

**NRDC Comments  
on  
The National Ignition Facility (NIF)  
and the  
Issue of Nonproliferation  
(August 23, 1995 Draft Study)**

by

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“The National Ignition Facility (NIF) and the Issue of Nonproliferation” draft study prepared by the U.S. Department of Energy, Office of Nonproliferation, August 23, 1995 [hereafter “Draft NIF Report”] is inadequate in its treatment of the nonproliferation issues raised by the proposed construction and operation of the NIF facility. Major deficiencies are identified below.

**1. The NIF May Fail to Ignite.** The Draft NIF Report is written as if there were no unresolved technical issues that could affect whether NIF meets its performance goals. For example, under ‘Background,’ the report states that NIF “is expected to reach the goal of ICF capsule ignition.” (p. 3; see also p. 10) However, there are still unresolved issues regarding whether time dependent asymmetries of the energy absorbed by the DT capsules, within the proposed gas-filled hohlraum targets, will be too large to obtain ignition with NIF.

**2. The Draft NIF Report fails to explain fully the primary objectives of NIF and the Stockpile Stewardship Program.** The “Background” section states that

As part of a broader Science-Based Stockpile Stewardship program, a primary interest of the Department of Energy in NIF is to preserve the core intellectual and technical competencies of the U.S. in nuclear weapons scientists as directed by the President during a nuclear test ban regime and without new weapons development and production.

This cadre of experts and their research agenda are not being retained for their own sake. There is an underlying purpose that is not identified or explored in the Draft NIF Report. The report fails to spell out explicitly that one of the objectives of the Science-Based Stockpile Stewardship program is for the United States to retain the capability to resume nuclear weapon development and testing within a specified number of years--in effect, to break out of the Comprehensive Test Ban (CTB) Treaty. Why is this good policy; for what purpose? Even if it is good policy, what is the basis for the time period adopted by the President? For how long should the U.S. retain this policy which undermines the CTB--indefinitely, forever? How does the NIF timing relate to need to retain this breakout capability? How long would it take to resume warhead modernization and testing if there were no explicit policy? How long would it take if there were no NIF? What alternative ways might the U.S. achieve the same objective? What happens if NIF does not work as expected? None of these questions are explored in the report.

**3. The Draft NIF Report fails to address adequately the vertical proliferation issue (pp. 4 and 35).** The Draft NIF Report states (p. 4) that “nuclear testing would be required to develop and place into the stockpile new warhead designs which we are confident are reliable.” While this is the current U.S. policy, it could change. Moreover, it is our

understanding that the French have a different view. One of the 6 to 8 tests of the ongoing French series of nuclear tests is a production certification test of the new TN-75 warhead; and the remaining 5-7 tests are said to be experiments designed to enable the French to introduce a new warhead for the new MSBS N5 missile without further testing--the new warhead being of the same family as the TN-75. Also, we have recently heard that consideration is being given in the U.S. to repackaging the B61 as an earth penetrator to replace the B53. What role could ICF play in a weapons program which plans to, or may, introduce a new warhead into its arsenal, where the new warhead is "of the same family" as an existing fully tested and stockpiled weapon?

Has the U.S. discussed with the French the possibility of the French conducting classified experiments on NIF? Is the U.S. assisting, or offering to assist, the French in building their own NIF-like facility (p. 34)? What assurance can be given that the French (or U.K.) experiments on NIF, or experiments on a French NIF-like facility built with U.S. support, will not be conducted for weapon development, as opposed to insuring reliability of the existing arsenal? Of course the United States "could encourage the other weapon states [like France] to seek to prevent purposeful development of advanced weapon concepts at their ICF facilities under a test ban regime," (p. 35) but **the French are planning to develop and deploy new warhead designs under the CTB.** The U.S. has been unsuccessful, if we tried, in getting the French to cancel their ongoing nuclear test series, which is being conducted primarily for nuclear warhead modernization; so why should we believe the U.S. will be able to convince the French not to use their NIF-like facility for future weapons development?

**4. The Draft NIF Report fails to address adequately the horizontal proliferation issue.** If the primary objective of NIF is to enable the U.S. to more quickly and effectively resume nuclear warhead development and testing, doesn't this same objective apply equally to non-nuclear weapon states like Japan? Wouldn't it be in the interest of some Japanese military planners to maintain a "core of intellectual and technical competencies" relevant to thermonuclear weapon research and development **without having to declare that this is a primary objective of the program?** The Draft NIF Report is simply in error to imply, as it does on p. 4, that a proliferator would have to have already developed simple fission devices before an ICF program could be of any value. The Draft NIF Report fails to address at all the value to a non-weapon state of pursuing an aggressive ICF program for the undeclared purpose of having a contingent capability to more rapidly develop thermonuclear weapons. One can take little comfort from the observation that "ICF research requires codes that have some similarities to codes used in nuclear weapons research. ... ICF targets will require more accurate computer models in some areas than those useful for weapons..." (p.19)

The NIF Report should describe in some detail how maintaining a thermonuclear design breakout capability could benefit a country such as Japan, and relate this to the report's discussion of the value to the U.S. of retaining a capability to develop quickly new nuclear weapons.

**5. The Draft NIF Report fails to adequately address the limitations on its ability to “manage the horizontal proliferation concern” (pp. 28-30).** Surely, DOE does not believe that screening procedures would prevent a country like Japan from retaining a comprehensive thermonuclear weapon design “breakout” capability by aggressively pursuing an ICF program in collaboration with the United States. Moreover, Japan maintains a similar “breakout capability” to rapidly develop fission weapon components through its civil nuclear fuel cycle activities.

What policy does the Department of Energy recommend with regard to collaboration by U.S researchers on a) ICF research projects in general, and b) NIF experiments in particular, with researchers in the following countries:

- 1) Japan,
- 2) Israel, and
- 3) India and Pakistan?

**6. The Draft NIF Report fails to adequately address whether collaboration on NIF will violate the Nuclear Non-proliferation Treaty (pp. 33-34).** The Draft Report discusses Articles IV and VI of the Nuclear Non-Proliferation Treaty (NPT) as they relate to NIF, but not Article I.

If an undeclared objective of a non-nuclear weapon state’s collaboration with the United States on ICF research is to retain a quick thermonuclear weapon design capability, is the United States “assisting ... a non-nuclear weapon state to ...acquire nuclear weapons...”? Is it DOE interpretation that this assistance is appropriate as long as the non-weapon state makes no formal declaration of a primary objective of its research program?

Under the discussion of Article IV (p. 34), the report makes the claim that “international collaboration on peaceful research is possible for approximately 80% of NIF experiments.” Peaceful research, particularly in a program supported in part to provide a breakout capability, is a function of the intent of the research effort, not defined by a percentage which simply represents how much of the ICF weapons research program the labs have convinced DOE management to declassified. Were DOE to declassify the rest of the ICF program, would it all be peaceful?

**7. Impact on the Comprehensive Test Ban Treaty (CTBT) Negotiations (pp. 31-32).** In stating that no nation has objected to the U.S. statement at the NPT Review Conference in 1975 at the time or since (p. 32), the Draft NIF Report is simply wrong. The scope language tabled by India in June 1995, (CD/NTB/WP.244) would prohibit ICF experiments on NIF by prohibiting “any release of nuclear energy caused by the assembly or compression of fissile or fusion material by chemical explosive or other means,...” We disagree with the Indian position and prefer the substitute language “by the assembly or compression of fissile or fusion material by chemical explosive or propellant,...”