Ba NMR studies of the triangular lattice antiferromagnets GEOR- 
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partment of Physics & Astronomy, University of Tennessee — Ba$_3$MSb$_2$O$_9$, with 
$M=$Co, Ni are triangular lattice magnetic systems with near-neighbor antiferro-
magnetic exchange. Previous studies have shown that Ba$_3$CoSb$_2$O$_9$ has a stabilized 
up-up-down spin configuration with in-plane field and the resultant one-third mag-
netization plateau has been observed. On the other hand, for the $M=$Ni system 
with 6H-B structure there has been no evidence of a magnetic ordered phase and 
thus it is being seen as a candidate spin-liquid material. Existing NMR data show 
a very broad Ba line comprised of signals from three different Ba sites, and the 
relaxation rate show a very weak temperature dependece, which is similar to the 
Co compound in the high symmetry phase. Here we report on Ba nuclear magnetic 
resonance (NMR) spectroscopy and spin-lattice relaxation measurements for both 
compounds. For the Co system, we will report data revealing the magnetization 
process up to 30T and present a detailed picture of the phase diagram. For the 
Ni compound, we are reporting the temperature evolution of the spectra and the 
temperature dependence of the relaxation rate for both Ba and Sb.

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