Technetium from nuclear fuel of fast reactors contains several percents of Tc-98 isotope. Tc-98 has low cross section of interaction with thermal neutrons and its separation from Ru after transmutation is more simple than the separation from Tc-99 before irradiation. The relative Tc-98 isotope quantity will increase in the case of technetium target recycling. If the future of nuclear energetics is fast reactors then Tc-99 liquidation during one irradiation cycle is also reason for the separation of Tc-99 and Tc-98 with the aim of their utilization by different methods.

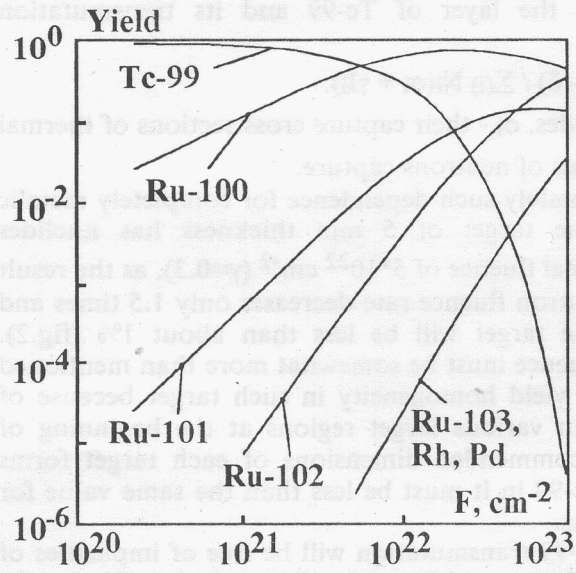

Fig.1. Dynamics of Tc-99 transmutation.

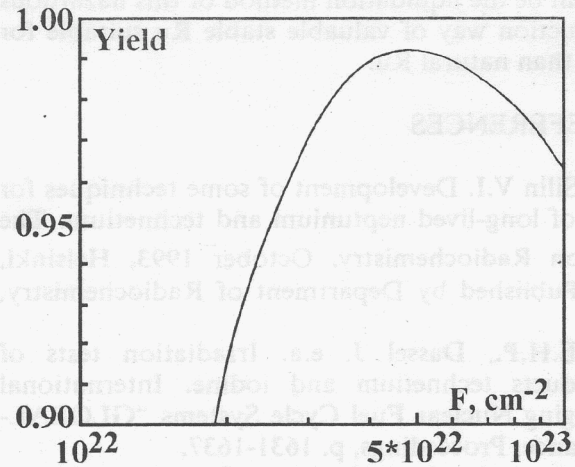

Fig.2. Accumulation of stable Ru.

Contemporary power reactors are not suitable for Tc-99 transmutation in consequence of its low liquidation rate and a necessity of frequent target recycling. This fact was confirmed by the irradiation of Tc-99 target in research Petten reactor (HFR) with thermal neutron fluence rate of $1.5*10^{14}$ cm^{-2}*s^{-1} (these conditions are like ones in power reactors) during 193 days (thermal neutron fluence was $2.5*10^{21}$ cm^{-2}, total neutron fluence was $1.5*10^{22}$ cm^{-2}), where it was achieved Tc-99 burn-up of about 5% [2]. Substantial Tc-99 point-target burn-up (70% and more) could be achieved after its irradiation by thermal neutron fluence of about 10^{22} cm^{-2} (γ=0.3). Hence thermal neutron fluence rate of more 10^{15} cm^{-2}*s^{-1} is needed for target unloading after approximately 3 years of its irradiation that corresponds usual time of nuclear fuel unloading. Such neutron fluence rate is more than this value in power reactors. Therefore special devices and conditions which give high thermal neutron fluence rate are needed for rapid Tc-99 transmutation.

One of minor actinides transmutation methods requires thermal neutron fluence rate of more than $5*10^{15}$ cm^{-2}*s^{-1}. In this case their significant burn-up and radiotoxity decrease 10^2 and more times will arrive after irradiation by the