Tackling Deepwater Development Challenges

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ABSTRACT

Since the 1970's first breakout beyond conventional water depths, deepwater resources and production have been continuously increasing, representing today some 60% of the global offshore discoveries in the last decade and some 30% of offshore production planned in 2020.

Developing these resources has triggered numerous challenges for most technical domains such as drilling, facilities design and installation, operations, in various environments combining sometimes the water depth barrier with harsh metocean conditions. The offshore industry took up these challenges by developing specific technologies to adapt to these new conditions of remote access, focusing on three main functions: wellheads and their support, fluids transportation and processing facilities. A number of technical solutions were engineered, with subsea systems taking a major part, together with flowlines, risers and umbilicals, floating production vessels but also dry-tree tensionleg platforms. These solutions had to be adapted to the main development areas i.e. North Sea, Gulf of Mexico, West Africa, in terms of design as well as installation, while keeping a high focus on safety and environment .

Such evolution is the result of a significant effort in research and development, undertaken jointly by the operators and the contractors industry. This effort is more than ever required to push the limits beyond current edge: breaking the 3000 m water depth mark is the next challenge. This will need to deploy more widely subsea processing systems and to manage more stringent installation issues, while keeping costs in an economical range.

Total has been on the forefront of deepwater developments with more than twelve years experience, mostly in West Africa and Gulf of Mexico, totaling nine completed projects and another four under execution.