



Computational Fluid Dynamics Modeling Of Wave Run Up Over The Slope Of Breakwater Using Numerical Model

Elham Mina¹, Amir Khosrojerdi², Mohammad Taghi Ahmadi³

1- PhD. Student Of Hydraulic Structures , Tarbiat Modarres University

elhammina.em@gmail.com

2- Assistant professor , Islamic Azad University

am_khosro@yahoo.com

3- professor , Tarbiat Modarres University

m_ahmadi@modares.ac.ir

Abstract :

Construction of embankment and impoundments over soft soils is one of the most important problems in coastal engineering. Chabahar is located in south area of Iran and beside Oman Sea on the northern shore of the Persian gulf with geographical coordinates equal to 60° 37' E -25° 17' N. In this place, a new breakwater should be constructed. According to the investigations on the breakwater constructions, the design parameters of the layers of breakwater should be calculated based on current breaking ,over topping and run up high .The design method for this application is fully covered by The Coastal Engineering Manual (CEM) assembles in a single source the current state-of-the-art in coastal engineering to provide appropriate guidance for application of techniques and methods to the solution of most coastal engineering problems. The CEM provides a standard for the formulation, design, and expected performance of a broad variety of coastal projects .The results of calculations show the top level of the armors was determined due to the wave run-up and overtopping conditions .An analysis of the different wave-structure interaction processes is performed, by simulation wave run-up over the breakwater using Ansys CFX .The Ansys results are compared with ACES software results which predicts run-up based on analytical solutions. Results of the two soft waves are in a good agreement and approach the same run up high results .

Key Words: piping, dam break ,outflow , overtopping, Hec-Ras, Parametric Models, peak breach discharge, numerical model, simulation.

1. TBE. Consulting Engineers ,Senior Structural Designer ,Tehran,Iran.
2. Department of water Engineering, Science and Research Branch, Islamic Azad University ,Tehran, Iran.
3. Departmen of Civil Engineering.,Hydraulic Structures Division,School of Civil and Environmental Engineering and Technology,Tarbiat Modarres, Tehran,Iran.