pumps, as well as to provide the intense magnetic fields for the fusion reactor.

The following equations illustrate the reactions taking place in this system which breed additional tritium in the lithium blanket.

$$^{6}_{3}Li + ^{1}_{0}n \longrightarrow ^{3}_{1}T + ^{4}_{2}He + 4.8\ MeV \qquad (1)$$

$$^{7}_{3}Li + ^{1}_{0}n \longrightarrow ^{3}_{1}T + ^{4}_{2}He + ^{1}_{0}n - 2.5\ MeV \qquad (2)$$

This tritium becomes a fuel to feed the same or another fusion reactor. Calculations indicate that much more tritium is produced than is consumed; so a very short doubling time can be predicted for this fuel cycle.

Let me bring out at this point that the fusion reactor I have just described, as well as other types contemplated, offers some remarkable environmental benefits. Briefly they are:

1. Fusion power plants will not produce large quantities of radioactive wastes. While the internal structure of a fusion reactor will become highly radioactive, the waste products are not radioactive. (I should stress here that the tritium produced in a D–T system is *not* a waste: it is a fuel that is fed directly back into the system.)
2. Fusion power plants operate at high conversion efficiencies, of the order of 60% or higher; therefore they will greatly reduce problems associated with waste heat.
3. Fusion power plants are inherently very safe. Thus we may see the day when such plants are installed in the center of urban complexes, reducing the costs and other disadvantages associated with long-distance power transmission and perhaps making use of the waste heat for space heating and low-temperature industrial processes.
4. Fusion power plants practically eliminate the consideration of the safeguarding of weapons-grade material from diversion for subversive purposes. A plant operating on the D–^{3}He cycle would eliminate the problem altogether.
5. Fusion power plants do not present an after-heat problem in the event of a cooling failure.

Before describing the fusion plant using the D–T cycle, I mentioned the possible use also of the D–D and D–^{3}He cycles for fusion reactors.