AAPG Datapages/Search and Discovery Article #90254 ©2016, GEO-2016, 12th Middle East Geosciences Conference & Exhibition, Manama, Bahrain, March 7-10, 2016

# Characterisation of the Background Fracture Network in a Basinal Carbonate Reservoir of Southern Albania

RaffaeleDiCuia[1], Raffaele Bitonte[1], stefano borello[1], Alberto Riva[1], angelo ricciato[1], Robert Konert[2], Eddie McAllister[2], Stephen Farner[3]

[1]GEPlan Consulting, Ferrara, ITALY
[2]Shell International, London, UNITED KINGDOM
[3]Petromanas, Calgary, Alberta, CANADA

## ABSTRACT

The characterization of the background fracture network is low matrix porosity and permeability carbonate is one of the key tasks to understand the volume of hydrocarbons in place and the productivity of wells. A recent oil discovery was made in in Southern Albania in one of the tectonic units of the Albanides thrust belt. The reservoir is in a Cretaceous to Eocene fractured carbonate sequence deposited in a basinal depositional setting The limited amount and the low quality and resolution of subsurface data forced in previous studies the extended use of outcrop analogues to characterize the geometry of the structure and the characteristics of large scale faults and fracture corridors.

A new integrated study was started to characterize the background fracture network and included the integration of outcrop data, image logs and cores taken in the same reservoir sections but in different structures and old fields. The main aim of this study was to complete the picture of the structural framework in the different tectonic units present in the area. The reservoir units are characterized by two main fracture sets that form an angle of 60°-70° between them and some minor sets. The orientation of the two main fracture sets show a rotation between the Paleogene and the Cretaceous sequences.

Cores show similar geometrical relationship between fracture sets but the core dataset allows the understanding of the relationship between the fracture network and the overburden-related and the tectonic-related stylolites highlighting the presence of pre-folding structures from folding-related fractures. Based on the present day stress field calculated using borehole breakouts and induced/enhanced fractures the main fracture sets identified are in shear and open modes. Fracture density is high and relatively constant in the different stratigraphic units and between different structures. Bed thickness, rock texture and large faults are the main factors controlling fracture development and intensity.

Overall, the background fracture network appears to be very well developed and the entire system well connected.