

## **Liquefaction Susceptibility of Tailing Storage Facility-Comparison of National Centre for Earthquake Engineering Research and Finite Element Methods**

**Authors :** Mehdi Ghatei, Masoomah Lorestani

**Abstract :** Upstream Tailings Storage Facilities (TSFs) may experience slope instabilities due to soil liquefaction, especially in regions known to be seismically active. In this study, liquefaction susceptibility of an upstream-raised TSF in Western Australia was assessed using two different approaches. The first approach assessed liquefaction susceptibility using Cone Penetration Tests with pore pressure measurement (CPTu) as described by the National Centre for Earthquake Engineering Research (NCEER). This assessment was based on the four CPTu tests that were conducted on the perimeter embankment of the TSF. The second approach used the Finite Element (FE) method with application of an equivalent linear model to predict the undrained cyclic behavior, the pore water pressure and the liquefaction of the materials. The tailings parameters were estimated from the CPTu profiles and from the laboratory tests. The cyclic parameters were estimated from the literature where test results of similar material were available. The results showed that there was a good agreement, in the liquefaction susceptibility of the tailings material, between the NCEER and FE methods with equivalent linear model.

**Keywords :** liquefaction , CPTU, NCEER, finite element method, equivalent linear model

**Conference Title :** ICGSASS 2018 : International Conference on Geotechnical Slope Analysis and Slope Stability

**Conference Location :** Prague, Czechia

**Conference Dates :** August 13-14, 2018