Comments on "Advanced Thorium Cycles in LWRs and HWRs"

INFCE/DEP/WG.8/38
1. The Seed Blanket Close Packed Heavy Water Breeder

Though the paper makes it clear that the basic idea involved is to operate a seed blanket core with very low atom ratio of moderator to fuel, the actual value of this ratio is not mentioned. From the figure that is included in the paper it seems that in order to get reasonably high breeding gain, the moderator to fuel atom ratio should be around 1. However, if the volume ratio of the moderator to fuel is about 2, then the atom ratio of moderator to fuel will be about 4. From the heat transfer point of view there will be need to have a minimum amount of heavy water per unit volume of fuel and this minimum value may be high enough to make the atom ratio of moderator to fuel too high for permitting satisfactorily high breeding potential. A detailed description of the lattice used, the neutron spectrum existing in the reactor, the heat removal rate and a description of the neutronics calculations method employed in the analysis may be very useful.

2. The Self-Induced Thorium Cycle in CANDU Type Reactors.

There is no description of the core or the fuel management scheme, nor are any references given. Neither is there any description of the characteristics which make the fuel cycle a "self-induced" one. The report mentions that the transition to the "self-induced" stage takes only five years, and that a new technique that has been found recently reduces the change over
period to about two years. There is no description at all of the "new technique" that has been developed which reduces the transition period from 5 years to 2 years. Very little detailed information has been given on this system which presumably needs only a small fraction of the natural uranium that is needed to run the reactor on the conventional natural uranium fuel cycle without any fuel recycling. Considering the fact that this is accomplished without any fuel reprocessing whatsoever, it is an interesting concept for which a detailed description would be welcome.