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Measured 19F(α ,n) with VANDLE for Nuclear Safeguards¹ WILLIAM PETERS, Univ. of Tenn. & ORNL, R.C.C. CLEMENT, US Air Force, M.S. SMITH, S. PAIN, M. FEBBRARO, S. PITTMAN, ORNL, S. THOM-SPON, M. GRINDER, INL, J.A. CIZEWSKI, C. REINGOLD, B. MANNING, S. BURCHER, Rutgers, D.W. BARDAYAN, W.-P. TAN, E. STECH, M.K. SMITH, R. AVETISYAN, A. GYURJINYAN, Notre Dame, M. LOWE, Univ. of Wisc. LaCrosse, S. ILYUSHKIN, Col. Sch. of Mines, R. GRZYWACZ, M. MADURGA, S.V. PAULAUSKAS, S.Z. TAYLOR, K. SMITH, Univ. of Tenn. — One of the most promising non-destructive assay (NDA) methods to monitor UF6 canisters consists of measuring gross neutron rates induced by uranium-decay alpha particles reacting with the fluorine and emitting a neutron. This method currently lacks reliable nuclear data on the ${}^{19}F(\alpha,n)$ reaction cross section to determine an accurate neutron yield rate for a given sample of UF6. We have measured the cross section and coincident neutron spectrum for the alpha-decay energy range using the VANDLE system. This experiment had two parts: first at Notre Dame with a LaF3 target and and a pulsed alpha-particle beam, and second at ORNL with a windowless He-gas target and a 19F beam. The motivation for this measurement and cross section results will be presented.

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