

## Services Performed

IRC conducted a fault-tree risk analysis to assess the cost and frequency of well-control-related accidents for Ophir Energy's conventional subsea well blowout prevention (BOP) and surface BOP (SBOP) drilling operations. Monte Carlo simulation was used to help Ophir understand its well control accident liability and to optimize its insurance coverage.

## Objectives

- Quantify the frequency and expected losses resulting from insured well-control-related incidents for drillship SBOP and conventional subsea BOP operations
- Present results in a manner that will allow the benefit of insurance coverage to be assessed; for example, with exceedance curves showing the frequency that a certain level of loss will be exceeded

## Project Description

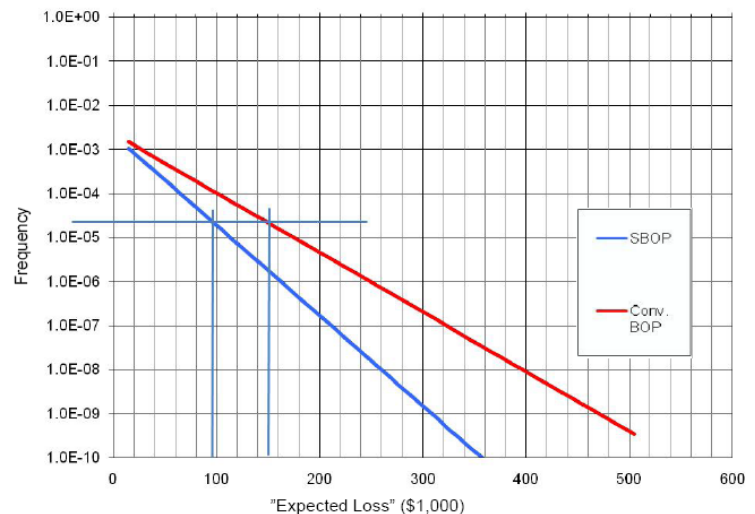
Ophir was expanding its capability to drill in ultra-deep water, Africa. Well-control insurance is a significant expense for offshore drilling operations, and Ophir sought comparison of the financial risks for well-control options to optimize insurance coverage.

IRC had previously completed a risk assessment for SBOP drilling for Stena Drilling and Ophir in September 2007. Using this analysis as a basis, IRC quantified risk in terms of expected loss associated with conventional subsea BOP and SBOP well control incidents. The categories assessed were:

- Loss of life
- Asset damage
- Oil spill
- Well control and recovery

This analysis demonstrated that, compared to conventional subsea BOP drilling, expected well-control-related losses were less for SBOP drilling. Example: For a frequency of occurrence associated with \$150-million loss for conventional subsea BOP drilling, the loss for SBOP drilling was approximately \$50-million less. This difference increased as expected loss increased.

Compared to results from deterministic methods such as event trees, Monte Carlo simulation allowed for more accurate prediction of the future real-life situation.



## Key Benefits to Client

- Well control insurance costs were optimized by reducing insurance coverage for a given frequency of events
- Well control insurance premiums were re-negotiated by using lower expected losses for SBOP drilling compared to conventional subsea BOP drilling