Rare Beam Production below the Fermi Energy at Texas A&M. *

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The possibility of rare isotope production around and below the Fermi energy regime is investigated using the MARS recoil separator at TAMU. The reaction of 20 MeV/nucleon ^{78}Kr on ^{27}Al is employed for the production of proton rich nuclides (especially N=Z). For neutron rich nuclides, the reaction of 20 MeV/nucleon ^{86}Kr on ^{64}Ni is utilized. In addition, the fission of ^{238}U projectiles at 10 MeV/nucleon following interaction with a ^{64}Ni target is explored as a source of extremely neutron-rich nuclei. The experimental results on rates of rare isotopes will be presented and compared to results of reaction simulations. Apart from in-flight possibilities, the option of utilizing such reactions (in normal or inverse kinematics) at these or lower energies for rare isotope production in ISOL-based facilities will be discussed. Finally, possible application of such reactions in current plans of ISOL-type rare beam production at TAMU will be mentioned.

*This work was supported in part by the NSF through grant No. PHY-9457376, the Robert A. Welch Foundation through grant No. A-1266, and the Department of Energy through grant No. DE-FG03-93ER40773.