**Intercomparison for multiphase flow**

*Peter Lucas (VSL), David Crawford (NEL), Asaad Kenbar (NEL), Gertjan Kok (VSL), Rick de Leeuw (Shell), Dennis van Putten (DNV GL), Lev Zakharov (OneSubsea)*

The work described in this paper is part of the European Metrology Research Programme (EMRP) project *“Multiphase flow metrology in the Oil and Gas production”.* The main objective is to develop an accurate and validated metrological reference network whereby multiphase flow meters can be more reliably developed and verified for their application in the oil and gas industry. The work involves four European test facilities (DNV GL, NEL, OneSubsea and Shell) in the world’s first comprehensive multiphase intercomparison study. A multiphase meter transfer package has been made available by one of the partners for this intercomparison**.**

To achieve meaningful and transparent inter-comparison, the uncertainty in the reference flow rates at the test meter had to be established first for all test facilities. In addition, the meter transfer package was designed to enable repeatable and reproducible measurements. Another important aspect of meaningful intercomparison is to achieve comparable Froude and Reynolds numbers for the selected test points by adjusting the test line pressure, temperature and gas flow rate.

The intercomparison has started with the measurements at NEL. This will be followed by measurements at the other three facilities then returned back to NEL for reproducibility tests. The role of VSL is to organize the intercomparison, analyze the results and to review and harmonize the uncertainty budgets of the facilities. VSL has no facility for multiphase flow meter testing and therefore act as an independent party for analyzing and reporting the results.

The paper briefly describes the intercomparison protocol including the test matrix and the uncertainty budgets. If test results are available in time for this publication then preliminary “anonymous” results will be also included.