ID: W2306562289

TITLE: Sea Lion Field discovery and appraisal: a turning point for the North Falkland Basin

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ABSTRACT:

In 1998, the first six wells were drilled in the North Falkland Basin, and demonstrated the presence of excellent source rock and good reservoirs. Oil and gas shows were encountered in all but one well; however, no commercial volumes of hydrocarbons were proven. At that time, the focus of exploration was almost exclusively on traditional structural traps mapped on two-dimensional (2D) seismic surveys. Eleven years later, in May 2010, Rockhopper Exploration discovered the Sea Lion Field, which has over a billion barrels of estimated oil in place. Discovery well 14/10-2 was drilled on three-dimensional (3D) seismic data acquired by Rockhopper in 2007. Unlike the targets of the first campaign, the Sea Lion prospect was a stratigraphic trap imaged as a series of fan-shaped amplitude anomalies. Following a successful drill stem test of the SL10 and SL20 fans in the discovery well, Rockhopper embarked on an aggressive field appraisal and exploration drilling programme in the Sea Lion area. A second fully engineered production test was successfully performed on a later well to establish commercial flow rates. In addition to appraising the Sea Lion reservoirs, a further three hydrocarbon-bearing reservoirs were proven (Casper, Casper South and Beverley). Comprehensive data acquisition and analysis has been key to de-risking the first commercial development in the basin. A full suite of wireline logs was run in all the appraisal wells; seven wells were extensively cored and fluid samples were recovered for analysis from all reservoirs. In parallel with the drilling campaign, in 2010?11 a total of 4500?km 2 of 3D seismic data was acquired and processed in a collaborative programme with Argos and Desire. In 2012, Premier Oil farmed-in to the licence and assumed operatorship with 60% equity. Dynamic modelling indicates that estimated resources of approximately 160 million barrels (160?mmbbl) can be recovered from the north-east flank of the field based on a Floating Production, Storage and Offloading (FPSO) facilities concept for Phase 1 of the field development. The concepts for additional phases of field development are currently being evaluated.

SOURCE: Petroleum geoscience

PDF URL: None

CITED BY COUNT: 21

PUBLICATION YEAR: 2015

TYPE: article

CONCEPTS: ['Geology', 'Structural basin', 'Palaeogeography', 'Metamorphic petrology', 'Telmatology', 'Oceanography', 'Geobiology', 'Field (mathematics)', 'Regional geology', 'Paleontology', 'Turning point', 'Volcanism', 'Tectonics', 'Period (music)', 'Physics', 'Mathematics', 'Acoustics', 'Pure mathematics']