Title	MODELING THE RESPONSE OF A CALIBRATION NEUTRON MONITOR TO COSMIC RAYS
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ABSTRACT

A calibration neutron monitor (calmon) is an instrument to calibrate the neutron monitors in the worldwide network for atmospheric secondary cosmic ray measurement in order to control the standard of the neutron monitor. The purpose of this research was to create a model of the calibration neutron monitor which was used in the calibration of the Princess Sirindhorn Neutron Monitor (PSNM), Doi Inthanon in Thailand, which has the world's highest geomagnetic vertical cutoff rigidity of 16.8 GV. In this research, we created the calibration neutron monitor model both inside and outside the station by using the FLUKA program with numerical technique of Monte Carlo. We studied the factors that affect the measurement of the neutron count rate in the calibration neutron monitor. We used the Simple Geo program for creating our geometry model to define the initial values of simulations. The simulation results show the neutron count rate vs. energy values. We compared the count rate results between the calibration neutron monitor outside the PSNM station (by installing the calibration monitor above a pool which was on a concrete bunker's roof) with the simulation results for the calmon inside the station when the calibrator was set inside the station, which consisted of the neutron monitor of 18 tubes and 3 bare counter tubes. The calibration neutron monitor inside the station was surrounded by a roof, concrete ground and walls of the building. The simulation results suggested that the neutron count rate of the calmon inside the station is greater than the neutron count

rate outside the station. The differences of the ratio of calibrator/neutron monitor for inside and outside the station from the experimental results were close to the simulation results. These data show that our models of the calibration neutron monitor response and the calibration neutron monitor measurements are in good agreement.