High field magnetization, specific heat and NMR of the two dimensional tetramer-cuprate Na$_5$RbCu$_4$(AsO$_4$)$_4$Cl$_2$ RAIVO STERN, NICPB, Akadeemia tee 23, EE12618 Tallinn, Estonia, A. KRIISA, I. HEINMAA, E. JOON$^1$, NICPB, Akadeemia tee 23, EE12618 Tallinn, Estonia, P. KUHNS, A. HARTER, A. REYES, W. MOULTON$^2$, NHMFL, 1800 East Paul Dirac Dr., Tallahassee, FL 32310, M. JAIME, N. HARRISON, NHMFL-LANL, Los Alamos, NM 87544, J. A. CLAYHOLD, Physics Department, Miami University, Oxford, OH 45056, S.-J HWU, M. KARTIN-ULUTAGAY, X. MO, W. QUEEN, Department of Chemistry, Clemson University, Clemson, SC 29634 — Complex novel 2D compound Na$_5$RbCu$_4$(AsO$_4$)$_4$Cl$_2$ is a unique magnetic material, which contains layers of Cu$_4$O$_4$ tetramers [S.-J. Hwu et al., J. Am. Chem. Soc., 124, 12404 (2002)]. The ground state following a second order low entropy phase transition at 15(1) K is antiferromagnetically ordered one [J.A. Clayhold et al., Phys. Rev. B, 66, 052403 (2002)]. We have measured the $^{87}$Rb and $^{35}$Cl NMR spectra and high field magnetization and specific heat at low temperatures. We discuss the field dependence of $T_N$, hyperfine couplings at various nuclear sites, and characteristics of the ordered state as seen from Rb and Cl nuclear sites.

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