

**CONFERENCE REPORT TO ACCOMPANY H.R. 4818 -
CONSOLIDATED APPROPRIATIONS ACT, 2005
NNSA Section**

total → Inertial Confinement Fusion Ignition and High Yield.—The ~~conferee~~ *conference* agreement includes \$541,034,000 for the inertial confinement fusion ignition and high yield program. This represents a \$25,000,000 cut of the NIF project baseline. An additional \$46,000,000 is provided to support expanded research in non-NIF related ICF research including petawatt and high-energy petawatt laser development. Funding also enables continued development of the beryllium shell targets currently envisioned for ignition demonstrations in 2010. This target, if successful, may enable advancement of the 2014 date for ignition specified in the budget request documentation, a date which represents a 4 year slip from the original goal of 2010. Since demonstration of ignition by 2010 was the rationale provided for construction of NIF under the current baseline funding, the conference is extremely concerned with suggestions of major delay in that date and requires that effort focus on achieving that goal on the timescale originally proposed. Until very recently, the beryllium shell and fill tube design was not considered viable, but it is now viewed by the program managers as the best option for regaining the 2010 ignition goal. Significant risks are associated with this design however, which is why this target design was not considered earlier in the program. To estimate the probability of success for this new target design, the conference mandates that a full

review of NIF progress and the use and promise of this target be accomplished by an outside panel of experts, the JASONS, to validate the current NIF construction baseline and the outlook for ignition with this target design. As part of this validation, experiments should be designed and completed on alternative drivers, such as LLE at the University of Rochester and the Z machine at Sandia National Laboratories, to increase confidence in the performance of this target. The conference further requires that these experiments, as well as the JASON review, be used to develop a position paper authored by the NNSA Laboratory and LLE Directors by June 2005, discussing the promise of this target design to achieve ignition on the original schedule of 2010, 4 years ahead of the date specified in the current Budget. The conference is also aware that the laser glass used in the Japanese GEKKO program, which is identical to the optics used in the NIF project, has significantly degraded in efficiency over time. The conference requests the JASONS undertake a study utilizing the Japanese laser optic operations as a measure to determine if the NIF laser optics are performing as originally estimated and what impact this will have on the project, the ability to achieve ignition by 2010 and the overall lifecycle costs of replacing the optics more frequently. The conference provides \$5,000,000 for the development of advanced target fabrication and diagnostic techniques required to support experiments at Omega, Z machine and NIF employing advanced materials. Target fabrication and manufacturing capabilities are critical in fielding increasingly sophisticated experiments.

Ital, → Petawatt Lasers. —The conference recommendation includes an additional \$6,000,000 for university grants and other support. Of this amount, \$3,000,000 is provided for continued development of the petawatt laser at the University of Texas at

Austin; \$1,000,000 is provided for an optical parametric chirped pulse amplifier upgrade and associated operations of the short pulse laser at the University of Nevada, Reno; \$1,000,000 is provided to the University of Nevada, Reno to continue its collaboration with Sandia National Laboratories on highly diagnosed studies of exploding wire arrays and implosion dynamics; and \$1,000,000 is provided for research using the Z-Beamlet laser at Sandia National Laboratories under the Z-Petawatt Consortium that includes the University of Texas at Austin, the University of California, San Diego, the University of California, Davis, the University of Nevada, Reno, the University of Michigan, the University of Rochester, Ohio State University and the General Atomics Corporation.

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→ Inertial Fusion Technology.—The conferees also include \$25,000,000 to continue development of high average power lasers and supporting science and technology, the budget request for the Naval Research Laboratory, and \$73,469,000 for the University of Rochester, an increase of \$28,000,000 over the budget request. The additional funding is provided to the University of Rochester's Laboratory for Laser Energetics for the OMEGA Extended Performance (EP) Facility in support of the nation's stockpile stewardship program. The conference recommendation includes \$9,000,000 to initiate double-shift operations and assessments and initial development and testing of Z-pinch inertial fusion energy. The conference recommendation includes \$1,000,000 to the University of Nevada-Reno for magnetized plasma/laser interaction studies at the Nevada Terawatt Facility, using the Zebra pulse power machine and the Leopard short pulse laser system.

→ National Ignition Facility.—Within the funds provided, \$130,000,000 is for National Ignition Facility (NIF) construction, Project 96-D-111.

→ Advanced Simulation and Computing.—the conference agreement provides \$703,760,000. From within available funds for advanced simulation and computing, \$10,000,000 is provided for the Ohio Supercomputing Center high-end computer network at its Springfield, Ohio site; \$2,500,000 is provided to complete Phase I of the demonstration project of three-dimensional chip scale packaging integrated with spray cooling at Pacific Northwest National Laboratory. The conferees direct the University Partnerships program be funded at the budget request. 6

For Special Projects, the conference agreement provides \$41,500,000. Within the available funds, \$3,000,000 for magnetized high energy density matter research at the Nevada Terawatt facility at the University of Nevada-Reno; and \$1,000,000 to continue

From within available funds, \$5,000,000 for National Energy Technology Laboratory to use the Plasma Separation Process to develop high energy isomers and isotopes for energy storage and utilization. From within available funds, the conferees