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Study of the ^{13}C(d,$n_{0,1}$)^{14}N reaction below E_{cm} = 400 keV ERIC CLINTON, M.W. AHMED, S.S. HENSHAW, B.A. PERDUE, Duke/Triangle Universities Nuclear Laboratory, P.N. SEO, TUNL, UConn, and UMass Amherst, S. STAVE, H.R. WELLER, Duke/Triangle Universities Nuclear Laboratory, P.P. MARTEL, University of Massachusetts Amherst, R.H. FRANCE III, Georgia College & State University, R.M. PRIOR, M.C. SPRAKER, North Georgia College & State University — Several poorly understood reactions may contribute to heavy element inhomogeneous nucleosynthesis. Among these reactions, ^{13}C(d,n) has been studied in order to better understand the dynamics of this reaction and the proper way to extrapolate its S-factor. We have made detailed measurements of the angular distributions of the cross sections and the vector analyzing power for the n_0 and the n_1 reaction groups in the E_{cm} range from 250 to 400 keV. The atomic beam polarized ion source and the TUNL mini-tandem supplied polarized deuterium beams which struck a thick, enriched ^{13}C target. Nine organic liquid scintillator (BCI-501) neutron detectors were placed at forward and backwards angles. Angular coverage was from 0° to 158° with two detectors at ± 90° to control systematic effects. The data will be compared to the predictions of the direct reaction model.

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