

A Holistic Approach to Model-Building in and Around Injectites: A Case-Study Offshore Norway

**Victoria Valler¹, Nathan Payne¹, Thomas Hallett¹, Marcin Kobylarski¹,
Girish Venkatraman², Jochen Rappke², and Dirk Fairclough³**

¹Imaging Services, ION, Chertsey, Surrey, United Kingdom.

²Engie, Stavanger, Norway.

³Monarch Geophysical Services, Cobham, United Kingdom.

ABSTRACT

The Northwest European continental margin provides many well documented examples and case-studies of the origin and, more recently, hydrocarbon potential of remobilized injectites in the Paleogene. In velocity model building large injectite fields or fairways present a common challenge, in terms of both their effect on the image of deeper structures and as an imaging target for prospectivity themselves. In particular, the variety of sizes, number, and complex geometry of individual injectites pose the greatest challenge, with manual interpretation often unviable in the scope of a commercial imaging exercise. In this case study we present a workflow to constrain a complex velocity model of large reworked Paleogene sand injectite field offshore Norway. Our approach uses a robust, deghosted pre-processing workflow, semi-automated identification and insertion of injectites and finally a high-resolution tomographic update. All of these steps formed critical elements of a multi-faceted approach to detailed model building in and around injectites within the timeframe of a conventional velocity model building iteration. Our results show that this method enables us to produce a highly accurate and detailed model of a complex injectite field and subsequent improvement on the deeper image within the timeframe of a conventional model building iteration.