Con-Fusion:

Confounding Fusion Weapons with Fusion Energy

Robert Alvarez, February 15, 2014.

Recently, national media attention was given to the publication of a paper by scientists at the Lawrence-Livermore National Laboratory (LLNL) announcing that fusion of hydrogen atoms was achieved involving lasers at the National Ignition Facility (NIF).

NIF is a major project of the U.S. nuclear weapons complex managed by the National Nuclear Security Administration within the Energy Department. Based on the concept of inertial confinement fusion (ICF), the NIF was established with two major goals:

(1) to preserve and advance the intellectual capability in service to the U.S. nuclear arsenal (Stockpile Stewardship); and

(2) to develop "pure fusion" nuclear weapons that will not require plutonium "triggers" to ignite a thermonuclear detonation.

The latter is a "holy grail" for nuclear weaponeers at LLNL.

Having worked in the Energy Department at the time when NIF was launched, I know – and it was well understood – that this project was part of the political price for support from LLNL of the Comprehensive Test Ban Treaty.

To achieve its primary goal, NIF – a football-stadium-sized project – is meant to generate extreme pressure and heat, comparable to that created by a nuclear fission weapon, to yield a very small-scale thermonuclear explosion. This is to be done by focusing 192 powerful lasers on a target of millimeter dimensions containing a gas mixture of stable hydrogen and tritium (H-3- a radioactive form of hydrogen).

NIF's entire budget comes from the "Weapons Activities" account of the DOE budget. DOE/NNSA has been spending several hundreds-of-millions of dollars per year for the past 20 years on this project. Currently, NIF is spending $400 million (in FY2014).

When it started to experience costly and time consuming set-backs, the NIF “became” a technology to provide an inexhaustible supply of energy. The recent news story announcing that nuclear fusion was achieved for a very brief time is an example of how LLNL has changed the goal posts of this troubled project from demonstrating the viability of ICF [for weapons purposes] to pulling off a "credible" experiment [for peaceful purposes].

The first actual ignition experiment – now being touted as a "breakthrough" – is actually ten years behind schedule.

It's no coincidence that publication and announcement of this experiment was made public around the time that the U.S. Congress has to approve the budget for NIF, now estimated to have a current total cost of about $7 billion.

It's also no coincidence that the promise of NIF “to solve our energy problems” began to be touted around the time its budget came under closer critical scrutiny. Even pronuclear advocates, such as Rod Adams, scoff at the idea of NIF serving this purpose.

Not much was said [in the news reports] about the fact that the experiment took a very much larger amount of energy than it produced. As pointed out by Arjun Makahijani, who has a PhD in fusion engineering: "you need an improvement in performance of tens of thousands of times before a shot can be deemed fit for a power-producing machine."

If this project weren't wrapped around the energy "breakthrough" flag, behind the protective walls of the nuclear weapons budget, it probably wouldn't have survived as long as it has.

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