



## Anadarko

### Anadarko Raises Deepwater Drilling Hazard Assessments to Ensure SEMS Compliance, Enable Sustainable Growth

Anadarko Petroleum Corporation is among the world's largest independent oil and natural gas exploration and production companies, with 2.56 billion barrels of oil equivalent in proved reserves at year-end 2012. The company has operations throughout the United States – with onshore assets in the Rocky Mountains region, the southern U.S. and the Appalachian Basin – and is well known for its successful deepwater operations in the Gulf of Mexico and Internationally.

Anadarko is widely recognized for its innovation and commitment to delivering energy resources to the market in a manner that protects the safety of its employees and the communities where it operates. The company's strong culture of bottom-up employee involvement ensures that Anadarko's commitment to safety is carried out daily at all levels of the organization, throughout its operations.

And yet, in 2010, all energy companies with deepwater operations in the Gulf of Mexico – including Anadarko – were deeply affected by the tragic Deepwater Horizon events at a mobile offshore drilling unit that killed 11 workers and injured 16 others. As a result, U.S. officials imposed a six-month moratorium on deepwater drilling operations across the Gulf of Mexico. In addition, federal authorities, citing the need to improve safety during offshore drilling operations, mandated adoption of Safety and Environmental Management Systems (SEMS).

“One requirement of SEMS is a formalized hazard identification process,” said Anadarko Senior Drilling Engineer Advisor Nancy Seiler. “We previously relied on an informal process for hazard identification. Now we needed a system that would formalize that process. And we only had until Nov. 15, 2011 to get an operational SEMS-compliant system in place so we could reconvene drilling operations in the deepwater Gulf of Mexico.”

A SEMS program is designed to help operators identify and manage operational hazards and impacts, with the goal of promoting safety and environmental protection. It requires companies to perform hazard assessments prior to initiating drilling and during execution to identify, assess, mitigate and communicate operational and environmental, health and safety (EHS) hazards and risks.

#### CHALLENGE

- Comply with new U.S. regulatory requirement to support Safety and Environmental Management System (SEMS)
- Streamline drilling permit application process and simplify management of change
- Minimize operational disruption and delays due to replacement of experienced staff

#### SOLUTION

##### Operational Risk

- Process Hazard Analysis (PHA)
- Management of Change

#### RESULTS

- Formalized and standardized proven hazard assessment work processes to ensure full compliance with SEMS regulations
- Tailored industry best-practice template for hazard assessments to fit drilling operations
- Modified permit application process and supporting steps so they are now routinely completed in 1 day vs. 3 weeks for many competitors
- Avoided disruption due to loss of experienced staff and need to train replacements with template that preserves/shares knowledge
- Established model process and system for hazard assessment process that is now being considered for adoption enterprise-wide

## Anadarko Raises Deepwater Drilling Hazard Assessments

Anadarko set out to ensure compliance with SEMS standards and additional safety measures through its Anadarko Management System (AMS). To meet the hazard analyses requirements of SEMS and AMS, Anadarko assigned a team of experts to identify, acquire and implement an enterprise-level software solution that would provide the information framework for hazard assessments. Specifically, the team sought a fit-for-purpose system that is Web-based, and therefore readily accessible to engineers in multiple locations, as well as user-friendly so Drilling specialists stay focused on data and work processes rather than software management.

After a detailed evaluation of the leading products, Anadarko selected Sphera's *Stature*® software, part of the Sphera Operational Risk Solution. Anadarko's evaluators selected the Sphera system because it had both the capabilities and flexibility the company needed. Sphera services experts worked closely with Anadarko stakeholders to fine-tune the software's hazard template for use in deepwater Drilling and Completion operations in the Gulf of Mexico. Together, the team captured and documented Anadarko's best practices in a standard template that parallels each phase of an operation.

As a result, Anadarko is now successfully using the Sphera system to meet SEMS and AMS requirements, while also gaining a competitive edge that quickly caught the attention of other operators. When required, Anadarko has attained swift government approval of permit applications and streamlines completion of other required steps — including peer review of proposed operational plans and procedures, as well as preliminary meetings where rig personnel and other external stakeholders examine the “drilling the well on paper” or DWOP pre-plan.

“That’s the biggest improvement that we’ve seen,” Seiler said. “Now we can get a modified permit approved within a day. Some of our peer operators have actually asked us, ‘How did you get that done so fast? We’ve been working on this project for three weeks and we still don’t have a package ready to submit.’”

“When something happens during the operation that requires a deviation from the well plan, we just check the hazard analysis records in the system. That’s a required step for any management of change and now we can get it done very quickly by returning to the templates and simply adding new information as needed.”

While Anadarko's adoption of *Stature* was driven initially by the need to ensure compliance with SEMS regulations, use of the system quickly began to pay dividends on other fronts, too. Another business challenge that confronted operators following the Deepwater Horizon event was the negative impact that it had on their regional workforce.

“During the moratorium, many experienced industry personnel went overseas,” Seiler said. “Our team had more than 600 years of combined experience among a very small group of people prior to Deepwater Horizon, so we needed a way to rapidly bring additional staff up the learning curve.”

Anadarko successfully met this human resource challenge by leveraging the standard templates within their *Stature* solution as a teaching tool to help new employees gain experience more quickly as well as smoothing transitions for workers who transferred from another company or one job or location to another.

Additionally, metrics for incident severity and probability were calculated for drilling and completion operations based on the Anadarko corporate matrix.

“This strategy of continually incorporating best practices and lessons learned in support of our operations in the Gulf of Mexico contributes to our remarkable culture,” said Sanseeahray (Sans) Burnett, senior EHS/Risk representative for Anadarko's compliance regulatory affairs group. “Other groups across Anadarko are looking at this standardized hazard analysis process as a model they can replicate to promote continual operational excellence.”

“Anadarko's first priority as a company has always been to operate safely and responsibly,” concluded Seiler. “I’m excited because the Sphera solution is helping us clarify our language and quantify the hazards we face so we can work together more effectively to drive sustainable growth.”

“Now we can get a modified permit approved within a day. Some of our peer operators have actually asked us, ‘How did you get that done so fast? We’ve been working on this for three weeks and we still don’t have a package ready to submit.’”

Nancy Seiler,  
Senior Drilling Engineer Advisor  
Anadarko Petroleum