

# COMPARATIVE RISK USING MANAGED PRESSURE DRILLING TECHNIQUES

Kenneth Malloy, P.E. - Stress Engineering Services – Mohr Engineering Division

## ABSTRACT

Drilling for oil and gas in any environment entails risk. There are risks of not hitting pay, getting stuck, taking a kick, having an oil spill, falling down on the rig floor, tripping down a set of stairs, even getting a bad meal in the galley. Some of the events associated with these risks have more serious consequences and have a more profound impact on drilling operations than others. Each incident carries with it the components of severity, occurrence, and detection. Since time is money, the consequences are typically measured in terms of money and safety.

- **Risk = Severity x Frequency of Occurrence x Ability to Detect**
- **Risk\$ = \$Consequences x Frequency of Occurrence x Exposure**

In very broad terms, risk is the known chance that an event will occur. Uncertainty is knowing an event will occur, but not knowing when, or how, or where that event might occur. Reliability engineers and risk analysts are often able to assign a number based on probability that an event will occur. As an example, risk analysts routinely use actuarial tables to help determine risk before assessing the premium to be charged for an insurance policy based on the costs for a defined risk. Reliability engineering not only deals with risks but also addresses the issue of uncertainty through the use of statistical tools that help to predict the occurrence and magnitude of an event based on historical data.

Malloy, K.P. (2006), "Comparative Risk Using Managed Pressure Drilling (MPD) Techniques", Drilling Contractor Magazine, Mar/Apr, 2006.