

BP prepares for tomorrow's production needs on a foundation of efficient, integrated processes

Overview

■ Business Challenge

With exploration of one of its newest and most promising developments completed and full production on the horizon, BP needed to ensure that the pieces were in place to keep production levels high and downtime low. This also meant adapting to a number of local operational challenges.

■ Solution

Working with IBM, BP deployed an integrated asset management solution that leveraged best practices in work management, stock management and procurement—from within and outside BP—and adapted them to bring world-class efficiency to a new and important development.

■ Key Benefits

- Greater production efficiency through high uptime
- Lower overall asset management costs through efficient procurement and proactive maintenance
- Improved employee and environmental safety.



BP is the world's third-largest global energy company, with headquarters in London. BP's involvement with Angola goes back to the mid 1970s. During the 1990s, BP made very substantial investments in Angola's offshore oil and it is now an important part of the company's upstream portfolio.

The world's third-largest independent oil company, BP (www.bp.com) has exploration and production operations in just about every oil-producing region. In Angola—a country on the southwest coast of Africa whose 1.7m barrels of daily oil output make it a world-class producer—BP is an established player, having operated in various capacities for nearly 40 years. The last decade, however, witnessed a stepping up of BP's activities in Angola, whose strategic importance to BP continues to grow. The company's efforts to develop a promising offshore field known as Greater Plutonio provides a glimpse of what it takes to make such a venture successful.

Beginning in the late 1990s, BP used deepwater drillships to sink a series of exploratory wells in areas that its geologists had deemed promising.

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— Mike Mihalco, Project Manager, BP Angola

Meeting production goals through proactive and integrated asset management

Business Benefits

- Greater production efficiency through high uptime
- Lower overall asset management costs through efficient procurement and proactive maintenance
- Ability to repurpose asset management solution to other offshore production areas by virtue of “build once, deploy many” methodology
- Improved employee and environmental safety
- Shorter time to investment recovery

The successful strikes encountered in the initial drilling marked the culmination of a decade-long exploration phase. But for its bets to truly pay off, BP needed to make a successful transition to the operational phase, when it would begin extracting substantial quantities of oil and natural gas from the five wells that constitute the Greater Plutonio development. The fact that these wells lay beneath nearly one mile of ocean—and below that, complex geological formations—presented major engineering challenges that would ultimately require large capital expenditures to overcome. Achieving the potential of the Greater Plutonio fields also required BP to bridge another distance—the roughly 100 miles that separated its offshore facilities from its “in-country” base of operations in Luanda, the coastal capital. Even greater was the challenge of establishing a supply chain from its Luanda base back to suppliers, whose hundreds of thousands of tons of equipment and materials would serve as the lifeblood of its offshore operations in the truest sense of the word. Constricting that flow could deny BP of millions of dollars of oil and gas production per day and hinder the company’s ability to recoup its huge investment.

Ramping up

To meet this challenge, BP conducted an operational readiness phase that involved staff located in the UK and Angola. In addition to addressing the unique engineering requirements of Greater Plutonio, the efforts were also aimed at putting in place the robust systems and processes needed to ensure maximum production uptime as well as employee safety. Like anyone in the business, BP knew that a ruptured pipe or broken pump can bring production to a standstill, costing millions in lost revenue. It also knew from experience that as production levels rose, the interconnected tasks of managing parts inventories, ordering parts and performing proactive maintenance also rose in complexity. The fact that IBM Maximo® Asset Management performs each of these functions in a single off-the-shelf package was one of the key reasons BP selected it to run other offshore operations, including those in Azerbaijan and the North Sea.

Eager to replicate its success, BP was intent on using Maximo to take on the asset management functions of the Greater Plutonio operation, and chose IBM Global Business Services to help it get there. Speedy deployment was an implicit part of the plan, underscoring the need for BP to get the operations up and running—a point known as reaching “first oil”—as soon as possible. BP’s other guideline was that IBM deploy Maximo in a way that employed as much out-of-the-box functionality as possible so that it could be expanded out to new fields around the world as they came online. Addressing both needs simultaneously, BP and IBM used the Caspian Maximo implementation—due to the operational similarities of Angola and Azerbaijan—as a template or starting point for the solution. A similar approach was taken in the area of business processes, with IBM using best practices as the basis

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– Mike Mihalco

for defining such critical asset management processes as procurement, job scheduling and inventory management, as well as the governance structures necessary to keep them running smoothly. One of the inherent challenges in optimizing the design of asset management processes is in integrating them into a series of trackable, connected workflows that maximize the efficiency of BP's resources while minimizing downtime due to unavailable parts or missed maintenance jobs. To meet this challenge, IBM designed a solution that leveraged Maximo's built-in process integration and workflow strengths, as well as its powerful out-of-the-box capability to integrate with SAP, on which BP runs its core financials.

A seamless process flow

The solution that came out of this effort is a tour de force of process integration. While the solution is comprised of three functional components—work management, parts inventory management and procurement—the tightness of integration between them effectively creates a single, seamless process. This is best illustrated by what happens when a problem with equipment—in this example, an essential pump—is found by BP personnel out on the platform. Accessing Maximo, that employee would raise a work requisition, identifying that specific pump and its location. Using that information, Maximo automatically creates a work order and places it in the work queue in accordance with its high priority. The next step is for planners to determine (again, based on information within Maximo) which parts and labor resources will be needed, and from that to create a work plan. Approval of the plan within Maximo triggers a review of the facility's parts inventories—a larger one located onshore in a BP warehouse and a smaller one on the platform.

Parts found to be in stock are reserved by the Maximo system. For those out of stock, Maximo automatically raises a purchase requisition and sends it to the procurement organization, which then issues one or more purchase orders to the appropriate supplier(s). In the case of critical parts, lead time is the primary criteria that Maximo applies in selecting suppliers. Once the parts are received from the suppliers at the warehouse, the planner then uses Maximo to check on the next availability of the necessary technical labor resources and then assigns and schedules the job accordingly. Upon completion, the planner records the actual hours and parts used in the work order, and then closes it. SAP comes into the picture when the parts and associated invoices are received by suppliers. After matching invoices with their corresponding purchase orders, SAP closes out the POs and issues payments to suppliers. In addition to “reactive” break-fix situations, the Maximo solution also enables proactive maintenance by automatically alerting personnel of the need to perform scheduled inspections or replacements. In such cases, the solution follows the same closed-loop process flow around inventory management, procurement and financials.

Solution Components

Software

- IBM Maximo Asset Management

Services

- IBM Global Business Services
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Why it matters

By employing a “design once—build many” approach to its new Angolan offshore production facility, BP will be able to bring new fields in the region into production at a fraction of the time and cost. By designing its processes to be in sync with its emerging global standard, the initiative helps BP move toward becoming a globally integrated enterprise.



The use of the existing Caspian Maximo implementation as a starting point—in terms of both system configuration and process design—was a key factor in the successful delivery of the solution within an extremely tight time frame. That said, however, the effort also needed to take into account unique challenges specific to Angola—including a long supply chain, a less mature logistical infrastructure and complex customs arrangements—in defining processes and configuring the system. Moreover, while IBM was the lead on process design, BP was bound by local regulations to have final process accountability. To accommodate this, the IBM team worked closely with BP's local process owners—often in Portuguese, Angola's primary language—to ensure seamless knowledge transfer and a successful handoff. Notes Mike Mihalco, Project Manager of Angolan Operations: "IBM is one of the few companies that have the global presence and experience necessary to meet the project's unique set of challenges."

Production on schedule

Having robust asset management processes in place will help maximize the uptime of the Greater Plutonio operation, thereby minimizing lost revenue and speeding payback of its capital investments—all the while maximizing the safety and minimizing the impact on the environment. Moreover, as production volume ramps up and the demand for replacement parts increases, Maximo will enable BP to optimize its inventory levels and thus minimize costs. That's why the project is an important part of BP's long-term strategy. "Our Angolan operation is going to be a key part of our global production in the next 20 to 30 years," says Mihalco. "By helping to develop our business processes around work management, stock logistics and procurement, IBM has helped position BP for maximum efficiency and safety going forward."

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September 2008
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ODC03089-USEN-00