Faults and Fractures in the Surat Basin: A Seismic Perspective

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Project: Understanding Faults and Fractures in the Surat Basin

INTRODUCTION

The faults and fractures project has a focus on understanding the mechanisms behind the large variation in permeability in the Walloon Coal Measures. The contribution of underlying structure and the succession of deformation to fracture development is not well understood. This portion of the project was intended to better understand the deformation affecting the Surat succession and the dependence on pre-existing structural fabric. Primary Walloon faulting is related to transpressional style deformation. Permian subcrop is associated with an increased density of faulting.

PRELIMINARY RESULTS

Bowen Deformation:
- Bowen age deformation underpins and partially controls major Surat age deformation
- Major structures are primarily vertical and bounded by high angle reverse faults
- Fault morphology for larger structures is complex due to apparent shear component

Surat Deformation (Cenozoic):
- Pre-Surat complex structures are reactivated as folds with small faults in Cenozoic def.
- Faults rarely are re-activated directly to continue along same plane
- Keystone structures prevalent where remnant Permian coals subcrop
- Transpressional shear results in distinctive "keystone" deformation in Walloon

OBSERVATIONS

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