Hydrodynamic forces on a partly buried cylinder exposed to combined waves and current

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Received 18 January 2000; accepted 13 April 2001

Abstract

The present study extends the investigations of the hydrodynamic forces on a cylinder, laid on, or partly buried in the bed. They were determined by measuring the pressure distribution on the cylinder surface in the case of steady current, waves and coexisting flow. The pressure distribution around the cylinder was measured by using pressure transducers, which were replaced in the cylinder. Force coefficients were obtained for the ranges of Re = 0.8 × 10^4–1.5 × 10^4, for steady current, low KC numbers (KC<5) for wave alone case and, for current-to-wave velocity ratio=0, 3, 6 and infinity (current) for coexisting flow. The forces were also determined for the various burial-depth-to-diameter ratios between 0 and 0.7 values of the cylinder. © 2002 Published by Elsevier Science Ltd.

Keywords: Hydrodynamic forces; Buried and unburied cylinder; Steady current; Wave; Coexisting flow; Pressure distributions