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Estimation of explosion energy yield at Chernobyl NPP accident

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About the physical nature of Chernobyl NPP accident hitherto does not exist the generally accepted version. The main version is that this explosion has chemical nature - blast of the hydrogen formed in reactor under high temperature as a result of reactions of water with zirconium and other elements. The alternative version is based on admission of nuclear mechanism of large instant energy yield. The arguments in favor of nucleic nature of the explosion for the first time were received by specialists of the Khlopin Radium Institute on the base of atmospheric xenon activity measurement and isomeric 133Xe / 133mXe ratio definition. These data were received during the period since April 22 to 6 May of 1986 by means of ã-spectrometric analysis of xenon samples, prepared from the industrial krypton-xenon mix, produced at the Cherepovets Metallurgical Plant. Arrival of the air masses polluted by the accidental release of Ch. NPP in Cherepovetc region was observed during the period since April 28 to 2 May. Received values of 133Xe and 133mXe isomeric relations are enough homogeneous to allow the determination of its average value (22.4 ś 3.4) recalculated to the date of accident and to use it for estimation of explosive energy yield value. For this purpose the special computer program evaluating the values of these rations taking into account the reactor power change before damage and different contribution of explosive energy yield. It should be emphasize that carried out estimations do not allow the receiving of the absolute value of energy yield. This approach allows only the estimation of its relative value normalized by mean value of reactor power in period before the accident. Obtained estimation of explosive energy yield gives value of about 105 -106 Joule/Watt. If formally refer this result to nominal power of the reactor (before its reductions) that brings value of absolute explosive energy yield about 3 1014 - 3

1015 Joule (70 - 700 kt) that not comparable with actual scale of NPP destruction. This result allows to suppose the extremely unhomogeneous distribution of the neutron flux in active zone at the moment of the explosion and to estimate the part of fuel involved in explosive process as 0.01-0.1 % of the total fuel.