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A 3-D Model of Sand Injectite Network from Outcrop and Shallow High Resolution Seismic Data: The Rosans Clastic Sills and Dykes Field Example (Southeast France)

Clastic injectites (sills, dykes) and breccias are observed in cores from turbiditic hydrocarbon reservoirs. These features can modify the reservoir architecture. They can be "troublemakers" in oilfield development, but they can also contribute to a better pressure support and oil recovery. They are difficult to detect with the logs and not always recognisable on cores.

In SE France, the Vocontian Aptian-Albian formation provides a large set of injectites or facies-similar features: dykes and sills associated in the same network, metre to kilometre long, centimetre to decametre thick, per ascensum or per descensum injectites (syn depositional or post depositional sand injection). The quality of the exposures and the field data indicate that the Vocontian model, even if unique and exceptional, can be used as an analogue for turbiditic channel and clastic injection features.

A 3-D model of injectite network has been built from the Rosans outcrop using seismic data and Gocad tool. A very high resolution 2-D seismic acquisition has been designed to image the shallow (0 - 30 m) sandstone : 4 m trace spacing, 18 m maximum offset, signal frequencies up to 400 Hz, no stretch imaging. Six sections (total length of 3 km) were acquired over a 0.6 km² area. The interpretation of the seismic was tied to the outcrop data. The Gocad model was built based on the both sets of information. This model will help minimising the risks (unsuspected reservoir connections, various and heterogeneous net pays, reservoir characteristics ...) during the development of turbiditic reservoirs.