Nearly a decade after its originally scheduled completion and with a cost overrun of more than 400%, the National Ignition Facility at Lawrence Livermore National Laboratory (LLNL) in California is still not fully functional. At the same time, NIF has not achieved several of its highly promoted goals, particularly attaining thermonuclear ignition and producing more energy output than was put in.

**Original Proposal**

**Purpose/Justification:** The LLNL Institutional Plan for fiscal years 1994-1999 claimed that NIF's mission was three-fold. It was intended to: (1) push the envelope on nuclear weapons design; (2) provide additional capability for nuclear weapon effects tests; and (3) develop inertial fusion energy. The plan states that these applications require achieving ignition and propagating thermonuclear fusion burn, or gain.

**Original Cost:** According to the Institutional Plan, NIF would cost $677 million. After the conceptual design was completed, the Department of Energy (DOE) cost estimate rose to $900 million. NIF went to Congress with a price tag of $1 billion. By 1996, the budget was $1.2 billion. In 1998, it was pegged at $1.7 billion. In 1999, a General Accounting Office (GAO) investigation estimated NIF's construction and construction related research and development costs at $4 billion. In 2000, NIF was "rebaselined" by DOE.

**Original Completion Date:** A 1996 Environmental Impact Statement gave 2002/2003 as the completion date for NIF. After the "rebaseline" in 2000, the date shifted to 2008. In 2009, NIF construction was declared "complete." In 2010, target blast shielding along with other construction-related equipment was installed. NIF was to have achieved thermonuclear "ignition" one to two years after completion of construction. Following the "rebaseline" Congress was promised ignition would occur in fiscal year 2010.

**Current Status**

**Purpose/Justification:** NIF has been sold as all things to all people. To Governor Arnold Schwarzenegger in 2010, NIF was promoted as a green energy machine. To Congress, it is sold as a necessary stockpile stewardship tool, although the former head of DOE's stockpile surveillance and evaluation program, Robert Peurifoy, called it "worthless" for that task.

**Current Cost:** NIF construction costs are conservatively estimated at $7 billion to date. According to the National Nuclear Security Administration (NNSA) FY2011 Stockpile Stewardship and Management Plan, NIF's out-year costs will continue at nearly $500 million annually. Additionally, millions of dollars each year are hidden by charging NIF overhead costs to other projects. A recent review found that LLNL management shifted $80 million in NIF overhead to other programs in FY2010.

**Current Completion Date:** Construction is not truly complete. Some equipment remains uninstalled, and some is yet to be developed for use in the NIF project. Diagnostic equipment, ignition targets and other key items have unresolved technical problems. There is currently no date certain for ignition. NNSA Administrator D'Agostino testified before Congress that the agency would run a "credible ignition experiment" before the last fiscal year ended on Sept. 30, 2010. Only a week later, an NNSA press release disclosed that the energy of the experiment delivered 1 megajoule, not the 1.8 megajoules that NIF was designed to deliver. The "target" capsule was plastic, and therefore not likely to be capable of ignition. It was filled with a mix of tritium, hydrogen, and deuterium, not the appropriate fuel for ignition.
What is the Problem?

As a "new nuclear weapons" design tool, NIF takes the nation in a dangerous direction. NIF is neither particularly well-suited nor needed to maintain the safety and reliability of the nuclear weapons stockpile, according to many nuclear weapons experts. Instead of attracting talent to LLNL, top-notch employees have fled NIF due in part to its overselling. As a scientific achievement, NIF's likelihood of achieving "ignition" and "gain" (more energy out than was put in) is becoming vanishingly small. At an estimated $500 million each year into the future, NIF continues to pose a budget-busting risk. Its non-proliferation dangers will exist as long as NIF continues as a NNSA nuclear weapons activity, with 80% of its experiments classified. NNSA's recent decision to use plutonium in experiments in NIF along with fusion fuel increases its nuclear proliferation risks dramatically. NIF also presents a health and environmental threat to workers and local community members. According to the latest LLNL Site-wide Environmental Impact Statement, the primary impacts of plutonium and other fissile materials use at NIF will be to increase its output of nuclear waste by 50% and worker exposure to radiation about three-fold.

Is There an Alternative?

Since NIF is not necessary for any of its alleged uses, a number of options exist. Probably the best alternative is to take NIF out of NNSA, place it in the DOE Office of Science or another agency, forego classified experiments and provide a modest operating budget. Then any utility NIF might have for earth sciences, astrophysics or other disciplines could be accomplished, without spending hundreds of millions unnecessarily each year and adding to environmental, health and proliferation dangers. Since no amount of money or change in management is guaranteed to achieve ignition at NIF, another option would be simply to pull the plug. Congress should consider this option in light of current financial constraints.

RECOMMENDATIONS:

- Congress should insist that LLNL management cease the illegal practice of shifting NIF's overhead costs onto other programs.
- Congress should request from NNSA an accounting of the costs of using plutonium and other fissile materials in NIF, and then de-fund those activities.
- The Administration and Congress need to reevaluate the NIF project to reduce or eliminate its excessive risks and costs
- NIF oversight should be transferred to DOE's Office of Science.

ananuclear.org