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recycling of plutonium as fuel would save only about 2 per cent of the expected cost of electricity from nuclear plants, a study by the Energy Research and Development Administration has concluded. The implication of this finding in a report designated ERDA 76-121, is that civilian plutonium recycling...is not crucial to the economic acceptability of nuclear power."

The *Times* goes on to note the Oct. 28 statement by President Ford "that delayed a United States commitment to plutonium recycling until potential risks of diverting plutonium to military uses can be resolved."

The only piece of information from the ERDA study that the *Times* accurately reports is that plutonium recycling "would reduce United States demand for uranium ore...from 1.5 million to 1.1 million tons, between now and the year 2000."

Lying With Statistics

The 2 per cent figure quoted by the *Times* is misleading on two counts. First, it is a relative figure for the savings accrued from utilizing plutonium recycling for the *total* cost of electricity. In absolute terms, the ERDA report says this net saving is $16.6 billion, compared to a total cost of more than $830 billion — a substantial amount of money by any count. The figure quoted is, moreover, a "base line" case, which, the ERDA study cautions, does not take into account the full economic costs that would occur if uranium production would have to be increased from 1.1 to 1.5 million tons without recycling. In actuality, the total savings gained by utilizing the plutonium recycling in terms of greater energy growth would quickly soar to more than $48 billion.

Contrary to the *New York Times*' prattle, the "implication of this finding" is not the conclusion it prints. In fact, the source of that "finding" is not difficult to determine — the Trilateral Commission. As reported in the Japanese press, the January meeting of the Trilateral Commission in Tokyo decided that "plutonium recycling" is not economically important, and should be delayed because of "proliferation problems." As the Trilateral Commission notes in its unpublished study on reordering the world, without plutonium recycling world commercial nuclear fuel will remain under the thumb of

The Advantage Of Recycling Plutonium For Nuclear Power

Existing nuclear fission power reactors are based on the utilization of the uranium isotope 235. When present in sufficient quantity this isotope of uranium will support a chain reaction of "fissuring" of the atomic nuclei that generates large amounts of energy. In naturally occuring uranium, less than 1 percent is the isotope 235 and more than 99 percent is the isotope 238, which does not fissure under normal chain reaction conditions.

In order to utilize uranium in the currently developed, economical power reactors, the so-called Light Water Reactors (both the pressurized and boiling water designs), the proportion of the 235 isotope must be increased. This is accomplished by very expensive and large isotope enrichment plants that were first constructed for the production of nuclear weapons material. It should be noted, however, that the degree of enrichment needed for power reactor fuel — from less than 1 percent to 3 percent — is much less than the 100 percent needed for bomb material.

As the uranium 235 is burned up in Light Water Reactors, a small portion of the uranium 238 captures neutrons produced by the fission of the 235 and is transmuted into plutonium 239. Plutonium 239 can also sustain a fission chain reaction and is used in nuclear weapons. Since plutonium 239 is a different chemical element, it can be separated from the spent fuel of a nuclear power reactor in a much easier and cheaper fashion than that of isotope separation.

In Light Water Fission Reactors the amount of plutonium produced through transmutation is equal to about one-third of the uranium 235 that is fissured during the operation of the reactor. Since plutonium is roughly equivalent to uranium 235 as a source of nuclear energy, this plutonium in spent nuclear fission fuel represents a substantial potential energy resource even today — if the facilities for chemically separating and fabricating plutonium nuclear fuel are built. The technology for doing this has existed and has been utilized in the nuclear weapons industry for more than three decades.

Furthermore, with the development of the Fast Fission Breeder Reactor, for which several prototypes already exist, the ratio of new plutonium nuclear fuel produced to uranium 235 utilized can be increased to *more than 100 per cent*. This would convert uranium from a marginal energy resource — equal to a fraction of the world's potential oil resources — into a major energy resource for electrical power production.

More significantly, using nuclear fusion neutrons to produce plutonium (a fusion breeder), this potential energy source could be developed as rapidly as desired. The fission breeder, in contrast, because of limited breeding rates, can increase the supply of total fuel only by a factor of approximately 7 percent per annum at best. It should be noted that existing fusion experiments have attained the necessary physical conditions for operation of fusion breeders, and that this system could be developed much more quickly from an engineering, economic, and scientific standpoint, than that of a pure fusion system.

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