The novel radical intermediate HNNO has been detected at 12 K via FTIR spectroscopy. This species is formed from the reaction of NH (X $^3\Sigma^+$) with NO in solid Xe at temperatures near 40 K. The reaction is essentially activationless. The intermediate is stable indefinitely at 12 K in the dark, but visible light induces photodestruction at wavelengths as long as 550 nm. Evidence from these experiments on the thermodynamic stability of HNNO and its isomers and a comparison with theoretical predictions will be presented. This radical has been previously postulated to be an intermediate in schemes for ammonia oxidation and NOx removal from flue gases.