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NMR studies of quantum spin liquids using high magnetic fields: $SrCu_2(BO_3)_2$ and $BaCuSi_2O_6$[1] RAIVO STERN, I. HEINMAA, NICPB, Akadeemia tee 23, EE12618 Tallinn, Estonia, P. KUHNS, A. REYES, W. MOULTON, NHMFL, 1800 East Paul Dirac Dr., Tallahassee, FL 32310, M. HORVATIC, C. BERTHIER, GHMFL-CNRS, 25 Avenue des Martyrs, F38042 Grenoble Cedex 9, France, C. BATISTA, M. JAIME, T. KIMURA, NHMFL-LANL, Los Alamos, NM 87544, H. DABKOWSKA, B. D. GAULIN, Dept of Physics and Astronomy, McMaster University, Hamilton, Canada — We present the results of Nuclear Magnetic Resonance (NMR) experiments on the quasi-2D spin gap systems $SrCu_2(BO_3)_2$ and $BaCuSi_2O_6$ in continuous magnetic fields H of up to 44 T. Using ^{11}B spectra and spin-lattice relaxation times T_1 we explore the spin structure on the so-called 1/3 magnetization plateau of the Shastry-Sutherland model material $SrCu_2(BO_3)_2$. In ancient Han purple - $BaCuSi_2O_6$ – we observe with help of ^{29}Si and $^{63,65}Cu$ T_1 the closure of the singlet gap at $H_{c1} = 23.4$ T down to temperatures $T \sim 40$ mK. While entering the suggested Bose-Einstein Condensate phase for higher fields [M. Jaime *et al.*, Phys. Rev. Lett, **93**, 087203 (2004)] we discover dramatic changes in ^{29}Si line shape suggesting incommensurate (and complicated) spin modulation in the ordered phase.

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