Analysis of Seismic Data from Gas-Hydrate-Bearing Channel Systems on the Southern Hikurangi Margin, New Zealand

MIKO FOHRMANN¹ and INGO A. PECHER¹ ¹GNS Science, PO Box 30-369, Lower Hutt, New Zealand

The Hikurangi Margin, a subduction-zone margin east of New Zealand's North Island, contains gas hydrates in a very variable geologic environment. Significant gas hydrate saturations have been inferred in particular from controlled-sourceelectromagnetic data collected in 2007. However, little is known so far about the quality of the host rock for gas hydrates. High permeability is likely to be a key requirement for any future production. Sands are typically the most permeable reservoir rocks. We have therefore started searching for potential gas-hydratebearing sands, in particular, in channel systems. Extensive canyons are present in the southern part of the margin. We have identified high-amplitude reflections in 2-D seismic data that cross bottom simulating reflections with a polarity reversal. These reflections may be located in paleo-channel systems. We suggest these reflections may be caused by high-permeability layers, probably sand-dominated, containing a significant gas column beneath the gas hydrate stability zone and gas hydrates within it. We are currently applying high-resolution velocity analyses followed by AVO inversion to confirm our interpretation and will present first results form these analyses.