

## How to Sustain Exploration Programs in Low Oil Price Environments

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Exploration activities are expensive and the riskiest investment part of the Petroleum Value Chain and therefore, these also become the first focus of cost cutting. However, due to “long lead time” of 3-6 years as required for the exploration, discovery and appraisal & development, a sustained minimum critical mass of projects must remain in the exploration funnel to avoid next gaps in the oil & gas supplies, a lesson learned from the historical boom & bust cycles in the Upstream oil & gas sector. In today’s low oil price environment, E&P managements and teams’ first resort to cost reduction is renegotiating the Contracts, new Tendering and cutting down the “General & Administrative” (G&A) expenditures head count. However, such cost savings only make 2-5% of the total E&P costs. On the other hand, a deeper look into the drivers of exploration business and exploration planning & execution activities suggests that exploration cost effectiveness and minimizing finding cost (\$/boe) actually involve:

- (1) Restructuring the exploration portfolios and exploration strategies for low oil price environment. Restructuring and repositioning for the leverages and resilience and deferring high-risk frontier or technology-intensive wells can make money available for smaller but more robust projects able to deliver in short-term. Capital-intensive larger and longer A&D projects may be split into smaller phased projects; phased de-risking and phased development.
- (2) Significant de-risking of the Prospects through carefully customized technologies & workflows and minimizing the residual risk prior to drilling through an effective Quality Assurance Stage Gates approval process,
- (3) Improving operating performance through robust planning, building on top of the existing infrastructure and using all the synergies and leverages,
- (4) Agile tendering and contract management, and
- (5) Timely start of operations, and therefore a realistic scheduling and execution based on front-end loading and lean management.

In exploration arena, predictive tools of sequence stratigraphy and structural restorations and the Play-based Exploration workflows as deployed by us in the Lower, Middle and Upper Indus Basins starting early 2000s have not only allowed to identify the previously unmapped depositional systems tracts and reservoir corridors farther into the distal basin-ward settings, the patches of much better reservoir quality (sweet spots) have also been predicted and mapped by the Explorationists in deep burial settings (>4,000m). Optimal placement of new wells has significantly improved the wildcat and step-out wells’ success rate. Simultaneously, geoscientists have also been able to deliver high efficiency producers

which ultimately increase the reserves and expedite 2P to 1P reserves movement. Such improved ability to predict reservoir sweet spots for optimal well locations, and to de-risk and substantially reduce even the residual risks during exploration, can and have actually improved the lifecycle economics.

Onus is therefore on Exploration & Reservoir Geologists and Geophysicists to first identify and then demonstrate to the internal & external stakeholders the remaining potential of the petroleum basins they are working in by summing up the yet-to-finds of its individual Plays, accompanied by the means and tools of deploying new but 'appropriate' technologies and workflows after necessary customization.