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Taking Control

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Left: Preparing for operations at Agbami, Nigeria.



Taking Control – At Speed

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It's all about ensuring that from Day 1, major capital projects deliver energy and cash flow as promised. Chevron's Upstream team in Brazil, for example, proudly began producing oil in June from the Frade deepwater development, their first major capital project. But behind this startup success was some timely handover advice from seasoned colleagues on the Blind Faith project in the U.S. Gulf of Mexico.

"They gave us a systematic approach and framework to define, perform and document our transition to operations," says Mike Mileo, Frade project manager with Chevron's Project Resources Company (PRC). Three senior Frade team members traveled to Houston to learn from Blind Faith, a new Chevron deepwater facility that also provided handover lessons to a huge sister project, Tahiti. "Their help shortened our learning curve and also delivered a lot of value to the company."

As it continues to shoulder a big load of mammoth projects, Chevron will see more sharing and improvement of handover skills, continued emphasis on incident-free startups – and, possibly by 2010, a new company-wide System Completion and Turnover Process.

During a handover, says Mileo, "It's hard to tell where construction ends and operations begin." Trying to track progress can feel like "hugging a cloud," says Steve Goetsch, a PRC project controls manager for Frade. Others say it's like switching drivers in a moving car – or passing a baton in a relay race. Organization charts overlap and boundaries blur, notes Mauro Pagan Junior, who coordinated the Management of Change process for the Frade startup. But the payoff, he says, is "making sure we transfer knowledge and make better decisions."

Handovers involve much more than testing the completed hardware and delivering it to operations. "It's the whole progression from building a facility to running it, and especially, preparing people to take the controls and run it with excellence," says Gary Fischer, who leads PRC's consulting group.

"The operations personnel play a great role in the handover," agrees Baltazar Sebastiao, operations supervisor for Chevron's Tombua-Landana deepwater project team in Angola. They began their handover this summer. Operators must be hired and begin training years ahead of startup; learn key skills on computer simulators; and be on site during construction and hookup. Things like poorly prepared manuals and spare-parts plans can trouble a facility for years after startup. Consider that Tombua-Landana alone had to transfer about 150,000 digital documents to operations.

"The challenges range from taking over topside commissioned systems to ensuring we have materials and supplies to operate and maintain our equipment," says Wayland Christensen, operations superintendent for Tombua-Landana. "The smallest details can set you back."

This year, a PRC team began working on an envisioned Systems Completion and Turnover-Process grounded in best practices from showcase developments like Agbami (pictured on page 1), Tahiti and the massive Sour Gas Injection/Second Generation Plant project in Kazakhstan. The standardized handover approach could be available for business units to use and adapt by next year, says Fischer.

"It's an obvious opportunity to improve efficiency," he adds. "Today, every project must invent its own handover process from past knowledge and lessons pulled from others."

PRC currently provides projects with standard Operations Readiness Reviews, Operations Assurance consultants, "facilitated engagements" (getting project builders and future operators together face-to-face, and early) and other support. Meanwhile, Chevron organizations have built some solid capabilities on their own.

The Southern Africa Strategic Business Unit (SASBU), for example, is rolling up its knowledge into a SASBU Commissioning Systems Process. And North America's Deepwater Exploration & Production Business Unit (DWE) has developed a comprehensive system for handing over new projects between business units in the Gulf of Mexico, says Steve Rives, DWE's transition manager. The process -- the same one Blind Faith shared with Frade -- emphasizes transferring knowledge not just to organizations, but to individuals, he says.

"A tremendous sense of accountability develops during a successful handover," says Rives. "Everyone keeps asking themselves: Has all the knowledge been shared? Are we really ready to transfer responsibility?" These questions are soon answered, adds Rives, if any problems arise during startup. The ability to resolve them rapidly is a measure of the mutual accountability, readiness and over-all effectiveness of the handover effort, he says.

Handover readiness is a hallmark of the professionals handling Chevron's Africa projects.

"We involve one or more operations representatives as early as Phase 2 of each major project to begin planning for the eventual handover," notes Chuck Cox, senior operations advisor for SASBU's major capital projects group, Chevron's busiest. They may follow a project all the way to startup and first oil, which Cox says promotes an increased degree of ownership in the process.

"We are still learning how to manage handovers, but we are clearly moving in the right direction," adds SASBU's Christensen. "By acting on lessons learned, communicating with stakeholders and using our Operations Assurance and Operational Excellence processes, we have the tools in place to improve. To me, a successful handover doesn't end after first oil. It continues throughout the life of the facility."



Results: The Right Way

Respect – for communities, cultures and the environment – guides all of our capital projects.

The liquefied natural gas plant rising between the beaches and jungles of Angola’s Soyo region is a miracle of modern technology. It will bring energy and revenues to this fast-developing nation. But like any major capital project, building it requires considering the needs of local people and their environment.

Left: Environmental protection in Angola.



Progress and Protection

Angola’s state-of-the-art LNG plant is close to 40 percent complete with startup slated for 2012. It is one of dozens of Chevron projects around the world we build within diverse communities and, sometimes, delicate ecosystems.

These projects are the successful results of a complex, internally driven process that works to meet energy demands while protecting people and the environment.

Chevron has endeavored in this way for decades, but recently expanded, formalized and intensified this work into a process called ESHIA – Environmental, Social and Health Impact Assessment.

“This is about the company’s commitment to achieve a high level of performance everywhere we operate, including where regulations are less stringent,” says biodiversity manager Sarah Connick.

“Protecting the environment and our communities is a basic expectation. We are raising the bar for

our new projects to identify and address stakeholder and environmental concerns early in project planning, to lay the foundation for long-term operational success.”



Constructive Engagement

Applied to all capital projects, ESHIA is part of our Operational Excellence Management System.

“ESHIA operationalizes The Chevron Way,” explains community engagement advisor Aaron Padilla, who supports assessment of social impacts and stakeholder engagement in many ESHIA endeavors.

By identifying early on the potential impacts of our projects on the environment and surrounding communities, our project teams are able to incorporate this information into the planning process – and reduce these impacts to protect those important stakeholders.

Adds Community Engagement manager Nadeem Anwar, “It’s one of the many ways we work to ensure that our projects are getting results the right way.”

Launched in 2005 within Upstream, ESHIA went corporatewide in 2006 and has been applied to roughly 200 major projects so far. Downstream projects are slated for full implementation of ESHIA by the end of 2010.



Helping the Vulnerable

Community consultations in Angola began in 2005, predating the official ESHIA process but covering all the potential impacts of the multi-billion dollar project.

Most vulnerable to this new development were the area's extraordinary animals, including the Olive Ridley sea turtles (pictured on previous page) – an endangered species. To protect this native species, Chevron partnered with the Wildlife Conservation Society.

Snakes were another concern – not just for their safety but also for that of the local community. To prevent the reptiles from entering nearby homes as the site was cleared, the team captured and relocated them safely – a process that led to an unexpected discovery, the pregnant flap-neck chameleon pictured here.

Wildlife advisor Warren Klein (pictured on page 1) helped care for the expectant mother before her release and incubated her eggs for about three months until their hatching day. Klein noted, "In the wild, chameleons do not take care of their eggs – so she won't mind if I do it for her."



Quieter Than Songbirds

In Bangladesh, we produce about 900 million cubic feet of gas per day to meet domestic demand. But the country's need for additional production is taking exploration into environmentally sensitive areas such as the Lawachara National Park (pictured here), nearly 5 square miles (13 sq km) of tropical forest.

Beginning in 2007, Chevron implemented ESHIA before conducting a 3-D seismic survey in the Moulavi Bazar Gas Field, which includes Lawachara.

Many process adjustments were made to protect the region's biodiversity including; modifying the straight-lined; seismic grid to follow existing, rambling trails; limiting work hours to avoid disturbing the rare Hoolock Gibbons and sound-proofing diesel-powered pumps. The result: natural sounds such as singing birds registered louder than seismic equipment.

The International Union for Conservation of Nature monitored the work and reported that there was no long-term impact on the forest flora and fauna.



Building New Livelihoods

Also in Bangladesh, the ESHIA process for the Bibiyana gas field revealed socioeconomic vulnerabilities in the community, which was affected by the government's land acquisition for the processing plant and roads.

To address this, Chevron and nonprofit Friends in Village Development Bangladesh created the Alternative Livelihoods Program (ALP) offering training and financial assistance. Fish farming and livestock rearing are among the many skills taught.

"The program, which has just entered its third year, has proved to be a successful and sustainable initiative where the community is empowered to drive the project," explains Naser Ahmed, external affairs director, Chevron Bangladesh.

The ALP has already helped more than 2,300 people with new ways to make a living, including this local resident (pictured) who received training and funds to start a chicken farm. Chevron Bangladesh President Steve Wilson said, "It is heartening to see that the Bibiyana communities do not want charity – they want opportunities. We are helping people help themselves."



Adapted for Minimum Visual Impact

Developing natural gas from the Piceance Basin in western Colorado in a safe, environmentally

responsible and scalable fashion has been the mission of Chevron's Piceance team since delineation drilling began in 2005.

Over the course of the project – located on 35,000 acres (142 sq km) of Chevron-owned land – the team has demonstrated a clear commitment to the ESHIA process.

The wellpad was sited in a location that preserves the basin's sweeping, aesthetic sightlines and avoids ecologically sensitive areas. Fit-for-purpose drilling equipment has been developed, enabling a single rig on a pad to drill up to 22 directional wells simply by moving the rig structure several feet along a skid.

The team also adjusted project plans for the benefit of local road traffic safety, and its partnership with the Colorado Division of Wildlife to protect a unique, non-migratory species of greater sage-grouse – predominant in the area of the basin – earned the team a wildlife protection award.



Preparing To Lead in Thailand

To support the anticipated increase in our operations off the coast of Thailand, the Chevron Thailand Exploration and Production team is planning to construct a new facility – the Chevron Thailand Shore Base – that will consolidate multiple facilities into one base to sustain long-term offshore operations.

This sizable facility is intended to be a leader in design, safety and pollution control.

As a part of the project development, the team is applying the ESHIA process to assess the complex environmental and social factors in the area. This involves holding extensive community meetings to address local concerns, as well as conducting environmental baseline studies at the site (such as the survey of dolphins pictured).

Information gathered will shape project design and environmental, social and community health activities to be undertaken during construction and operation.



Concern for Cultural Heritage

Following the coastlines of four countries, the 421-mile (678-km) West African Gas Pipeline (WAGP) project has an impact on many stakeholders. WAGP is designed to supply Nigerian natural gas to Ghana, Benin and Togo for industrial applications and power generation.

Chevron conducted environmental impact assessments and resettlement action plans predating the ESHIA process but similar in nature, focused on protecting the habitat and biological and cultural resources of the region – with a specific focus on archaeological treasures.

In Ghana, the trained survey team identified a religious shrine and subsequently changed the location of a regulating and monitoring station and the pipeline route to protect the cultural marker.

Also in Ghana, they found a collection of broken pottery and glass estimated to date back to the 18th century. The 21 pieces will be sent to the Ghana Museums and Monument Board for review and classification.



Respect for the 'People of the Land'

As part of the ESHIA process involving residents of Alaska's North Slope, a community engagement team met with residents from Anaktuvuk Pass and other villages. Anaktuvuk is the last remaining settlement of the Nunamiut (People of the Land) Inupiat communities in Alaska.

The meetings enabled the residents to learn about Chevron's drilling plans and express concerns about the possible effects on village life and their relationship to the land – including subsistence hunting activities. Chevron adjusted project planning to mitigate these issues.

Before exploration, the MidContinent/Alaska business unit also conducted baseline studies of the area's environment and wildlife, used to modify the drilling plans to reduce the potential for impacts.



Major Capital Project – Small Town Culture

Onslow is a fishing town on Australia's northwest coast. It is about 7.5 miles (12 km) away from where our Wheatstone natural gas field will be developed at Ashburton North.

Early ESHIA work here is focused on understanding what the residents most value and their perceptions of Chevron's presence.

Data is being incorporated into project considerations – including plans for traffic mitigation, infrastructure and capacity building.

ESHIA can bring collateral benefits through other forms of community engagement. Chevron partnered with the local government to create Onslow's Youth Outreach Program to address juvenile crime, a major local concern. The after-school program offers a range of activities including kayaking (pictured), and in its first year, helped lower the youth crime rate by 85 percent.



Useful Resources

For more information, visit the [link](#) of the Operational Excellence Web site.

Further examples of Chevron's achievements in protecting the environment can be found in a new fact sheet: [link](#).



Go With the Flow

Today's deepwater oil developments would choke to a halt if not for the unsung heroes of 'flow assurance.'

Chevron Energy Technology Co.'s Flow Assurance team ensures the multiphase flow of liquid, oil and gas in the company's production systems, collaborating continuously with operating company business partners and other ETC units. Equipped with the science of rheology, these super plumbers study the flow behavior of liquid, sludge and solids under various conditions to prevent or remediate problems.

This is an interactive feature and therefore unavailable in PDF format. The interactivity is available on the Chevron intranet (<http://linerider.chevron.com>) or you may email for more information (linerider@chevron.com).