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One of 12 anchor
piles for the
Stampede Field is
lowered 1,067 m
into the GoM.
(Source: Hess Corp.)

BETTER TOGETHER

Careful preparation and collaboration deliver Gulf of Mexico installation win for Hess and Heerema Marine Contractors.

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Innovation is rooted in collaboration. Take the crazy idea that the Earth is round. Centuries of debate—mostly civil—ensued before Soviet cosmonaut Yuri Gagarin took a short trip into outer space in 1961 and could provide visual confirmation that our planet was not pancake-flat.

Even the bizarre notion that humans could fly, much less travel into space, was made possible with collaboration. From DaVinci's vision of the helical aerial screw to a NASA-controlled rocket putting a man on the moon five centuries later, it is easy to see that society has benefited greatly from the innovations nurtured through collaboration.

It is the same spirit of innovation and collaboration that pushed hydrocarbon E&P off the shelf and into the Gulf of Mexico (GoM) deep water. And it is that spirit that Hess embraces through its use of Lean thinking to help safely and efficiently manage all its projects, both onshore and offshore. There is much ado about Lean, but converts to it are common after the validity of its principles and methodologies are confirmed by its successes. In West Africa, for example, seven of the 10 wells the company drilled in its deepwater campaign that used Lean were, according to Hess COO Greg Hill, by far among the best wells drilled by the industry in West Africa, with the last well drilled recording zero nonproductive time.

A little closer to home the company is leveraging Lean and using the lessons learned and efficiencies gained to meet its goal of bringing first oil production to the Stampede oil and gas development in the GoM.

Stampeding into 2018

Located 185 km (115 miles) south of Fourchon, La., in Green Canyon lease blocks 468, 511 and 512, the Stampede Field is in about 1,067 m (3,500 ft) of water, with a reservoir depth of 9,144 m (30,000 ft), according to the company.

Plans for the production facilities include subsea production and injection wells tied back to a single tension-leg platform (TLP), with a gross processing capacity of 80 Mbbbl/d oil and 100 Mbbbl/d water injection capacity, according to the company.

Total gross recoverable resources for Stampede are estimated in the range of 300 MMboe to 350 MMboe. Hess holds a 25% working interest and is operator, with Union Oil Co. of California, a Chevron subsidi-

ary; Statoil Gulf of Mexico LLC; and Nexen Petroleum Offshore U.S.A. Inc. each holding a 25% working interest in the field.

Sanctioned in 2014, the project successfully passed its first physical milestone in late November 2015 when the first of 12 120-m-long (395-ft-long) anchor piles were successfully hammered 114 m (375 ft) into the soft clay seabed. Twelve days later, installation of the final pile was completed, four days earlier than planned.

That four-day savings was made possible through the use of core Lean principles: meticulous planning to identify all waste, eliminating that waste and engaging everyone involved on the project early and often.

Indeed, the time saved was all the more notable—and arguably greater—given the team's ability to safely and successfully execute the job despite unforeseen, challenging and severe loop current conditions that would have resulted in substantial downtime.

Rolling start

As the saying goes, there is no "I" in team, and for the Stampede project there is no operator team or contractor team; there is just the Stampede team. By engaging with its project contractors early and often, the company is able to identify and put in mitigation measures before an issue snowballs into a monumental delay.

"Early engagement with the contractors started at the beginning of 2013," said Steve Whitaker, project director of the Stampede Deepwater Development for Hess. "We set ourselves on what we called a P0 schedule; it's where we've taken the contingencies out. In a sense, it is like skiing in that you are leaning forward on your skis. It's dynamic, and if you're not used to it, it can be uncomfortable. But what it does from a project management perspective is give us great line of sight of all potential problems that could come at us before they do. It gave, even as the project went through the early-phase FEED, a line of sight on all issues that I could address without putting the project under undue schedule pressure."

By the time the project reached sanction in 2014, through its engagement with its project co-owners and with the contractors, everybody was aligned internally, he added.

"We have a very open and transparent way of working here. The co-owners are involved on a very regular basis with the team, and we are leaning forward with



The 120-m-long anchor piles were loaded onto transport barges at Gulf Marine Fabricators. It took the barges three days to reach the Stampede Field from Ingleside, Texas. (Source: Hess Corp.)

the schedule where we try to address issues as they come forward. When we got to the co-owner sanction, we were already cutting steel for the TLP topsides about a month before we had their sanction because we had their support and agreement,” he said. “It’s like the rolling start used in NASCAR, where the cars roll through the starting line rather than from the standing start used in Formula One racing.”

That rolling start has really helped the project stay on schedule.

“We’ve maintained that schedule over these four years. It is going to get more difficult as we move into the next couple of years,” Whitaker said. “Unlike before, where there was flexibility in the timing of our plans, now there is limited flexibility as activities line up on the critical path.”

The first milestone on that critical path to completion was to install the anchor piles in sets of three at four locations, and accomplishing that in 2015 was high on the plan for a host of reasons, with safety as the most important.

“Traditionally, piles could be installed in the six to eight months ahead of when the structure goes out,” he said. “If we had waited, then we put the team into a pattern where there is more equipment on the seabed that they could impact or damage if we had a problem, with 400 more people out there at the same time we have our two drillships operating. By going in 2015, I’m keeping people out of harm’s way.”

The team follows the “SQDC” motto underpinning Lean thinking: safety, quality, delivery and cost.

“Our view is that safety and quality are the leading metrics,” Whitaker said. “They tell you how to go forward, while delivery and cost are the lagging metrics. They tell outcomes rather than inputs. So the message from me to

the team is focus—if you focus entirely on the safety of the work that you’re doing and are passionate that a safe project is a good project, and if you focus on doing it right the first time so the quality is solid—[then] you will have good delivery and you will have good cost.”

Hess embraces that philosophy and wants its contractors to do so as well. The company is working with all key Stampede contractors, including fabrication and drilling and completions contractors, to introduce Lean thinking and work collaboratively so that they can apply Lean themselves in their businesses to ensure safety is the priority, remove waste and become more efficient.

“That’s how we try to approach every issue that we have. It’s just focus on getting everyone, everywhere, every day, home safe,” Whitaker said. “We really try to work to that. We’ve had a very positive safety record at KOS [Kiewit Offshore Services]. They’ve been exemplary. We also had a very good safety record at Samsung, where we built the hull.”

Piling on the plans

Before the Stampede TLP currently under construction at the KOS yard in Ingleside, Texas, could call Green Canyon Block 468 home, its anchor piles had to go beneath the hammer.

“As you may recall, 2015 was an eventful year for offshore installations,” said Chuck Cinotto, project manager, Stampede Hull, for Hess. “There were challenges caused by large loop currents during the execution of various deepwater projects, which were scheduled right before Stampede’s work. We watched the currents for many months and planned how we could effectively execute the work ahead when we went for the install.”

With the company’s early and open engagement with its trusted supplier Heerema Marine Contractors (HMC), planning for the piles installation at the Stampede development project was key to the success of the install.

“We work with the contractors to make sure we’re pointing in the same direction, working to solve the same problems,” Cinotto said. “We identified all the potential issues ahead of time and went a few steps forward and identified the mitigations. In a few instances we implemented the mitigations ahead of time.”

For Heerema, the work it is doing on the Stampede project is broken out into two phases. Lifting and installing the 500-short-ton piles was Phase 1 for the

company. Phase 2 will be the lifting and installation of the 12 tendons, TLP facility itself and then pull-in of eight steel catenary risers.

“In the preparation phases we focus in depth on how we’re going to do the work, the risks and what countermeasures we need to put in place to mitigate those risks,” said Ewout Bastian, Stampede project manager for HMC. “We did it for Phase 1, and we are doing that at the moment for Phase 2. Procedures for Phase 2 are almost complete, and in them we go into a great amount of detail on how we will execute the work, including contingencies. For Phase 1 we had planned for it to last 15 to 16 days, and we did it in 12 in very challenging current conditions, so all preparations paid off.”

Mitigating the loop

The Loop Current, one of the fastest currents in the Atlantic Ocean, was identified as a primary issue for the Stampede team to work around. At the time of the installation the speed of the currents was twice as high as deemed normal in heavy-lift contracts, and the 16-day contract did not have that built in, just typical weather downtime. The Lean principle involved everyone on the team to determine solutions to a challenge and deliver results.

“Involving the workers and identifying the risks and mitigations as opposed to telling them what is going to happen is a big thing for Hess. It is actually something we have learned from Lean,” Cinotto said. “It was the workers that identified that the whole operation would come to a stop if an ROV goes down or if a subsea hammer goes down. These single points of failure were identified, and we implemented backups ahead of time to make sure there was no downtime in case something happened.”

Part of working on a collaborative team is understanding the risks creating discomfort or concern within the team. “We worked with the contractors on understanding these risks. We found that one was the ability of the ROVs to work in high current speeds, that there is risk of one of the two going down and then they’d be blind in some areas,” Whitaker said.

That is a risk that, according to Bastian, could bring operations to a standstill. “ROVs are our eyes and our hands subsea. If one of those breaks down, then we will be in a difficult spot,” he explained. “As part of our preparations, we discussed to what extent a breakdown would be acceptable. We carried three ROVs ourselves and of course try to prevent any breakdowns, but we can never rule it out completely.”

Hess hired a backup vessel from Tidewater with an ROV package onboard to have on standby and ready to go in Fourchon in case there was a breakdown.

“It was available in case it was required,” Bastian explained. “Fortunately, we didn’t need it in the end, but it clearly explains the sense of how we dealt with risk and how Hess was willing to work with us.”

The team’s ability to work within the difficult conditions it experienced was enhanced through the data it received from the current-monitoring vessel hired by Hess to keep an eye on the water and weather conditions.

“The real-time current-monitoring vessel was effective because each morning the superintendent would tell the vessel which way to go to watch the current, to see if it was flowing in or back out,” Cinotto said. “We had real-time measurements at the site, which is vital because all the predictions and analysis don’t really get you the actual at-the-site conditions, which is essential to know by the hour.”

It also freed the ROVs up to work up to the working limit without the fear of the units breaking down, he added.

“Because we had a spare, it allowed them to work in the high-current conditions,” he said.



The *Balder* deepwater construction vessel operated by HMC lifts an anchor pile into place. (Source: Hess Corp.)

HMC's subsea hammer is lifted into place to begin driving an anchor pile 114 m into the seabed. (Source: Hess Corp.)



The data coming from the current-monitoring vessel let the team know when the current was present onsite.

“If the current was there, we would move offsite and lower the pile down and then reposition over the site,” Cinotto said. “This is something the team identified ahead of time as potential mitigation. And once they encountered this, they didn’t need to call management and ask if it could be done as we had already given our approval to do so in advance.”

Added Bastian, “It was great to see that all preparations and mitigations paid off. We did not encounter a single hour of current standby despite very challenging loop current conditions at site.”

According to Cinotto, the cost to have an ROV on standby and the current-monitoring vessel was a wise investment. “We spent a little bit of money, but by doing so we were able to operate in a fairly robust offshore environment,” he said. “But by spending that money ahead of time to mitigate the risks, we were able to basically walk through the whole program—and that’s how we got it done in 12 days, which was a very good accomplishment.”

The four-day improvement in the actual vs. planned execution was arguably exponentially greater when one takes into account the fact that the 16-day contract did not have the potential impact of loop currents built in. Had the team not done everything they did in terms of planning and working to mitigate potential weaknesses, the schedule likely would have been much longer than the planned 16 days and would have involved substantial downtime.

Next steps

At press time the Stampede team found itself at the project halfway point. Installation of the subsea system and pipelines was underway, according to Whitaker.

“We’re drilling with the *Ocean BlackLion*, and we’ll be bringing in the *Ocean BlackRhino* [owned by Diamond Offshore Drilling Inc.] in the beginning of 2017. We’re going to be running two rig streams for this project. Right now it’s about the two rigs working together to deliver these deep wells. We’ve drilled one well so far, and we’re about to move into the first completion,” he said.

The surface facility is going through an integration phase at KOS, and if all goes as planned there, Whitaker hopes to see it heading out to the field in second-quarter 2017, where an extensive hookup and commissioning phase will be commenced.

“We’ve done really well getting ourselves to where we are today, pulling all the pieces together, and now it’s about a flawless execution. If we can do that, we’ll be delivering a project that I think will be a very successful project from the industry’s perspective,” he said. “But we have a hurricane season in 2017 to navigate, and we still potentially may see loop currents back next year, which we’ll have to address as well. So there are challenges to navigate between now and first oil in 2018,” Whitaker said, always emphasizing safety as the priority and repeating Hess’ primary strategic focus on its work: “Everyone, everywhere, every day, home safe.” **ESP**