

Environmental dependence of underwater sound propagation resulting from percussive pile driving

Tanja Pangerc¹, Pete Theobald¹, Lian Wang¹, Paul Lepper² and Stephen Robinson¹

(1) *National Physical Laboratory, Hampton Road, Teddington, Middlesex, TW11 0LW, UK*

(2) *School of Electronic, Electrical and Systems Engineering, Loughborough University, Leicestershire, LE11 3TU, UK*

Percussive pile driving, often used to install offshore wind turbine foundations, has the potential to radiate high amplitude sound into the water column. The amplitude of the radiated sound will depend on both the sound source characteristics (e.g. frequency, source level) and the propagation environment. In this presentation we consider the effect of environmental parameters on the propagation of pile driving noise. The sound source is based on published data (Ainslie et al., 2012) and propagated in third octave bands using RAM (Range-dependent Acoustic Model, AcTUP V2.2L), a Parabolic Equation solution propagation model, representing a single strike pile-driving event. Particular consideration is given to the effects of varying sound speed profile and sediment type, and is presented for typical North Sea parameters.

Contact details: tanja.pangerc@npl.co.uk