



ABSTRACT

This study focuses on Yogyakarta Province, located on the middle of Java Island. The study uses two general methods for Seismic hazard analysis, deterministic and probabilistic. In deterministic analysis, analysis focuses on comparison between Mélange Tertiary Opak Fault and Subsurface fault as the main causes of Yogyakarta earthquake on May, 27, 2006. In probabilistic, the scope in this study covers are several item that will be used to border this area i.e. a. the maximum depth is 200 km, the earthquake source location is 500 km and attenuation functions that appropriate for each earthquake zone. Combination of several attenuation function have been adopted that is appropriate with the type of seismic source. In addition, both exponential and characteristic recurrence models have been adopted. Some uncertainties are minimized through logic tree methodology.

The result of comparison between Opak fault and Sub-surface Fault illustrate that Opak Fault has larger damage potency than Sub-surface Fault. Opak Fault generate PGA 0.38 g and MMI scale of IX while Sub-surface fault generate PGA 0.35 g and MMI scale of VIII and also result site effect larger than this ones. This matter is caused by The Mélange Tertiary Fault has bigger dimension and different characteristics than Sub-surface Fault.

There are at least three earthquake sources, sub-duction zone, opak fault, and sub surface fault that influence seismotectonic in Yogyakarta Province. De-aggregation analysis within PSHA indicates that a seismic source originated from the benioff zone of the sub-duction provides the highest contribution to probability. A uniform hazard spectrum was developed and is used as the basis of generating seismic input motion for site-specific response spectra analysis. The earthquake hazard map resulted from this study is necessary to figure out the characteristic of seismotectonic setting in Yogyakarta Province

Key word: seismic hazard, deterministic, probabilistic, hazard map, opak fault, sub surface fault, sub-duction zone