

Exploration and appraisal of the Ana and Doina gas fields, offshore Romania, Black Sea province, showing the evolution of the gas in place

Stephen Birrell, Paul Duley, Patrick Whitley and Anthony Fogg

Successful unlocking of the Doina Trend potential of the Romanian Black Sea, has been driven by technology-led efforts in Lithology and Fluid Prediction and Reservoir Characterisation.

The Ana and Doina gas fields are Pliocene-age shallow-marine sandstone reservoirs located some 100km offshore in Romanian waters of the Black Sea in water depth between 60 and 90m. The trapping configurations appear to be dip closure to the west, south and north with fault closure and rollover constraining the eastern extent of each field.

Doina was discovered in 1995 by Doina 1 which encountered dry gas within Mio/Pliocene siltstones and on appraisal, tested 17.4 mmscfd on a restricted choke in the subsequent Doina 2 well.

Further drilling in 2001, with the Doina 3 well, failed to convince the operator to move to development for a reservoir that was difficult to characterise with the technology and data available at that time.

In 2006, Sterling Resources, became Operator and 100% holder of the Midia concession; Sterling began to re-evaluate the potential within the Doina field and prospectivity along the “Doina Trend” using the evolved technologies for Seismic Inversion, AVO and Reservoir Characterisation

Drilling resumed in December 2007 when Ana was discovered by exploration well Doina Sister-1, finding dry gas in Pliocene sandstones and siltstones and flowed at 18.6 mmscfd. This well applied new logging technologies (Shear wave sonic and CMR logs) to unlock the reservoir characterisation issues and provide seismic calibration for prediction beyond the well bore.

The acquisition and reprocessing of new seismic data along with further appraisal drilling to test the concepts derived from better depth conversion and fluid prediction followed in 2008

As a result of the geophysical and well evaluation programmes instigated, the GIIP (Gas Initially In Place) has been revised upwards thus directly impacting the field development planning.