

FY13 Senate Energy and Water Appropriations Subcommittee Language  
April 30, 2012

Fusion Power Associates (<http://www.fusionpower.org>)

FUSION ENERGY SCIENCES

The Committee recommends \$398,324,000 as requested for Fusion Energy Sciences. Within these funds, the Committee recommends \$150,000,000 as requested for the U.S. contribution to ITER.

Similar to the Nuclear Physics program, the Committee is concerned by the lack of strategic direction for the fusion energy program. The Committee understands that the budget request provides a \$45,000,000 increase to the U.S. ITER contribution but even with the increase, the U.S. contribution is still \$50,000,000 short of the project plan.

The Committee also understands that the increase to the U.S. contribution came at the expense of the domestic fusion program. The Committee is concerned that additional cuts to the domestic fusion energy program may undermine U.S. advances in fusion and the U.S. ability to take advantage of scientific developments of the ITER project. The Office of Science believes that it can take advantage of international programs and facilities to build and maintain U.S. expertise in fusion energy sciences. However, a February 2012 Fusion Energy Sciences Advisory Committee report cautioned that international facilities in Asia and Europe will not be operating for several more years and international collaborations cannot come at the expense of a domestic research program that can benefit from ITER.

The Committee directs the Office of Science to assess the impact to the domestic fusion energy sciences workforce and the ability of the United States to take advantage of ITER to advance fusion energy before recommending any further cuts to the domestic program. The Committee also directs the Office of Science to assess alternatives to participating in the ITER project, including reducing contributions to the project, and the impact of withdrawing from the project, if necessary, to maintain domestic capabilities. Further, the Committee directs the Office of Science to include a project data sheet with details of all project costs until the completion of the project for ITER in the fiscal year 2014 budget submission.

The Committee understands that DOE provides funding for ITER as a Major Item of Equipment rather than a line item construction project, which would be consistent with DOE Order 413.3B. However, the Committee feels that a multi-billion dollar project, especially of this scale and complexity, should be treated as a construction project and follow DOE Order 413.3B guidance.

*INERTIAL CONFINEMENT FUSION IGNITION AND HIGH YIELD CAMPAIGN*

The Committee recommends \$460,000,000 as requested. The Committee understands the importance of the National Ignition Facility [NIF] and supports NNSA's efforts to ensure the long term viability of the facility when the National Ignition Campaign ends. The Committee encourages NNSA to work closely with the Lawrence Livermore National Laboratory to help manage the required full transition of the facility to the laboratory's standard cost accounting practices. The Committee directs NNSA, with congressional notification to the House and Senate Appropriations Committees, to use up to \$140,000,000 of Lawrence Livermore National Laboratory's internal additional direct purchasing power—generated by the overall lowering of the laboratory's "Blended Rate" resulting from NIF's transition away from a Self Constructed Asset Pool indirect rate and reduced management fee—to increase the level of the laboratory's Readiness in Technical Base and Facilities funds dedicated to supporting NIF. The Committee recommends that NNSA move the NIF operating budget to the Readiness in Technical Base and Facilities budget line, which would be consistent with the facility's transition to regular operations and how other facilities are funded. The Committee also recommends that NNSA consider alternatives to operating the facility 24 hours a day, 7 days a week.

Also within the funds for inertial confinement fusion, at least \$62,000,000 and \$55,000,000 shall be used for inertial confinement fusion activities at the University of Rochester's Omega facility and Sandia National Laboratory's Z

facility, respectively. The Committee also recommends at least \$5,000,000 as requested for the Naval Research Laboratory to continue operating laser facilities focused on laser plasma interactions, target hydrodynamics, materials, and advanced ignition concepts.

The Committee remains concerned about NIF's ability to achieve ignition—the primary purpose of constructing the facility—by the end of fiscal year 2012 when the National Ignition Campaign ends and the facility is to transition to regular ignition operations and pursue broad scientific applications. The Committee directs NNSA to establish an independent advisory committee as soon as possible to help set a strategic direction for inertial confinement fusion and high-energy density physics research and determine how best to use current facilities to advance this scientific field. If NIF does not achieve ignition by the end of fiscal year 2012 using a cryogenically layered deuterium and tritium target that produces a neutron yield with a gain greater than 1, the Committee directs NNSA to submit a report by November 30, 2012 that (1) explains the scientific and technical barriers to achieving ignition; (2) the steps NNSA will take to achieve ignition with a revised schedule; and (3) the impact on the stockpile stewardship program.

To meet the complex and increased mission requirements of the Inertial Confinement Fusion and Science Campaigns at a period of constrained funding, the Committee urges the Department to continue its activities to ensure a multiple vendor base capable of cost-effectively developing and fabricating the full range of targets for inertial confinement fusion facilities that support the stockpile stewardship program.