well control technique in DSD which has the ability to resolve problems like long well killing time, large kill mud volume, early kick detection and formation fracture during well kick operations in soft formations.

samip.umaretiya@gmail.com