Gulf of Mexico offers new challenge

In the first of an occasional series about markets on the edge of tanker operating, we look at how the market in the oil fields of Gulf of Mexico for floating, production, storage and offloading (FPSO) vessels is developing.

While shipyards and shipping companies are not holding their breath for contracts to build and operate floating, production, storage and offloading vessels in the Gulf of Mexico, company executives and legislators speculating who will be the first with a development plan.

With no FPSOs currently working in the Gulf, US independent Unocal and oil major Royal Dutch/Shell top the speculators' list of companies likely to kick off an FPSO development. ChevronTexaco also ranks as a possible.

Known for its conservative approach to new technology and a general reluctance to be the first to test new ideas or equipment, the oil industry appears in no rush to test the regulatory framework put in place by the US government's Minerals Management Service (MMS). Although the MMS has given the green light for FPSO developments, it will be several years before at the earliest before such as vessel becomes a regular sight in the Gulf of Mexico.

Bill Westcott, manager at classification society Lloyd's Register in Houston, Texas is pessimistic about an oil company taking the FPSO route. "We're not counting on getting any revenue from classifying FPSOs in the short term," he says.

The US has limited experience with offshore floating vessels in US waters, through ExxonMobil's Santa Ynez facility in Californian waters. But, with Californian waters off limits to explorers, no further development is being done here.

Further south, in Mexico's Bay of Campeche, a floating, storage and offloading (FSO) vessel has been on station since 1999. It is operated by Pemex, Mexico's state oil company.

Fierce rivalry to FPSOs already exists from tension leg platforms and spars; and with innovative designs such as Houston, Texas-based OPE's satellite services platform (SSP), they ensure that FPSOs are not yet the development method of choice.

SSP is a multi-purpose floating vessel designed as a satellite separation facility providing improved flow assurance and individual well control to subsea trees in water depths out to 10,000 feet, said a company spokesman. OPE hopes that SSPs will offer the flexibility demanded by the type of companies that are currently combining spars and tension leg platforms (TLP) with subsea tiebacks.

Competition to FPSOs also comes from companies such as Houston-based Atlantia Offshore, part of the IHC Caland Group. Atlantia has built several deepwater structures for the Gulf, notably its proprietary SeaStar TLP. SeaStar was chosen by Chevron and BHP for the Typhoon development and by TotalFinaElf for Matterhorn.

Although the bubble of excitement that greeted the January 2002 decision by the US government to allow FPSOs to operate in the Gulf of Mexico has deflated, interest remains high about who will be the first to use the technology in such an environmentally and politically sensitive area.

California-based independent Unocal is generally associated with being the most advanced in developing an FPSO proposal to present to the MMS.

Its 2001-discovery Trident, which lies in 9,876 ft of water in the Alaminos Canyon area, is believed suitable for such a solution. Trident is located many miles from existing infrastructure and contains between 340-850m barrels of crude.

Last year's huge Great White discovery made by Shell and partners ChevronTexaco and BP in Alaminos Canyon block 857, is another prospect touted for an FPSO development.

Like Trident, Great White lies some 250 miles south of Houston in the Alaminos Canyon area. It was found under 8,000 feet of water was drilled to a total depth of 19,907 feet.

Another front-runner is ChevronTexaco's Tahiti prospect. Discovered in 2002 in the Green Canyon area lying under 4,017 ft of water it holds significant oil reserves of around 500m barrels. The prospect is currently in the planning stage with testing scheduled for 2004. First production is not expected before 2007.

Whichever application is submitted first, it is clear that it will be intensely scrutinised by the authorities, with specific attention paid to oil spill prevention methods and environmental safety procedures. The MMS does not allow gas flaring or re-injection into the ground with could tip the balance in favour of FSPOs in the right circumstances.

The environmental record for FPSOs around the world is generally regarded as good. The worst spill happened in late 1990s during the commissioning of Texaco's Captain vessel in the North Sea when around 3,900 tonnes of oil splashed out into the sea. Investigators blamed human error, rather than an inherent fault in the FPSO design.

Oil discharges from other FPSO operations have reportedly totaled less than 500 barrels of oil combined - an incredible record considering such floaters have been successfully operating for a cumulative 460 plus FPSO-years, processing an estimated 6.4bn barrels of crude oil, according to MMS figures.

FPSOs are regarded as cost-efficient and capable of operating under most conditions. But within the Gulf of Mexico the technology faces stiff competition from a range of established alternative floating systems such as spars and TLPs. Subsea developments also have a strong grip in the field planning scenarios played out by oil company executives.

To date this year only BHP Billiton's Boris field has come onstream. Located in 2,386 ft of water, oil is flowing via a subsea network. Industry watchers predict that 16 more field are due onstream before the year-end, with subsea developments dominating the horizon.

In 2004, a further 16 fields are expected to come onstream including six using spar technology; Devils Tower operated by Dominion, Front Runner (Murphy), Gunnison (Kerr-McGee), Holstein (BP), Mad Dog (BP) and Red Hawk (Kerr McGee).

Contractors have been busy drawing up possible designs for FPSOs. Most previous designs were conceived with the harsh North Sea waters in mind. In the North Sea FPSOs are moored permanently, while the hurricane prone Gulf of Mexico the vessels would need to be capable of weather-vaning. Indeed, when faced with severe winds, the vessel might need to be temporarily abandoned during a storm such as Hurricane Lili, which blew across the Gulf in late 2002 costing insurance companies close to $350m.

Moving the oil from the FPSO could be achieved using shuttle tankers rather than pipelines. But this adds a new twist to the issue, as no shuttle tankers are employed in the Gulf of Mexico.

Adding extra mileage to the vast pipeline network already in place in shallower waters easily beat shuttle tankers on a simple cost basis. To be eligible for a role in the Gulf, shuttle tankers must qualify under the Jones Act and OPA 90 and be constructed in the US at a cost approaching double that of vessel built in the international market with a double hull. The price for a single vessel could exceed £200m.

Designers at American Shuttle Tankers, recently sold by Norway's Statoil to tanker operator Teekay, and Skaugen Petrotrans are reported sharpening their pencils on potential shuttle tanker designs.

FPSO do have a role to play in the Gulf of Mexico, but it will take a brave company to make the first application, faced with mountains of paperwork from the MMS and locally proven technology such as TLPs and spars.