A ‘Pipeline’ to Unleashing Value: Cutting Midstream Costs and Reducing Risk with Enterprise Project Portfolio Management Solutions
Executive Overview

The petroleum industry today faces unprecedented waves of added costs and new regulatory challenges as it tries to navigate the shoals of risk management toward preserving its bottom line.

The historical risk factors alone—e.g., commodity price volatility, geopolitics, etc.—facing the industry have become more complex. Oil and gas price movements are now tethered more to macroeconomic influences than they are to physical supply and demand factors; that makes hedging through commodity-related financial derivatives—a key risk management tool—a dicier proposition. A “brain drain,” aka the “Great Crew Change,” was a critical issue just a couple of years ago for oil and gas companies seeing their pool of qualified personnel dwindle; it will return with a vengeance as activity continues to rebound with economic recovery. Sociopolitical concerns are also changing the playing field, with such emerging issues as resource nationalism and foreign investment restrictions. A growing tendency is seen among many nations to capture more rent from the development, transportation, and processing of hydrocarbons—both out of economic impulses as well as a result of market intervention to promote other energy sources for environmental and energy security reasons.

At the same time, huge capital costs have grown even larger, given industry’s increasing proclivity for mega-projects that leverage economies of scale. Mega-projects have become commonplace in the oil and gas industry, as activity fans out in more challenging physical environments. On the midstream side, pipeline mega-projects can run into the multiple billions of dollars; for example, the massive pipeline project designed to bring Alaskan North Slope natural gas to market has been estimated to cost $26–35 billion. With expanding project scope comes bigger challenges to manage project risk.

Such projects entail enormous hurdles in logistics, planning, scheduling, communications, data management, and risk analysis. With pipeline mega-projects comes a great need to better collaborate and share information across the value chain that ultimately will drive down costs and increase the accuracy of delivery dates. Owner-operators, contractors, and suppliers working in the oil and gas pipeline industry all must find innovative solutions to minimize complexity and risk in these massive undertakings, as it becomes a top priority to have all players on a project team work more closely together.

All of these factors and more are adding costs or reducing revenues and creating new risk management challenges for oil and gas pipeline companies.

Mitigating such risks and demonstrating the wherewithal to accommodate them incurs tens of billions of dollars in the cost of capital, debt, and operations for oil and gas pipeline companies, crimping profitability even in an era of relatively comfortable commodity prices.

Add to those concerns a greatly heightened regulatory oversight and public scrutiny regarding environmental and safety risks.
The pipeline industry must grapple with new compliance constraints, permitting hurdles, and risk-reduction measures in an ever-evolving regulatory environment. Adding to the urgency is the uncertainty over future regulatory regimes, which alone complicates planning and budgeting for both long- and short-term petroleum industry projects.

Combine that regulatory uncertainty with a still-recovering global economy and the traditional volatility of an industry whose fortunes are tied to commodity price movements, and you have a daunting mix of challenges for managing oil and gas pipeline projects throughout their life spans.

Pipeline project lifecycle management solutions, such as enterprise project and portfolio management (EPPM) solutions from Oracle, enable both executive and project leaders alike to successfully manage costs and reduce risk in such a volatile climate. This paper will address some key management issues facing the oil and gas pipeline industry from an enterprise project and portfolio management lifecycle perspective and how EPPM solutions can help minimize risk and thus cut costs.

Introduction

The oil and gas industry has always been the embodiment of undertaking high risk in pursuit of high reward.

Early wildcatters relied on rudimentary and superficial indicators to discover oil and then “rolled the dice” with the drillbit. Failure was far more common than success. Natural gas was a dangerous waste product to be flared off. Gasoline was a loss leader to ensure your crude found a home. The standard of only 1 in 10 exploratory wells being successful persisted even into the 1960s, despite the application of more-modern technology.

As it has matured and evolved from the “Greatest Gamblers” era of the wildcatters, however, the industry has shifted its focus on risk. Today the operating paradigm for the industry is closer to a tightly controlled manufacturing-style business model than it is to the Boom Town mentality of yore. That is not to say that boom-and-bust swings no longer happen or that such a business model makes it easier to manage risk. Quite the contrary: a “factory” business model means dealing with tighter margins and less room for error.

Accordingly, the focus for oil and gas companies is on how to manage all kinds of risk in order to rein in costs. And that task is more daunting than ever for the pipeline industry.

Paradigm Shift for Pipelines

Over the decades, pipeline operators have seen their business shift from a simple business model—a closely regulated conduit for transporting oil, natural gas, and petroleum products under a handful of conventional tolling or tariff arrangements—to a much more complex free market business model tied to a dizzying array of rates and services. Permitting and land use
issues have become paramount concerns, topped only by environmental and safety worries. On the natural gas transmission side, the market complexity grows still more, as storage services, balancing, and arbitrage enter the equation. And the ascendance of unconventional gas resource plays is opening up significant new pipeline markets while creating questions about the future viability of these systems. Finally, environmental issues create market opportunities as well as regulatory challenges: Could climate change concerns result in rapidly expanding the global gas pipeline infrastructure? How does a pipeline operator address project planning, execution, and delivery schedules in such a potentially disruptive environment?

Pipeline companies face a brave new world of heightened risk and uncertainty. The usual commodity market considerations apply, especially on the natural gas pipeline side. Gas supply and demand are extremely sensitive to natural gas price movements, and vice-versa. But gas pipelines now must face competition from a growing source of global gas transportation: liquefied natural gas (LNG) carriers in a rapidly expanding international LNG trade. Even though gasified LNG feeds into domestic pipeline grids, LNG’s ability to monetize stranded gas assets at relatively low costs carries with it the potential to undercut high cost domestic supplies and thereby crimp pipeline economics.

In addition, many of the world’s pipelines are aging and at risk for leaks, spills, and even deadly explosions. Concerns are growing about proposals to establish liability standards that could overwhelm some pipeline companies.

Beyond the need for upgrading or replacing aging pipeline infrastructure is a growing need for new grassroots oil, natural gas, and natural gas liquids pipeline capacity prompted by the North American shale boom.

Unconventional resources—oil and gas shales in particular—have surged to the forefront of drilling activity in the U.S. This action is starting to spread to other countries as well, and some believe it may turn the global energy equation on its head. That already has happened in the U.S., where the pursuit of such resources is starting to dominate the active drilling rig count. In addition, the resulting eye-popping gains in reserves means that the nation now has more than a century’s worth of proved gas reserves at current rates of consumption vs. a couple dozen years at most less than a decade ago.

A critical concern for stakeholders in the ongoing shale development boom is a lack of pipeline takeaway capacity in regions where some of the shale development activity is strongest. For example, North Dakota, home to most of the Bakken oil shale development activity, is expected to increase its oil production by several orders of magnitude—from less than 100,000 barrels per day during the past decade to as much as 700,000 barrels per day in the coming decade. But drilling activity there is at risk of slowing down for lack of pipeline takeaway capacity. With production already topping 350,000 barrels per day, 75% of Bakken output is shipped by truck and train. Comparable situations are cropping up in other North American shale plays.
Safety and Security Concerns

The mantra in this sector today is pipeline integrity management, and that was a proactive initiative in the industry even before the latest legislation had been proposed in the U.S. Congress to pursue comprehensive pipeline safety reform. Such legislation would go well beyond a 2002 law that established integrity management programs for transmission, distribution, and hazardous liquids pipelines. It likely would require integrity management programs to expand beyond so-called high-consequence areas, extend regulations to currently exempt pipelines, establish standards for minimum leak detection requirements, and elevate pigging as the preferred inline inspection method for initial baseline assessments of integrity. In addition, liability caps and civil penalties for accidents are likely to be raised.

Also waiting in the wings: Possible new security mitigation measures in light of the potential for terrorist attacks on a key part of a country’s energy infrastructure.

Economics

But oil and gas transportation is a business that struggles with low margins even as operating costs continue to rise. The transportation fees and tariffs are typically fixed for the long term for pipelines regardless of capacity utilization or changes in operating costs spurred by new legislative or regulatory initiatives.

Accordingly, pipeline operators have to keep a tight rein on costs. As profits and revenues fell for natural gas pipeline operators in 2009 (the latest available data), as reported by the Oil & Gas Journal in November 2010, costs spiked. The Oil & Gas Journal reported that overall estimated pipeline costs rose nearly 37% to more than $5 million per mile. The biggest cost component has been labor, which underwent a 60% hike costs in 2009, according to the Oil & Gas Journal report. Typically, final pipeline construction costs are 150% of estimated costs. But actual labor costs are 180% of estimated costs.

A simple business has become extraordinarily complex, and with it the number and scope of risks it faces have proliferated. But the midstream sector still has to plan, execute, and deliver projects under a tight timeline, operate their facilities safely and with care for the environment, and ensure their economic viability often for decades. Oracle EPPM solutions have been proven to add value to pipeline operators’ and contractors’ efforts to manage projects and project portfolios.

EPPM Solutions for Pipelines

An increasingly complex and volatile business environment requires sound solutions for oil and gas pipeline companies seeking to mitigate risk, enhance efficiencies, and rein in costs while developing projects and managing project portfolios. EPPM solutions provide robust collaborative tools to help meet those goals. EPPM solutions maximize collaboration and
integration, real-time and uniform program visibility, and predictability in a way that goes beyond traditional solutions to optimize the value of a project throughout its lifecycle.

EPPM solutions can help pipeline companies pinpoint the best strategies to develop and implement projects from conception through execution to endgame, which helps manage costs and reduce risk.

Oracle’s Primavera EPPM solutions for pipelines are focused on two core areas: construction and maintenance. In the former, they enhance the construction process by helping to implement innovative construction management capabilities to ensure optimal cash flow and timely project completion.

As for operations, these solutions optimize maintenance by leveraging leading project management capabilities to ensure the ideal allocation of limited resources, capture best practices, and reduce operating expenditures.

Case Study

An offshore engineering company in China that includes offshore pipeline construction among its services faced a number of challenges. It was tasked with meeting all project requirements while reducing construction time and yet still make sure costs stayed within budget. At the same time, the company had to adopt internationally accepted project management practices to meet requirements of domestic and international clients.

Another priority was to optimize resource use and establish a database to capture best-practices processes and knowledge gained on projects for reuse.

The Chinese firm utilized Oracle’s Primavera P6 Enterprise Project Portfolio Management solution to enable effective project management and improve the use of key resources. By employing this software, the company was able to centralize management of bidding, planning, and construction. The EPPM solution enabled the company to enhance the bidding process in such a way that it spurred a 233% increase in the number of overseas project orders. In addition, the Chinese firm saved about $10 million by reducing shipping times by 26%. With the more accurate construction timetable—including real-time, web-based schedule and cost updates—the company was able to ensure that its project deadlines were met. Finally, the EPPM solution helped establish a central database to store and share project information—thus also ensuring the capture of best practices.

Conclusion

As the oil and gas pipeline industry grapples with change at every level—including an expanding regulatory oversight infrastructure—cost savings and operating efficiencies have become more important than ever.
The best tools for gleaning those benefits are those that provide standardized project planning and portfolio management; enterprise-wide unified reporting; optimized resource use; facilitated, real-time data exchange; comprehensive risk analytics; and simple integration to asset management and ERP systems.

Both pipeline operators and contractors can benefit from utilizing EPPM solutions to help them pinpoint the best strategies to develop and implement projects from conception through execution to end game—thereby helping to reduce risk and manage cost.

In the end, it’s all about smartly using an approach, such as EPPM solutions, like those from Oracle, to help pipeline operators and contractors reduce costs at the project, portfolio, and enterprise levels through the project lifecycle.

The midstream companies that are able to implement the best approach to managing risk to their operations in the most cost-effective way will be the ones to best weather another tumultuous decade to come for the oil and gas industry.
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