

# **Analysis of Moment Magnitude (Mw) to Compare The Energy of Six North Korea's Nuclear Test with Plutonium-240**

From 2006 to 2017 seismic monitoring noted that North Korea conducted nuclear tests six times, namely on October 9, 2006 (M 4.3), May 25, 2009 (M 4.7), February 12, 2013 (M 5.1), January 6, 2016 (M 5.1), September 9, 2016 (M 5.3), and September 3, 2017 (M 6.3). The purpose of this study is to find the comparative value between seismic radiation energy and Plutonium-240 energy. This study uses nuclear explosion in North Korea earthquakes. The waveform used from INCN Station, Incheon, South Korea (October 9, 2006, May 25, 2009, September 9, 2016, and September 3, 2017) and MDJ Station, Mudanjiang, Heilongjiang Province, China (February 12, 2013 and January 6, 2016). Data were downloaded from IRIS. we use the Seismic Analysis Code to process data. The results of this processing get the highest of moment magnitude (Mw) is 6.4, seismic moment ( $M_0$ ) =  $6 \times 10^{18}$  N.m, seismic radiation energy ( $E_s$ ) =  $3 \times 10^{14}$  Joule. Energy  $Q = 4.18 \times 10^6$  Joule is energy that can be produced by 1 kg of TNT. Then the energy released by 72 kt TNT is equal to 72 times the energy released by a nuclear explosion on spontaneous fission of Plutonium-240.

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**Track Classification:** Theme 2. Events and Nuclear Test Sites