



ABSTRACT

An earthquake with a strike-slip mechanism occurred on May 26, 2006, in Yogyakarta. The US Geological Survey (USGS) estimated the earthquake moment magnitude as 6.3. Researchers inferred that the damage was controlled by amplification factors from soft sediments redeposited from the active Mount Merapi. The damages founded were predicted caused by liquefaction since the appearance of liquefaction symptoms were found, namely sand boils and lateral spreading.

This study conducts a non-linear ground response analysis with pore water pressure dissipation to generate more specific and accurate soil dynamic responses due to earthquakes. DEEPSOIL was used to perform one-dimensional and non-linear ground response analyses with pore water pressure dissipation. The acceleration time history was selected from the NGA-west2 database by considering the de-aggregation parameters, $M_D= 6.5$ and the $R_D= 14.5$ km. Furthermore, this study's results were Maximum Surface Acceleration Map, Liquefaction Potential Index Map, and Liquefaction Severity Index Map.

The result shows that the soil deposits of the study area vary between 40 m to 90 m. The SPT-based calculation shows that all data are classified as medium soils except for Makam Imogiri. The time history from Mount Hamilton, Coyote Lake, and Parkfield-02 CA was selected and scaled by a factor of 18 to 33. The DEEPSOIL analyses found that amplification occurred in two locations in Bantul, namely Pundong (BH-13) and Nangsri (BH-22). Locations that experience high amplification were included in the high to very high damage zone.

Keywords: DEEPSOIL, local site effect, young volcanic sediment, amplification, LPI, LSI