Comments on the Misguided Termination of the IFR Project

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STATED REASONS FOR TERMINATING THE IFR PROGRAM

The Integral Fast Reactor program is inconsistent with the President's non-proliferation priorities for three basic reasons.

(1) First, employing the reprocessing technology associated with the IFR would require that the U.S separate plutonium from spent nuclear fuel, an activity we are not now engaged in and which we seek to discourage worldwide.

(2) Second, if the IFR were employed as a weapon-grade plutonium burner it is economically essential to produce power at the same time. This civil use of plutonium is an action the administration is seeking to reduce around the globe.

(3) Finally, the IFR was designed as a breeder reactor and can be used in this mode to produce more plutonium than it consumes. Continued pursuit of a breeder technology would send the wrong signal to the world and undercut our administration's desire to limit the stockpiling of plutonium for civil nuclear programs.

From the Prepared Remarks of Secretary of Energy Hazel R. O'Leary to the Lawyers Alliance for World Security, March 15, 1994

The box quotes the three official reasons for ending the development of the Integral Fast Reactor when it was on the verge of a successful conclusion. All three reasons are based on misconceptions.

(1) "*The IFR would require that the U.S separate plutonium from spent nuclear fuel.*" That is incorrect. The process involves chemical separation of *uranium*, but in dealing with spent fuel it does not and cannot separate plutonium completely from uranium, nor from the radioactive actinides americium and curium -- all of which are contaminants that render the plutonium unusable for weapons. To get plutonium of the chemical purity needed for weapons, further processing would be required -- an activity easily detected by on-site inspectors. Shipment off-site for further processing is also easily detected, since there are only special occasions when any plutonium would legitimately be shipped out of the plant. (Such additional processing still would not produce plutonium of the isotopic purity demanded by weapons producers.)

It is PUREX (aqueous) reprocessing, needed for cycling plutonium back into thermal reactors, that produces chemically pure plutonium. PUREX was developed for the weapons program, and was the focus of the Ford-Carter ban of "reprocessing."

(2a) "*If the IFR were employed as a weapon-grade plutonium burner it is economically essential to produce power at the same time.*" This is a strange one. Why would it be immoral to produce power while getting rid of weapons-grade plutonium? (Anyway, the subsequent plan to go to MOX burning for weapons-plutonium disposal does just that, although far less efficiently.)

(2b) "*This civil use of plutonium is an action the administration is seeking to reduce around the globe.*" First, plutonium is already in use, since some 30% of the power from a thermal reactor comes from burning the plutonium that is inevitably bred in such reactors. The widespread use of IFRs would eventually eliminate the global inventories of plutonium (both reactor-grade and excess weapons-grade), and also reduce the commercial shipping of plutonium to almost nothing. Second, as is even more evident in 2008 than it was in 1994, the use of plutonium is inexorably increasing around the globe, and the use of proliferation-proof forms of plutonium should be encouraged.

(3) "The IFR was designed as a breeder reactor and can be used in this mode to produce more plutonium than it consumes." True, but beside the point. First, today's thermal reactors breed much more plutonium than they consume -- they start with heavy metal that is pure uranium and discharge heavy metal whose fissile content is some 60% plutonium. Second, much IFR design effort went into optimizing its ability to *burn* excess plutonium. Operation as a breeder will perhaps not be needed for decades. Meanwhile, such operation would easily be detected by inspectors.

December 9, 2008