Magic numbers, defining closed shells for stable nuclei, have been reexamined in radioactive nuclei where the unbalanced proton-to-neutron ratio questions the persistence or evolution of the established shell gaps. $^{78}\text{Ni}$, with 28 protons and 50 neutrons, provides a unique testbed to investigate the persistence of those magic numbers for very neutron-rich nuclei. We will report on the first $\gamma$ in-beam spectroscopy measurement of $^{78}\text{Ni}$ performed at the RIBF facility (Wako, Japan). This experiment combined the MINOS device, a thick liquid hydrogen target surrounded by a proton tracker, with the DALI2 $\gamma$-ray array, in order to measure the first excited states of $^{78}\text{Ni}$ from one- and two-proton knockout reactions.