

Lower Tertiary plays hold a lure for floating production, storage and offloading vessels

Cascade to keep heat with Cabot

THE Cascade-Chinook project in the Gulf of Mexico is to incorporate high-performance aerogel heat insulation material from Cabot Corporation for a 39 kilometre section of subsea pipeline, writes *Adrian Cottrill*.

Sometimes called frozen smoke, and regarded as the world's lightest and best insulating solid, the aerogel consists of nano-sized particles that are 95% air and severely inhibit heat transfer through the material.

Pipeline fabrication company Pipeline Technique has selected Cabot's compression pack insulation system for this pipe-in-pipe order that it will build in its Mobile, Alabama, yard and supply to Heerema Marine Contractors.

The line is nine-inch diameter and the high performance of the insulation allows a relatively small diameter of 14-inch for the outer carrier pipe. It will be J-layed from Heerema vessel Balder in water depths approaching 2700 metres.

For Cabot, this is the second order to be delivered from the company's new assembly facility in Billerica, Massachusetts. The plant began production in April and has the capacity to produce enough compression pack to insulate more than a thousand kilometres of pipeline per year.

The system for the Cascade-Chinook project takes the form of packs of compressed nanogel. These are applied to sections of the inner pipe and then expanded against an integrated outer shell of flexible plastic before insertion into the carrier pipe.

This plastic cover protects against damage by weld slag or scale and also allows the freedom for relative movement between inner and outer pipes that is required when J-laying.

Cabot's first order for its compression pack product was from Helix Energy in May. That was to insulate a 60-kilometre subsea tie-back line at the Danny field in the Gulf of Mexico.

This eight-inch in 12-inch pipe assembly is the first pipe-in-pipe system to be installed by Helix's new DP S-lay vessel, Caesar.

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Looking ahead: more operators are starting to consider using FPSOs in the ultra-deep US Gulf Lower Tertiary play

Photo: REUTERS/SCANPIX

FPSOs stay in the game for US deep

THE highly-prospective Lower Tertiary play in the ultra-deep Gulf of Mexico is prompting more operators to start considering the use of a floating production, storage and offloading vessel as a development solution in such settings.

Only one FPSO project may as yet be under way in US waters — the Cascade-Chinook early production phase — but a sound business case exists for FPSOs because shuttle tankers may indeed offer an economic benefit over pipelines for a large field in the Lower Tertiary.

That is the view of Peter Lovie, senior advisor on floating systems at Devon Energy, one of the major partners in Cascade-Chinook.

"Far from shore and over mountainous seabed terrain, a new competition emerges," he said at the annual IBC floating production systems conference in London this

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month. "For Devon's 2008 portfolio of Lower Tertiary prospects in the ultra-deepwater Gulf of Mexico, we can confirm considering disconnectable FPSOs along the lines of early production schemes expandable to full field development," he added.

Approval in principle for FPSOs in the US Gulf was granted by the regulatory authorities in December 2001.

Cascade-Chinook, operated by Petrobras and with Devon as a 50% partner in Cascade, is first to take commercial advantage of that decision.

An FPSO moored in 2500 metres of water is to be used for an early production phase there, aimed at first oil in May 2010, although the full field develop-

ment solution is not yet selected. "There have been good reasons why there have been no FPSOs in the US Gulf until now," said Lovie. Wells often need intervention, and an extensive network of pipelines already exists that obviates the need for oil storage at the production platform in most areas.

He added that export by shuttle tankers is expensive in the Gulf because of the Jones Act, which calls for those tankers — though not the FPSOs themselves — to be built in the US and be American-owned and crewed.

This means the tankers cost about three times the international norm, and are about twice as expensive to operate.

Nevertheless, FPSOs have figured in past evaluations. As far back as 2001, BP apparently gave this type of unit serious consideration for its current swathe of

projects. However, at that time the regulatory situation had not been clarified and the decision was taken to invest in construction of the Mardi Gras pipeline network.

Now, the prolific ultra-deep Lower Tertiary trend could be a trigger for more FPSOs.

Drillers are being stretched there by extreme depths and reservoir pressures, and there is no production history for reservoir rocks to provide guidance.

Drilling and completion for one well in the Lower Tertiary may take six to nine months, and cost anything from \$130 million to \$190 million per producing well.

All this is slowing field development. "Realistically, TLPs are out of the running, and the choice is between a large spar, semi-submersible or FPSO.

"Circumstances are now more favourable than they have been for FPSOs in the Gulf, influenced by such factors as the rise of the independents and the arrival of serious experience in the shape of Cascade-Chinook participants Petrobras and StatoilHydro.

"The corporate goals of large independents may favour them, with an early production phase morphing into full field development," he said.

"In a remote area, tanker export is easier to start quickly and to grow incrementally.

However, he cautioned: "It is not conclusive that there must be a future for FPSOs for full field development in the ultra-deep Gulf of Mexico. Do not expect a flood of orders."

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In February, Deepwater Corrosion Services performed anode retrofits on 2 subsea fields, including 4 flowlines, 4 well trees, and 2 flowline manifolds in 775 to 1,750 ft. Project time: 73 hours. More info at www.stoprust.com.

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