

Who Dat initiates production in GoM in post-Macondo era

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LLOG project features first-ever use of a privately owned FPU

LLOG Exploration Co. L.L.C., operator of the deepwater Who Dat oil and gas field in the Gulf of Mexico, expects production before year-end, making it the first floating production unit (FPU) in the Gulf of Mexico in the post-Macondo era.

Discovered in December 2007, Who Dat lies beneath an average water depth of 3,200 ft (975 m) in Mississippi Canyon blocks 503, 504, and 547. The field, named after the chant delivered passionately by fans of the New Orleans Saints National Football League team, exhibits 10 stacked reservoirs located at 10,000-17,000 ft (3,048-5,182 m) in Pliocene and Upper Miocene zones.

Three wells – two in MC 503 and one in MC 547 – have been completed, with 10 more infill wells to be drilled and completed in the coming months using the *Noble Amos Runner* semisubmersible rig. Combined, the three completed wells penetrated seven of the field's 10 horizons and were completed in mainly oil zones, testing 17° to 26° API crudes with gas/oil ratios (GOR) ranging from 400 to 1,300. Reservoir pressures vary from 6,000 to 12,500 psi, and flow tests indicated an open flow of 10,000 b/d of oil and 60 MMcf/d of non-associated natural gas for the three wells alone.

Notable achievements for the Who Dat field also include the first use of the OPTI-EX design; the first use of an FPU built “on spec”; and the first use of a privately owned FPU in the world.

LLOG Exploration, based in Covington,



Moored in MC 547, LLOG Exploration's Who Dat field semisubmersible production unit, OPTI-EX, has 60,000-b/d, 150-MMcf/d oil and gas handling capacity. Photo courtesy LLOG.

Louisiana, believes the field holds 300 MMBoe.

LLOG managed to cut at least four years off its timeline for bringing first oil and gas production to market from Who Dat by teaming with Exmar Offshore Co. to use the semisubmersible production platform. Based in Houston, Exmar's confidence in the suitability of their proprietary OPTI-EX design FPU for the deepwater Gulf of Mexico enabled them to build one without a contract – the first such semisubmersible FPU in the industry's history to be built “on spec.”

The OPTI-EX transaction, in which LLOG purchased the semi-based FPU outright for more than \$400 million, payable over 62 months, resulted in what is thought to be the first privately owned FPU in the world. What's more, because the OPTI-EX design

met the suitability and safety rules posed by U.S. Gulf of Mexico regulators, it was the first deepwater FPU to be given the go-ahead by the U.S. Coast Guard, BOEMRE, and other government entities to be installed in the Gulf since the April 2010 Macondo incident. The OPTI-EX was moored in MC 547 without incident in mid-July, less than a year after LLOG purchased the system.

According to Exmar, the OPTI-EX's deep-draft ring pontoon hull has improved motion response in a range of extreme sea states, allowing it to be installed on one of the most onerous areas of the Gulf. The ring pontoon and large ballast capacity also allow for installation of a large number of production and export risers without any internal hull modification.

As built and equipped, the LLOG FPU has a liquid-handling capacity of 60,000 b/d, including facilities for handling up to an additional 40,000 b/d of water. The unit's gas dehydration capacity is up to 150 MMcf/d.

According to Nicolas Saverys, Exmar Group CEO, the Exmar team's second big achievement was matching the hull, fabricated at the Samsung yard in South Korea, with the topsides, fabricated at the Kiewit Offshore Services shipyard in Ingleside, Texas.

The LLOG exploration team, most with years of both shelf and deepwater experience with other companies, has taken advantage of both their combined experience and of the company's \$150-200 million inventory of seismic data that covers virtually the entire Gulf. With access to its volume of

the detailed geophysical and geological information, the LLOG exploration team has generated more than 300 prospects in the Gulf, with a nearly 70% success rate.

Broussard, Louisiana-based mooring contractor Delmar Systems Inc. completed preset mooring systems installation and facility connection operations for the Mississippi Canyon 547 "A" floating production facility in August.

Delmar provided project engineering for anchor/mooring system design, fabrication oversight, installation engineering, operation procedures, and installation services for the facility. In addition, Delmar says it procured, marshaled, and stored the 12-leg suction anchor, chain, polyester,

chain mooring system at Delmar's 11-acre Fourchon dockside facility. The mooring legs were connected to the pre-installed suction anchors using Delmar's patented subsea mooring connector.

Once on location, Delmar connected the preset moorings using two conventional AHVs (anchor handling vessels) and supported by a field ROV support vessel. Facility connections were completed in seven days.

Various subcontractors are engaged in hooking it up to the Who Dat seafloor layout, which features two well centers, "A" and "E," in MC 503. Designed by Pinnacle Engineering, both well centers are about 12 mi (19 km) from the FPU, with dual 6-in., round-trip piggable insulated flow-

lines connecting them to the FPU. One well center features two four-slot manifolds connected in series to allow for tiebacks from eight wells. A single four-slot manifold services the other well center. All well center flowlines, as well as both oil and gas export pipelines, are connected by flexible risers to the OPTI-EX.

A 5,000-ft (1,524 m), 11.5-in. flexible riser from the OPTI-EX connects to a 19-mile (31-km), 14-in. heavy wall thickness oil export pipeline that ties into Shell's Mars pipeline system. For gas export, the OPTI-EX is connected via a 9.5-in. flexible riser to a 17-mile (27-km), 10-in. pipeline connecting to the Independence Trail pipeline, operated by Enterprise Field Services. ●

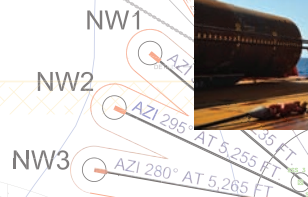
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The Strength of Experience... Complete Mooring Solutions

Delmar engineered the complete mooring system for the LLOG OPTI-EX floating production facility.

- Anchor/mooring system design
- Equipment procurement
- Fabrication oversight
- Equipment marshalling and storage
- Certification/regulatory assistance
- Installation engineering
- Installation services

Let Delmar's 42 years of experience work for your next mooring project!



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