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Mass-7 destruction through $^7Be + d$ and $^7Li + d$ reactions, studied with ANASEN.[1] NABIN RIJAL, INGO WIEDENHOVER, L.T. BABY, M. ANASTASIOU, J.J. PARKER, Florida State Univ, J.C. BLACKMON, K.T. MACON, D.S. GONZALEZ , Louisiana State University, E. KOSHCHIY, G. ROGACHEV, Texas AM University, J. BELARGE, A. KUCHERA, National Superconducting Cyclotron Lab, MSU — The astrophysically observed amount of ^7Li is only 25%-33% of the one predicted by current models of Standard Big Bang Nucleosynthesis(SBBN). However, nuclear reactions between $^7Be + d$ are not well constrained experimentally and can destroy a good fraction of mass-7 nuclei under the conditions of SBBN. At the FSU accelerator laboratory, we performed a measurement of reactions between a beam of the radioactive isotope ^{7}Be and the pure deuterium gas target located inside ANASEN (Array for Nuclear Astrophysics Studies with Exotic Nuclei). ANASEN is an active target detector system which tracks the charged particles between a position-sensitive proportional counter and 28 position-sensitive Silicon detectors, all backed up by CsI scintillation detectors. The experiment measures a continuous excitation function by slowing down the beam in the target gas, with a high detection efficiency for all relevant reaction channels, using single beam energy. We also performed an experiment for the mirror nuclear reaction $^7Li + d$ with ANASEN in active gas target mode. The preliminary results of these experiments along with details of ANASEN will be presented.

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