

TAKING ANOTHER LOOK AT THE RISK PROFILE FOR AIR DRILLING IN THE PRESENCE OF HYDROCARBONS

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ABSTRACT

Drilling with compressed air continues to enjoy vast popularity. However air drilling is not without its impediments; not the least of which is its reactivity with hydrocarbons. The application of drilling with compressed air provides many benefits, but misapplication of this technology has led to losses that include equipment both on the surface and downhole. More seriously, the most devastating of these losses are injuries to rig personnel and sometimes fatalities. For too long, some operators, drilling contractors, rig and service personnel have been under the mistaken impression that air drilling is a safe operation over a broad range of applications.

The International Association of Drilling Contractors (IADC) has published a Well Classification System for Underbalanced Operations and Managed Pressure Drilling. On a Risk Level Criteria from 0 to 5, air drilling for performance (rate of penetration) enhancement where no hydrocarbons are present is assigned the Level 0. The risk levels increase with operational complexity and potential well productivity.

Today, air drilling in the presence of hydrocarbons continues to be a common practice. The relationship between hydrocarbon molecular structure, compressed air in the wellbore combined with contributing bottomhole pressure and spontaneous ignition temperatures of the hydrocarbons contribute to the elevated risk profile of drilling with air in the presence of hydrocarbons.

Malloy K.P., Medley G.H., and Stone C.R.: "Taking Another Look at the Risk Profile for Air Drilling in the Presence of Hydrocarbons", Drilling Contractor Magazine, March 2007.