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The Earth-Mantle Model Using a Seismogram Analysis on Halmahera Earthquake C112597C With The PMG Observation Station

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This research has tested the inuence of the earth mantel structure on the surface waves at three components of the direction of the earth movement due to the earthquake. The earthquake occurred around Halmahera Island, Maluku, Indonesia on 25 November 1997, with an observation station in PMG, New Guinea. Seismogram recorded in the observation station, has been compared with the synthetic seismogram, after being subject to the high pass _lter at 20 Mhz. A simulation is conducted on the three Cartesian components simultaneously, where the Gemini Program has been used to calculate the synthetic Seismogram. The model if upper mantle of the earth from PREMAN indicates a good _tting on the components of Love wave; but on the Rayleigh component, a synthetic wave appears to come earlier. Fitting on the Rayleigh wave makes the _ne tuning on the Love wave deteriorate and not indicate a change. Using the velocity model on the earth mantle constituting a straight line with a positive gradient toward the depth, meaning that it is without a low velocity zone , the _tting on the three components of surface wave runs well. The conclusion of this research indicates that velocity structure on the area of the upper earth mantle has a clear inuence on the _tting of the surface wave, when the _tting is done on the three Cartesian components simultaneously.

Keywords: Upper Mantle Structure, Waveform, Surface Wave