# SEISMIC DATA COLLECTION BY 3-D PHYSICAL MODEL EXPERIMENTS FOR LAND AND MARINE ENVIRONMENTS (101)

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Physical model experiments provide a flexible means to simulate highly realistic data from accurately known structures. Simulated data can be used to test new processing and inversion algorithms, especially migration. This paper presents a new 3-D physical modeling technique with emphasis on correct full elastic simulation. The models were scaled to the MHz range, which reduces the size of the model and allows for the application of novel home-made materials with a wide range of P and S properties and a correct Poisson ratio. In the present study all experiments were performed on 3-D models, thus allowing realistic full elastic wave propagation. Processing and analysis of the data dial identify the different P-, S- and mode converted waves. Scans were performed with wide-angle, wide-band transducers. For this purpose several lead-metaniobate transducers were custom designed. The data-acquisition system allows for data collection in various spatial formats, e.g. common shot and common midpoint gathers. Data acquisition of marine, as well as land data, is supported.

In this paper the design rules for physical modeling and data acquisition will be discussed. Seismic responses obtained from models of thin layers, typically 1/20-wavelength, will be shown as well as the corresponding ray-tracing results. Conclusions on the resolution aspects and the detectability of these type of layers will be given. Finally, results of 3-D multi-experiment, multi-offset data generation by physical modeling are discussed. These data were used to validate the Delft target-oriented 3-D pre-stack migration concept.

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