

Fourteen Years of Risk Assessment at Amoco and BP ‘A Retrospective Look at the Processes and Impact’

Glenn E. McMaster* and Peter D. Carragher
BP Exploration Houston Texas
200 Westlake Park Blvd, Houston, TX, 77079, USA
mcmastge@bp.com

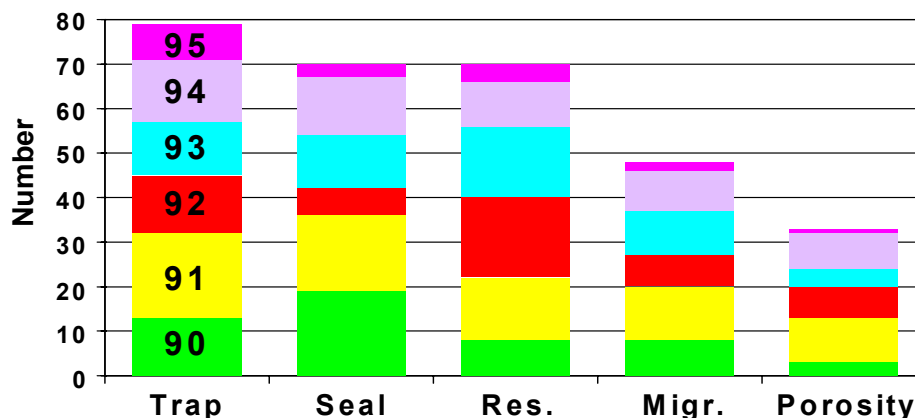
ABSTRACT

Systematic Risk Assessment began in earnest in the Petroleum Industry in the early 90’s in response to declining success rates, reduction in the size of the discoveries, the rising cost of failure and increased activity in new global arenas. Corporations could no longer spend vast sums of money on exploration with little or no associated return on their investment. Rose, Capen, Megill and others had been preaching the importance of risk analysis around the industry for a number of years; however very few companies had actually embraced the process.

The path to successful implementation of Risk Assessment at Amoco and BP reflects a contrast in styles and methods. Amoco utilized a formal top down process with standardized software and common risk assessment education. BP relied less on process and standardization and had a bottom up approach rooted in world-class geology. Amoco took a quantitative approach and relied on formal post appraisal to calibrate its system (*Fig. 1*). BP used a more qualitative approach or traffic light system to assign risk and adopted a network based, technical lessons learned approach to failures. Amoco had a formal Prospect Quality Team in order to standardize evaluations, while BP relied on internal assurance processes and peer reviews. Amoco formally tied the portfolio results of risk assessment to remuneration; BP did not (*Fig. 2*). Both approaches overcame the barriers to success, spread the lessons learned throughout the companies, and had very positive effects on the performance of exploration.

Fig. 1 Amoco Post Appraisal Data

Amoco Drilled Wells 1990-1995 Reasons for Failure



Resource Prediction Accuracy

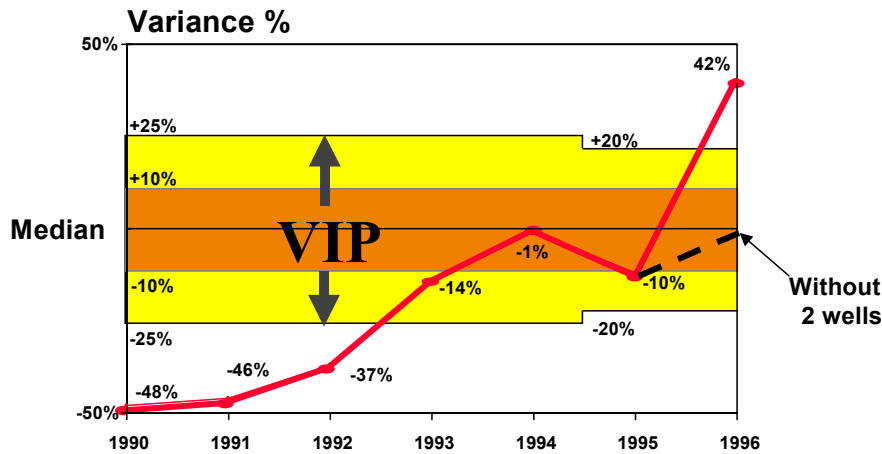
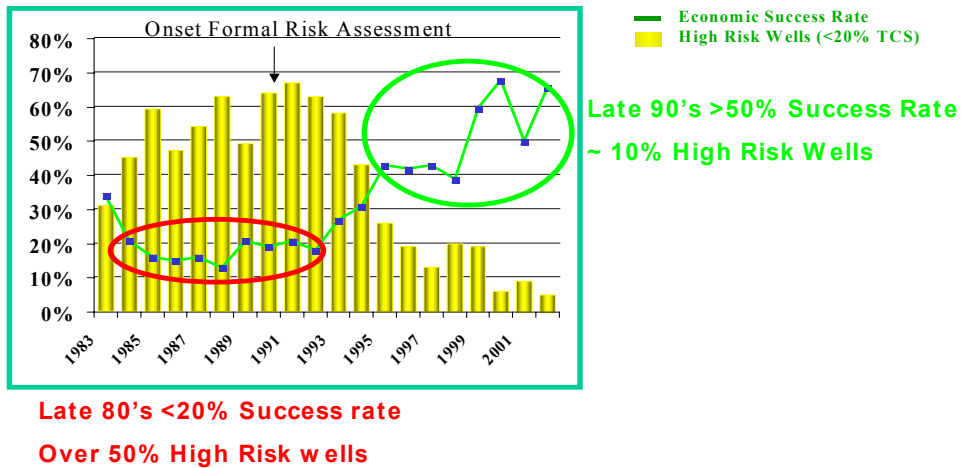


Fig. 2 Resource Prediction Accuracy

In the merged bp, from 1999 onwards, key parts of the heritage processes continue to be refined. New visualization technology plays a vital role in illuminating the detail of prospect segments, seals and spill points. Improved seismic acquisition and proprietary advances in 3D migration are showing breakthroughs in trap and fluid properties. In addition there are independent advances in source rock modeling and mapping based on 3D migration modeling. We believe there is great leverage in this “top-down, bottom-up” approach to prospect evaluation.

These results show that there is no single ‘right approach’. Both companies ultimately significantly improved their track records as shown by the increase in commercial success rate from less than 20% to greater than 60%, while the percentage and absolute number of high risk wells drilled each year were reduced from greater than 60% to less than 10% (*Fig. 3*). Also yearly resource additions increased from less than 500 mmb/yr to greater than 1 bboe/yr, and the exploration groups actually began to create real value (*Fig. 4*). But the journey was not without its challenges. Countries and basins without promise were exited, partnerships dissolved and staff reduced as exploration became more focused and less risk was taken.

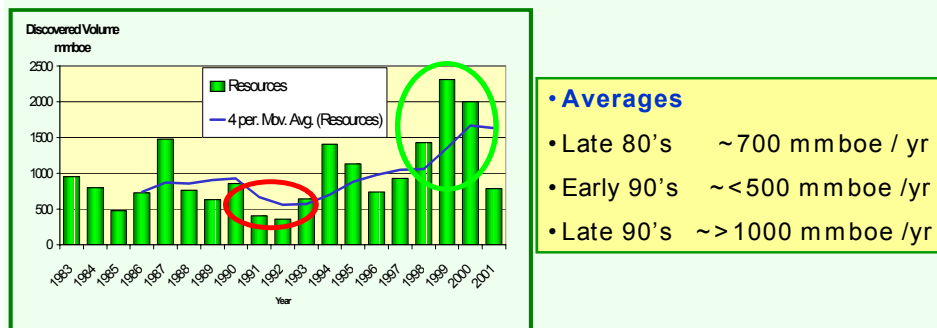
BP* Success Rate: 1983 – 2002



*BP data 83 - 90, BP + Amoco 90- 98, bp 99 - 02

Fig. 3 Commercial Success Rate Data

BP* Discoveries 1983 - 2001



Driving Choice towards Lower Risk, Larger, Growth Oriented Prospects...

*BP +Amoco 83 - 98, bp 99 - 01

Fig. 4 Yearly Resource Additions

Systematic and quantitative risk assessment can provide a step-wise change in the performance of any exploration departments. However this is just the first step in the Business of Exploration. Similar approaches are necessary for appraisal and development of discoveries and the commercial evaluation of the outcomes. By combining rate, resource and probability estimates with financial

data and corporate strategy (Fig. 5), the focus will shift from decisions on individual assets to an understanding of portfolio effects.

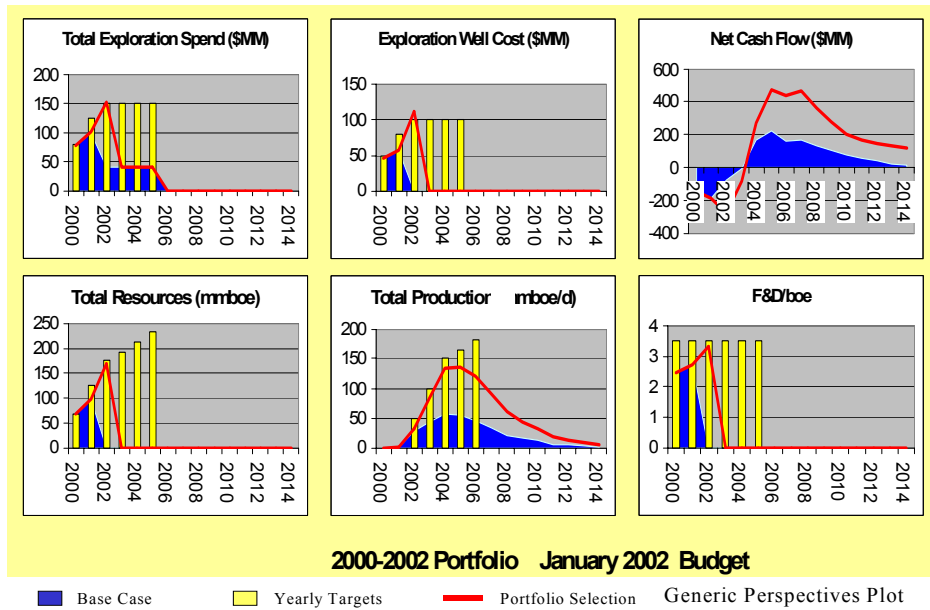


Fig. 5 Portfolio Optimization

Companies who make use of world class geological and geophysical technology, integrated with valuation methods and tools that are based on rigorous financial and decision science principles improve the chances for both short and long term success of their companies.