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# Perdido steps out



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# digest

## Gulf lease sale reflects industry caution

Shell was the top bidder at last month's Central Gulf of Mexico Oil & Gas Lease Sale 208, submitting the highest bid for a single block and the largest total amount among the 70 companies participating in the sale, the Minerals Management Service (MMS) reported. But a subdued oil & gas market kept the numbers well below those of the last Central Gulf leasing round, 2008's sale 206, which netted \$3.67 billion in high bids compared with \$703 million this time.

Shell Gulf of Mexico submitted a high bid of \$65.6 million on Mississippi Canyon block 721 and was the high bidder overall, committing \$153.6 million on a total of 39 tracts. BP bid the second highest total with \$77.5 million for 27 blocks, followed by Marathon Oil at \$62.4 million for 16 high bids. Rounding out the top five companies were Noble Energy, with 24 blocks at \$55.4 million, and BHP Billiton, which submitted 28 high bids for a total of \$50.4 million.

In all, 348 blocks out of the 6458 on offer received bids. A total of 476 bids were



PHOTO: JAN BERGHUIS, HEEREMA

**TOPPING PERDIDO:** Shell Oil's record-setting Perdido project in a remote part of the deepwater Gulf of Mexico's Alaminos Canyon passed another key milestone mid-March when Heerema's *Thialf* crane barge installed the spar platform's 9500-ton topsides in around 8000ft of water. Hookup and commissioning is now under way (see 'Deepwater Roundup' feature, page 56 and installation report, page 96).

Russ Ford, Shell's technology vice president for the

Americas, said: 'Perdido is a technological *tour de force* that is opening up a new frontier for global oil & gas production. Once the global economy recovers, the energy challenge will return with a vengeance, and new sources of energy will be required. Producing oil safely and responsibly this far out and this deep should allay concerns about industry access to the 85% of the US Outer Continental Shelf that remains undeveloped.'

submitted with the sum of all bids reaching \$933,649,315.

High bids are subject to MMS review and approval.

Statoil Gulf of Mexico bid

\$49.3 million on nine leases, followed by Repsol E&P's \$48.5 million on 20 blocks; ExxonMobil's \$24.5 million

commitment at 15 tracts;

\$22.4 million in bids by Chevron for 21 blocks; and Colombian NOC Ecopetrol, which was the high bidder on 26 blocks with \$20.6 million.



The deepest spar installed to date – in about 8000ft of water – brings Shell steps closer to bringing its Perdido development onstream near the US-Mexico border of the Gulf of Mexico. Heerema's *Balder* connected the Shell-operated Perdido Spar to its moorings in August 2008. Heerema's *Thialf* mated the topsides, constructed by Kiewit in Texas, with the spar, constructed by Technip in Finland, in a single lift in 1Q 2009 at Alaminos Canyon block 857 in the US sector of the Gulf (see page 96).

The Perdido spar will serve the Great White, Silvertip and Tobago fields as the Perdido hub will gather, process and export production within a 48km radius. There will be 22 direct vertical access wells from the spar, with an additional eight tiebacks from subsea completions. First oil is expected around the turn of the decade. Oil will be brought to the surface by 1500hp electric pumps; gas will be separated at the sea floor and naturally

rise to the production unit on the surface. The *Noble Clyde Boudreaux* has been drilling the production wells. Tobago, in about 9600ft of water, will be the world's deepest subsea completion.

The Perdido spar, moored with nine lines, will feature a drilling rig and direct vertical access wells and full oil and gas processing and serve remote subsea wells. Peak production is expected to hit 130,000b/d. New and existing lines will carry production to shore.

Perdido is the deepest oil development, the deepest drilling and production platform and serves the deepest subsea well in the world. The most remote producing platform in the Gulf of Mexico, Perdido will float 220 miles from Galveston, Texas; it will provide living quarters for 150. The helicopter deck will accommodate two long-range Sikorsky S92 helicopters simultaneously, each holding up to 24 passengers and crew.

Williams provided the export system – a

70-mile oil line and a 105-mile gas line – which it completed in December 2008. Technip got the contract to supply the steel-tube umbilicals and a 6in flowline and SCR, and installation was ongoing as of the writing of this report. Wood Group provided commissioning services, First Subsea the mooring connectors, MCS the contract to qualify the top tensioned risers, and FMC is providing the trees.

Shell operates the regional host with 35% on behalf of partners Chevron with 37.5%, and BP with 27.5%. Shell operates Great White – discovered in 2002 – in Alaminos Canyon blocks 812, 813, 814, 857, 900 and 901 with 33.34% on behalf of Chevron with 33.33% and BP with 33.33%. Shell operates Tobago – discovered in 2004 – in Alaminos Canyon block 859 with 32.5%, for partners Chevron with 57.5% and Nexen with 10%. Shell operates Silvertip – discovered in 2004 – in Alaminos Canyon block 815 with 40% interest on behalf of Chevron with 60%.



## Perdido puts another notch in the HMC deepwater belt

Heerema Marine Contractors' giant semisubmersible crane barges have done more than their share of offshore record-breaking over the past 30 years. In the Gulf of Mexico last month, *Thialf* continued the good work done by sister vessel *Balder* in Shell's Perdido field last year by completing installation of the 9500t topsides and living quarters on the spar hull in almost 2500m of water. **David Morgan** reports.

**T**he Perdido project, which Shell operates on behalf of partners BP and Chevron (see 'Deepwater Roundup' page 56), set several records including installation of the deepest spar

mooring system and the deepest PLET (pipe line end termination) yet, at 2950m. After kicking off the engineering phase for Perdido in June 2006, HMC reckons it invested around 100,000 man hours in

preparatory work for the project before offshore installation actually began two years later.

On 24 October 2008, the company's *Balder* vessel completed the spar and





**BARGE BRIEFS:** The latest addition to Heerema Marine Contractors' fleet, the 122m long, 36.6m wide *H-405* barge (left), arrived in Rotterdam mid-March following a 113-day journey from China where it was built. The barge was loaded with 10,300t of ship hulls in four tiers.

The *H-405* joins an HMC fleet of three semisubmersible crane vessels (*Thialf*, *Balder* and *Hermod*), two anchor handling tugs (*Retriever* and *Husky*),

subsea installation, consisting of nine suction piles and polyester mooring lines – averaging more than two miles in length to hold the 50,000t floating structure in place – five flowlines, one water injection line and three steel catenary risers.

Technip supplied Perdido's umbilicals as well as the spar's hull and mooring system, in the process setting two new industry records of its own: deepest reeled flowline installation (in 2961m of water) and deepest reeled SCR installation (2469m).

The water depth at Perdido required upgrading of some of *Balder's* equipment for the spar and subsea installation phase, reports HMC's Perdido project manager

René de Koeijer. The A&R wire was replaced by a 4000m long one of 5.5in diameter, the L&P wire with one of 4000m and 4.5in diameter, the crane wires with two of 19,000m and the frame and winch capacity of the vessel's ROVs was increased.

'Installing in 3000m deep water involved the use of very sensitive positioning equipment to ensure installation within 3m of planned location,' says de Koeijer.

'Not only the equipment was upgraded but also the working procedures were refined using the experience gained over the last five years. This also applied to the change-over from pipelay mode to handling mode and vice versa. While a change-over used to take at least five days, it was now cut down to one day. This was mainly due to integrated planning, which enabled us to carry out several tasks simultaneously, saving us time in the process.'

Perdido's remote location – around 150 miles from Corpus Christi and 180 miles from Galveston, with the nearest platform 80 miles away – was an extra challenge for the project, recalls HMC project director Eric Romijn.

'Installing during the hurricane season meant we had to have solid hurricane evacuation plans in place,' he explains. 'These detailed what had to be done and in which order, taking into account the predicted hurricane route. The spar is only storm safe when three mooring lines are attached to it, so we had to come up with a way to reduce the installation time and uncouple/detach the lines if necessary. Decisions had to be made on whether it was quicker to complete the installation of the first three mooring lines or to reverse the installation. To shorten the installation time we had already pre-installed the first three mooring lines and attached them to a buoy.'

'We experienced three hurricanes, which required that *Balder* leave the Perdido site, move out of the direct path of the hurricane and return five or six days later to continue installation,' notes Romijn.

'The hurricanes also affected the schedules of the barges we used, and

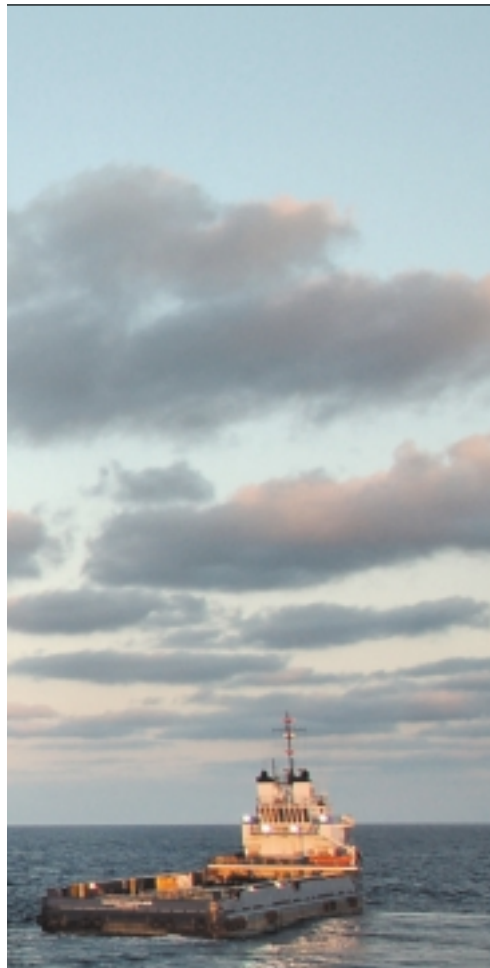
and eight barges, including the world's largest, the *H-851*, at 260m in length.

HMC expects shortly to complete the basic design of its proposed newbuild crane vessel but has put plans to build it on the back burner until market conditions improve. 'The current oil price and economic situation are not favourable for making major investment and financing decisions,' said the company.

severely affected our Fourchon and Houston facilities. This impacted schedules of both project materials and personnel. It took some real determination and dedication to supply *Balder* and the tugs to progress with the work as planned. But all crews, engineers and contractors did an outstanding job and delivered safely and on time.'

The icing on the cake came on 16 March when *Thialf* – one of only two vessels in the world capable of lifting the 9500t topsides – completed installation of the drilling and production platform atop the 555ft spar.

Offshore hookup and commissioning work is now under way. **OE**



The Perdido spar sits in 2500m of water.

LEFT: *Thialf* applying the finishing touches to the installation of Perdido's topsides and living quarters last month.

PHOTO COURTESY SHELL/© JAN BERGHUIS TERSCHELLING, CAPTAIN OF HEEREMA'S RETRIEVER