

Capital Project Challenges Focus of Workshop

Project managers and key decision makers converged on Abu Dhabi, UAE from 23 to 26 March 2008 for a workshop titled "Challenges in Delivering Capital Projects." In five sessions spanning three days, attendees exchanged ideas and experiences in major project execution challenges and learned about the key factors in identifying project challenges, predicting portfolio profitability, and understanding the various uncertainties impacting today's oil and gas industry.

Aqeel Madhi, Chief Executive Officer of NPCC, gave the welcoming address, in which he highlighted the challenges facing oil and gas projects such as market conditions, contracting strategies for owners, and unique challenges and risks for both contractors and owners. Madhi proposed actions and efforts that owners and contractors can undertake to mutually benefit and move a project toward successful execution. Many of these were discussed in detail in the subsequent sessions.

Session 1: Capital Project Execution Challenges

Session Chairpersons Mohammed Abdul Majeed and Shaker Faras of Kuwait Oil Company (KOC) helmed the first session, which was designed to take stock of the performance deterioration of recently executed projects and discuss the advantages of new methodologies being applied to reduce this trend. Core issues of capital projects were also addressed, such as budgeting, cost estimation, contract strategies and most importantly, achieving on-time completion.

Al Attar of KOC gave a presentation highlighting the evolution of strategies to cope with high energy demand. He opened with a brief discussion on KOC achievements and aspirations and discussed KOC's experience in developing strategies and tools to create dynamic organizations that evolve with changes in the global environment. He also discussed best practices in prioritizing production portfolios, the relation between types of reservoirs developed and market conditions, the framework of the Health of Strategy (HoS) processes, and inputs and outputs to HoS.

A breakout group discussion followed, which focused on what an organization can do to stay dynamic, including using creative thinking to change management relationships with project teams, giving workers incentives to change or try new things, and creating value propositions to support change.

The second presentation highlighted the relationship between human resources (HR) management and performance risk. As new employees enter a project, new challenges enter as well, including a potential reduction in performance and possible project cost increases. To reduce these risks, a successful company should have dynamic hiring and

employee management protocols, leaders with vision who value their employees, and a clear management vision that does not rely on following the activities of its competition.

The session's third presentation reviewed uncertainties in planning, budgeting, and cost estimation for capital projects. The planning stage involves gathering all pertinent initial information, understanding and accepting the risks inherent in taking on a project, and having a willingness to capitalize on technologies. During the budgeting stage, a clear market outlook with all commercial uncertainties should be developed. With this information in hand, the budget cycle review process can be improved. During cost estimation, it is important to have a well-defined scope of all costs impacting the project, which partly comes from updating the cost estimation model with information obtained during planning and budgeting. Project costs can be minimized by standardizing the design of equipment and securing long-term procurement agreements with vendors.

Bader Al-Harbi of Saudi Aramco discussed current project execution challenges, and shared his company's experience in developing new contracting philosophies for engineering, material procurement, contracting, and construction to meet market challenges. Specific discussion topics included standardization of equipment, better prediction of future project changes, utilizing indices, engaging in alliance contracting, and factors to consider in e-tendering.

Session 2: Resource Constraints

This session highlighted a pressing problem for many HR departments, both in the Middle East and all over the world: the current pool of oil and gas project engineers is getting older, and the existing population is not large enough to satisfy plans for ongoing expansion.

As a result, there is a pressing need to replace existing recruitment programs to cope with this development, and more educational services are needed to sustain, develop, and improve the existing workforce with the best academic and industrial knowledge. Lack of necessary materials and equipment to execute the projects on schedule is another challenge the industry faces.

The first presentation highlighted ways to develop and sustain manpower. Al Alam of DuPont shared his company's experiences and knowledge in recruiting, developing, and retaining people. He also discussed a current business reality, which is that in order to survive in a highly competitive, resource-constrained environment, it is necessary to provide a shift in contracting strategy and share contract-related risk.

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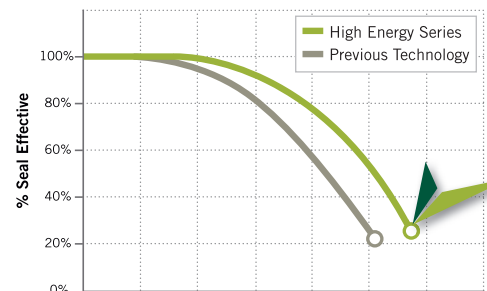


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The second presentation reviewed ways to manage source inspection to cope with project completion. A breakout group exercise highlighted several ways in which source inspection could be managed:

- Emphasizing that contractors and vendors should follow international codes
- Frequently auditing source inspection organizations and vendors
- Having more involvement with a company's inspection personnel
- Manufacturers putting more requirements on their sub-vendors.

Session 3: Advancement in Field Intelligence and Its Impact on Capital Projects

The intelligent field (I-field), or the digital oilfield, is a growing industry trend that enables the continuous monitoring and optimization of reservoirs, wells, and surface facilities. Successful implementation of an I-field depends on the following factors:

- Fit-for-purpose surface and subsurface instrumentation
- The delivery of reliable quality data from the field to the professional's desktop
- Development and uses of applications and tools for further analysis and optimization

This session drew upon the industry's accumulated I-field knowledge and experience and provided insight on how companies are developing and implementing I-fields. The session also stimulated discussion on I-field technologies, its development, integration and implementation challenges, and highlighted current and potential opportunities.

Presentations focused on real-time intelligence and how it can rapidly transform human knowledge and skills captured during years of operation into automated intelligence that can be utilized by the entire organization. Saudi Aramco shared its I-field experience, including implementation layers and issues related to the implementation such as project duration, pioneering, and change management. A case study by KOC presented an integrated multisimulation asset model to manage a field with nine reservoirs and 700 wells with limited design capacity.

The panel and participants then discussed the need for better communication and collaboration among stakeholders and I-field implementers, quality control to ensure better reservoir modeling tools, rigorous screening to determine the appropriate level of "smartness" in the field, the need for integration of surface and subsurface models, and the appropriate level of trust placed in the output of the I-field tool vs. the reservoir model.

Session 4: New Technology Implementation For Capital Projects

The workshop's fourth session was designed to bring forth the industry's experience with advanced production methods and flow assurance challenges to simplify, reduce, and optimize facility requirements to achieve faster delivery of upstream field development capital projects. This topic was seen as particularly relevant in the current environment of high demand and high energy prices because field development and associated capital project spending require innovative approaches to achieve effective and quick evacuation of reservoirs.

In the keynote of this session, Sami Bou-Mikael with Chevron described the advancement of multiphase technology and its application in production facilities. Costs of mul-

tiphase technology are still high, which is negatively impacting the pace of deployment. As costs of this technology drop, its use is expected to increase. The popularity of this technology is further expected to increase as it is seen as a higher performance, more reliable, and more compact alternative to conventional processing and separation equipment.

Presentations focused on recent and upcoming field trials with various pieces of multiphase technology. Saudi Aramco presented its plans to carry out performance tests of an inline separation technology and degasser in the onshore AinDar field. ZADCO presented its experience with multiphase pumping (MPP) technology at Huwaila field, including the surface facility development options, the types of MPP technology evaluated, and the option to reuse older pumps in developing remote small fields.

Weatherford presented various multiphase metering applications, including the available metering options in the market (full separation, inline multiphase, and partial metering). Compared to a test separator, multiphase metering tends to have a smaller footprint and a lower cost structure.

After these presentations, the participants discussed the following points in implementing multiphase technology:

- The technology can lower capital and operating costs
- The field must implement integrated development, including stakeholder participation
- One must understand the application before the benefits can be realized
- Have a technology plan and participate with manufacturers, i.e., joint venture partners
- Provide sufficient training for field engineers to maintain and operate multiphase technology

Session 5: Industry Predictions/Forecasts

The wrap-up session of the workshop was designed to link the latest capital project spending and future forecast data with market trends to remind participants of the stark reality of ever-increasing capital project costs and schedule escalations. The industry is monitoring the project escalation indexes of key spending areas and predicting trends, but the volatility in the currency market, coupled with scarcity of manpower and material, is proving all predictions to be wrong. In this environment, greater emphasis should be placed on sharing experiences, exploring common grounds and most importantly, measuring and accounting for uncertainties scientifically for successful completion of capital projects.

Presentations in this session included an overview of the construction industry costs in the Middle Eastern Gulf, currently valued at USD 2.4 trillion, and how an improvement in organization philosophy, methodologies to improve project execution processes, and proper implementation of total risk management can help to reduce project cost creep. The impact of high crude prices on projects in various Gulf countries was presented, including statistical data on the factors affecting oil prices such as market supply and demand, political instability, weather, and the value of the dollar.

Following the presentations, participants discussed strategies to better monitor currency fluctuations and embed such strategy into tender documents, the need for clients and contractors to share cost information and risk up front, how to cope with insufficient statistics in unstable markets, how to implement cost reduction strategies such as implementing parallel engineering and procurement activities, and splitting packages to match contractor capabilities. . **JPT**

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