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Fission xenon in trinities from the first nuclear test ALEXANDER MESHIK, OLGA PRAVDIVTSEVA, CHARLES HOHENBERG, Washington Univ. — Trinitites, greenish glassy remnants found in the crater of the first nuclear test, refer to the molten material of the desert where the Trinity test was conducted. Recently the Los Alamos Lab[1] suggested that the sand was first vaporized by the fireball and then precipitated onto a cooler desert surface forming trinitites. We measured the Xe mass-spectra during stepped pyrolysis of two trinitites and found an unusual Xe isotopic structure, dominated by ^{132}Xe and ^{131}Xe compared to the nominal fission yield spectra, which cannot be due to n-capture or any other nuclear processes. This structure is caused by the chemical separation of the immediate neutron-rich fission products, a process similar to CFF observed in the Oklo natural reactor[2]. When quantitatively applied to our observations it suggests that 17 min after the test one of the samples had a temperature of 1390^{o}C, while 5 min after the test the other was at 1320^{o}C. These results contribute to a reconstruction of the cooling history of the trinities and a demonstration of which formation scenario is the more likely. [1]V. Montoya et al, Denver X-ray Conf. (2007), [2]A. Meshik, C. Hohenberg and O. Pravdivtseva, PRL 93, 182302 (2004).

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