We report on progress in developing a balloon-launched, antideuteron-based search for dark matter. The General Antiparticle Spectrometer experiment (GAPS) utilizes signatures generated in the radiative decay and annihilation of exotic atoms produced by the capture of antideuterons. The antideuterons are a product of WIMP-WIMP annihilation in the galactic halo. The signature of antideuteron capture is not easily confounded with potential background sources. In addition, the primary antideuteron flux from dark matter is substantially larger than the cosmic-ray induced antideuteron flux. We discuss the current detection scheme, recent developments to improve this approach, and the status of hardware development. The status of our prototype balloon experiment – pGAPS – to be launched next year is briefly mentioned. The anticipated scientific sensitivity of the full scale dark matter experiment – bGAPS – will also be presented.