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Muon-Induced Production of ^{16}N NOAH OBLATH, University of Washington, SUDBURY NEUTRINO OBSERVATORY COLLABORATION — The Sudbury Neutrino Observatory (SNO) is a 1000-tonne heavy-water Cherenkov neutrino detector located in Sudbury, Ontario, Canada. Cosmic-ray muons pass through SNO at a rate of approximately 2.6 per hour, and they are easily vetoed. However, muon-induced spallation products with long lifetimes represent a background that must be considered. In particular, ^{16}N can be produced by (n,p) and (μ^-,ν_μ) reactions on ^{16}O. The β^- decay of any ^{16}N ($T_{1/2} = 7.13$ s, $Q = 10.44$ MeV) in the heavy water would represent an important background in SNO's neutrino measurements. We have investigated the production of ^{16}N by muons in the salt phase of the SNO experiment and found an initial ^{16}N activity in the 391-day salt-phase dataset consistent with zero: -0.97 ± 1.3 kton^{-1}. The result will be compared with theoretical expectations.

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