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New heavy fermion compounds $Yb_4Ni_9Al_{24}$ and $YbRh_3Si_7$ GERARD LAPERTOT, EMILIA MOROSAN, SERGEY L. BUD'KO, Ames Laboratory and Dept. of Physics and Astronomy, Iowa State University, YURIJ MOZHARIVSKYJ, Ames Laboratory and Dept. of Chemistry, Iowa State University, PAUL C. CANFIELD, Ames Laboratory and Dept. of Physics and Astronomy, Iowa State University — $Yb_4Ni_9Al_{24}$ and $YbRh_3Si_7$ are newly discovered compounds, with triclinic (space group P $\overline{1}$) and rhombohedral (space group R $\overline{3}$c) crystal structure respectively, and two, and respectively one Yb site in the unit cell. Measurements on solution-grown single crystals of $Yb_4Ni_9Al_{24}$ and $YbRh_3Si_7$ indicate anisotropic susceptibility and field-dependent magnetization for both compounds. No apparent magnetic ordering was observed in $Yb_4Ni_9Al_{24}$ down to 1.8 K, whereas the $YbRh_3Si_7$ data are consistent with a ferromagnetic component of the ground state below $\sim$ 10 K, for H $\parallel$ (ab). We are also presenting zero-field resistivity and specific heat data, based on which and $YbRh_3Si_7$ can be classified as new stoichiometric heavy fermion compounds.

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