

Submitted to the American Geophysical Union Fall Meeting 2007

Chronology of methane venting from pockmarks on the northern flank of the Storegga Slide complex

R. B. P. Critser¹, T. M. Hill¹, C. K. Paull²

¹University of California Davis, Davis, California, USA

²Monterey Bay Aquarium Research Institute, Moss Landing, California, USA

The northern flanks of the Storegga Slide complex on the Norwegian continental margin contains features that have been inferred to be associated with shallow methane. These include bottom simulating reflectors in seismic reflection profiles, that indicate free-gas below the base of gas hydrate stability and pockmarks which are commonly associated with seafloor gas venting. Four jumbo piston cores (JPC), three taken from separate pockmarks and one core taken near the pockmarks on the northern flank of the Storegga Slide (800m water depth), were sampled at 10 cm resolution. Radiocarbon ages indicate typical sedimentation rates of 40-70 cm/ka at these sites. Concentrated layers of *Bathymodiolus* mussels, an indicator of methane-rich environments, are found at 670-710 cmbsf and 780-790 cmbsf in one core. Radiocarbon dating indicates these mussel beds were deposited 18,212±338 and 22,229±338 calendar years before present respectively. Planktonic and benthic foraminifera (*Neogloboquadrina pachyderma*, *Globigerina bulloides*, and selected benthic species) were analyzed for stable isotopic composition. Oxygen isotopic values exhibit a classic glacial-interglacial sequence ($\delta^{18}\text{O}$ shift from 4.48 to 1.58 ‰), including Terminations IA and IB. Carbon isotopic values from multiple cores depict negative excursions in planktonic foraminifera (-0.45 to < -2‰), interpreted to reflect methane release to surface waters during the Last Glacial Maximum and early Holocene.