Seismic vertical array analysis of the records during aftershocks of the 2007 Niigata-ken Chuetsu-oki earthquake

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A velocity profile derived from PS-logging was examined using the mainshock and aftershock records from KK5 and KSH seismic vertical arrays in the Kashiwazaki-Kariwa nuclear power plant, that is located on the focal region, and a seismic phase decomposition analysis method was applied to aftershock vertical array records. Peak frequencies of spectral ratios of the aftershock records from KSH array between various depths were slightly different from those of theoretical transfer functions. Comparison between observed and theoretical S-wave travel times at various depths indicated that travel times for the mainshock measured by picking S-wave arrival times were identical to the theoretical travel times calculated from PS-logging profile, although travel times for the aftershocks were different from the theoretical travel times. Results of the decomposition analyses of seismic vertical array records from KK5 array for small aftershocks show that clear wave packets of surface waves follows just after the direct S-wave arrival. In contrast, a decomposition analysis result of KSH array records show that a wave packet of surface waves are not clear.

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