

power density. Its use of higher-energy neutrons, called "fast" neutrons, permits a much more efficient fission process for electricity generation. Second, the breeder reactor is able to actually create or "breed" new fissionable fuel. What distinguishes the breeder from other reactors that also convert fission products back into fissionable fuel is that the breeder reactor actually "breeds" more fissionable fuel than it burns up in the course of its operations.

In the Clinch River design, the breeder's fast neutrons provide a large, high-energy neutron flux that escapes the core region and is captured in an adjacent "breeding blanket" composed of uranium-238, which makes up 99 percent of uranium ore reserves. The interaction of fast neutrons with U-238 produces Pu-239, the excellent fissionable fuel that no longer occurs naturally.

Thus, one breeder reactor, producing more fuel than it consumes, can not only keep itself going but provide enough fuel for another breeder or light water reactor. In some second or third generation designs, one breeder will produce enough fuel to fire three or even four additional reactors. On the basis of existing reserves of naturally occurring U-235, the breeder reactor will increase available nuclear fuel supplies by 70 times!

The importance of breeder technology to a world confronting limited uranium supplies could not be more obvious.

### Weapons proliferation

The nonproliferation argument has been used by the National Security Council to prevent export of even light water reactors to Third World nations. Four percent of their spent fuel is Pu-239, the material used today in nuclear bombs.

The possibility of plutonium diversion to weapons applications is very small, because such diversion is extremely uneconomical in light water or breeder reactors *that have not been designed to produce bomb material.*

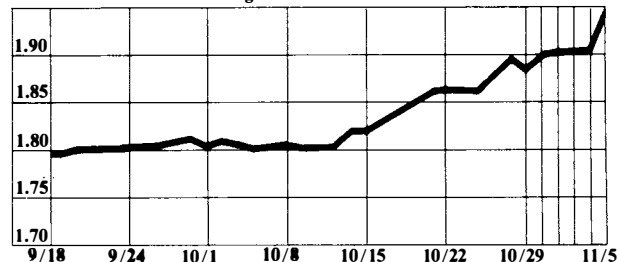
An enormous outlay of funds, skilled manpower, and special equipment is required. The radioactive plutonium-bearing fuel can only be handled by remote operations in sealed and shielded cells and containers. The chemical processing operation to extract Pu-239 would require skill in the remote-operation chemical processing technique that produces a plutonium oxide or nitrate compound.

Since this is well known among specialists, the "nuclear proliferation" argument against nuclear exports and breeder development is raised principally by those who either seek to prevent underdeveloped nations from obtaining nuclear technology for peaceful economic development, or to undermine the export basis of advanced nations' nuclear industries.

## Currency Rates

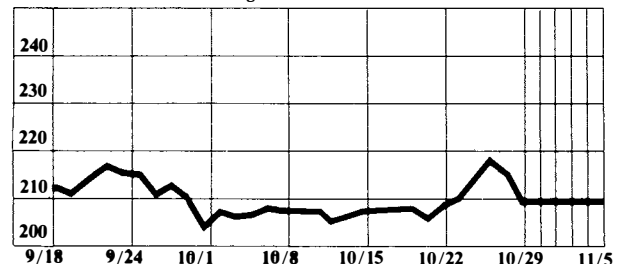
### The dollar in deutschemarks

New York late afternoon fixing



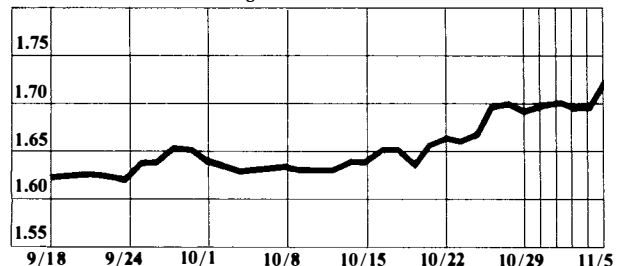
### The dollar in yen

New York late afternoon fixing



### The dollar in Swiss francs

New York late afternoon fixing



### The British pound in dollars

New York late afternoon fixing

