This is the tenth newsletter of the *Knowledge Centre Manoeuvring in Shallow and Confined Water*, which aims to consolidate, extend and disseminate knowledge on the behaviour of ships in shallow and confined water. In this newsletter, we have an item on a study of the nautical accessibility of the port of Delfzijl and we draw readers' attention to the availability of open access data on lock effects.

The presence of a mud layer in the port of Delfzijl in the Netherlands implicates a major restriction to the nautical accessibility of the port. At present the maximum drafts for shipping traffic to Delfzijl are limited by a minimum under keel clearance with respect to the top of the mud layer. By means of a simulator study, Flanders Hydraulics Research investigated the influence of sailing at very low and even negative under keel clearances with respect to the mud layer on the inbound and outbound route to and from the port of Delfzijl. In addition, the mud layer characteristics (thickness, density and viscosity) were varied systematically. In order to perform the simulations as realistically as possible, local pilots experienced with the port of Delfzijl, participated in the study.

Simulations were carried out with a 1700 TEU vessel for which the mathematical manoeuvring models have been derived from comprehensive captive model tests. During this experimental program (2001-2004) the ship behaviour above and in contact with several mud layers was measured. The mud layers were simulated using paraffins characterised by layer thickness, density and viscosity.

The simulator study, ordered by Groningen Seaports and Wiertsema & Partners, revealed the possibility to work with a nautical bottom which is at a lower level than the top of the mud layer. This opens up the possibility for the port of Delfzijl to receive vessels with a larger draft in the future without the requirement of extra dredging efforts. In order to validate the conclusions from the simulator study, full scale testing will be organized on site and Flanders Hydraulics Research will also be involved in this study. Read more.

The *Knowledge Centre* has given open access to a selection of experimental data from model tests studying the behaviour of ships in or near locks.

The first set of benchmark data were carried out with self-propelled models and were selected from model tests carried out in 2007-2008 to investigate the behaviour of vessels transiting the future Panama Canal Third Set of Locks, which is presently under construction. The tests were carried out in a 1/80 scale model of a lock and an approach channel at Flanders Hydraulics Research, according to the preliminary design of the Panama Canal Third Set of Locks. The selected benchmark data were carried out with a 12000 TEU container carrier model.

The second set of benchmark data were selected from systematic captive model tests carried out in the 1990s in the towing tank for manoeuvres in shallow water as a first step in a feasibility study for receiving bulk carriers with larger beam in the Pierre Vandamme Lock in Zeebrugge. This lock has a length of 500m, a width of 57 m and a depth of 18.5m. A 1/75 scale model of the lock configuration was constructed in the towing tank, with special attention to the asymmetric layout of the approach channel.

These benchmark data can be used for the validation of numerical tools and mathematical models of ship behaviour in locks. Researchers are particularly encouraged to submit papers with this topic to the *3rd International Conference on Ship Manoeuvring in Shallow and Confined Water: Ship Behaviour in Locks*, which will be held in Ghent, Belgium, on 3 – 5 June 2013.

The benchmark data can be obtained by mailing to info@shallowwater.be. A digital version of the data will then be sent to you, along with an accompanying paper describing the experimental set-up.

Knowledge Centre
Manoeuvring in Shallow and
Confined Water

Berchemlei 115
2140 Antwerp
Belgium

T +32 (0) 3 224 60 35
E info@shallowwater.be

www.shallowwater.be
