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Measurements of $^7Li + d \rightarrow n + \alpha + \alpha$ and $^7Be + d \rightarrow p + \alpha + \alpha$ nuclear reactions and their implication in the Standard Big Bang Nucleosynthesis (SBBN)[1] NABIN RIJAL, I. WIEDENHOVER, L.T. BABY, J. BELARGE, S. KUVIN, Florida State University, J.C. BLACKMON, K.T. MACON, M. MATOS, Louisiana State University, E. KOSCHIY, G. ROGACHEV, Cyclotron Laboratory, Texas A&M University — Current models of SBBN predict 3-4 times more ^7Li than observed. The nuclear reaction $^7Be + d \rightarrow p + \alpha + \alpha$ at energies relevant to SBBN, could destroy a fraction of mass-7 nuclei. We investigate the $^7Be + d$ reaction at SBBN energies using a radioactive ^7Be beam and deuterium gas target inside ANASEN (Array for Nuclear Astrophysics Studies with Exotic Nuclei). ANASEN is an active target detector system which tracks the charged particles using a position sensitive proportional counter and 24-SX3 and 4-QQQ position sensitive Silicon detectors, all backed up by CsI detectors. The experiment measures a continuous excitation function by slowing down the beam in the target gas down to zero energy. Our set-up provides a high detection efficiency for all relevant reaction channels. We also performed an experiment for the mirror nuclear reaction $^7Li + d \rightarrow n + \alpha + \alpha$ with ANASEN in solid target mode using CD_2 target and a neutron detectors wall. The results of the experiment along with details of ANASEN and plans for the $^7Be + d$ experiment using ANASEN in gas target mode will be presented.

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