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Development of floating production facilities - second year operations at Argyll field / North Sea

With over two years' operating experience in the North Sea behind them, the Hamilton Brothers' Argyll field production facility from a floating platform provided delegates with an opportunity to hear first hand some of the problems and solutions associated with this form of development. The paper was titled *'The development of floating production facilities — second year of operation at Argyll field,'* and it was read by J. L. Daeschler.

The author, speaking against a background of earlier-than-expected water production which the popular press had misconstrued with gloom, was assured of an eager, technically qualified audience, and he said that average production was now 32 000b/d and a cumulative production of more than 15 million barrels had been raised.

The floating production facility (FPF) was a novel concept at the time of its adoption by Hamilton Brothers but was now being viewed with increasing respect and being proposed as an economical method of developing and producing marginal and sub-marginal fields in considerable water depth.

Several factors influenced the choice of standard semi-submersible drilling platforms as candidates for FPF conversion. They were designed for all-year round use in North Sea conditions and 100 year storm survival and they were often available for immediate conversion due to the capricious demand for exploration rigs. With exploration equipment stripped off, top hamper was reduced and deck space was available for production equipment, such as separators.

Used in conjunction with an SDM loading facility, the FPF could service either template drilled wells directly under the vessel or satellite wells connected by flowlines to a

central manifold from which a riser could be stabbed bringing production to deck level for treatment and returning stable crude to the seabed flowline to the loading buoy.

Many considerations were necessary for the FPF to be effective, but operating experience has now given hard facts on which to base future investment decisions. These show the FPF is less vulnerable to collision damage, safer in the event of a fire — only the FPF might be lost while the producing wells remain shut in automatically. Secure anchorage is imperative, not only for the FPF but also the loading buoys. A sophisticated riser bundle containing all the production 4½in. flowlines supported on a central 10in. delivery line, as well as the small control lines for the manifold, is continuously monitored with strain gauges connected to a computer and CRT display on deck. The subsea production manifold was sited on a mass anchor directly under the FPF and the flowlines from the satellite wells were connected to it.

Each well was completed and treed to give as simple a unit as possible.

The author told delegates that in the light of such operating experience, and successful management as is now enjoyed on Argyll, template drilling directly under the FPF offers advantages for workovers to be done from the FPF while normal production continues from the other wells.

Studies are now in hand to evaluate the elimination of an SPM by delivering to an off-moored tanker by floating line, thus reducing buoy excursion and extra maintenance. Solid trees were also advocated to eliminate leaks.



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