

**Poster 8**

**USING GRAVITY DATA TO HELP IDENTIFY AND DIFFERENTIATE MOBILE SHALE BODIES, OFFSHORE SABAH**

S. J. CAMPBELL<sup>1</sup>, M. LENNANE<sup>2</sup> AND S. E. PISAPIA<sup>2</sup>

<sup>1</sup>GETECH, Kitson House, Elmete Hall, Elmete Lane, Leeds, UK. sjc@getech.com

<sup>2</sup>Murphy Sabah Oil Co. Ltd., Level 31, Tower 2, PETRONAS Twin Towers, Kuala Lumpur, Malaysia

The reliable identification and definition of shale diapirs is important to reduce exploration risk. This poster describes the work carried out to establish the degree to which these shale bodies can be identified using high resolution gravity data from offshore Sabah.

Test models show that, assuming reasonable density contrasts, mobile shale bodies of a typical size and geometry would give a 2-3 mGal amplitude and 7 to 9 km wavelength gravity low response. Therefore they should be resolvable with good, high resolution gravity data. The picture, however, is complicated in this area by the presence of numerous large bathymetric canyons. The larger of these are shown to yield a similar gravity response as the possible shale diapir bodies, although the gravity effect of these bathymetric canyons can be diminished to some degree by the use of the Bouguer gravity anomaly.

The mobile shale bodies manifest themselves on seismic data as disturbed zones, often with a distinct high impedance contrast on the top. These have been identified on several seismic sections and usually correspond directly with observed 1 to 2 mGal low anomalies in the Bouguer gravity profiles, which can be further highlighted by the use of careful filtering. This gravity response is observed irrespective of whether there is interference from the bathymetric canyons or not. Given that this characteristic gravity response is observed in several places, disturbed areas in the seismic where there is uncertainty can be verified by looking at the Bouguer anomaly profile. The poster shows that such an uncertain zone with this characteristic gravity response is confirmed as a shale diapir by viewing the cross-line trace. For disturbed areas on the seismic data that don't correspond to this same gravity response, alternative explanations might be sought such as the existence of a gas chimney.