Peroxyacetyl nitrate, commonly called PAN, is an important reservoir of nitrogen oxides. Peroxyacetyl nitrate is formed by reaction of partially oxidized hydrocarbons (oxidized to the peroxyacetyl radical) with NO. This reaction is reversible, thus PAN can be a source of NO to regions remote from pollution sources. The strong temperature dependence of the PAN dissociation reaction makes PAN stable with respect to thermal decomposition at low temperatures. The lifetime with respect to thermal dissociation is 1 month at -10°C and 1 year at -25°C. Therefore, other losses of PAN can be the major sink of PAN in regions where the temperature is low. One of these other losses is photolysis of PAN. Photolysis of PAN can produce two major products, NO and NO. We have measured the production of NO via pulsed laser photolysis with detection of NO via cavity ring-down spectroscopy. Atmospheric implications of these measurements will be discussed.