Congress of the United States  
Washington, DC 20515  

March 16, 2018  

The Honorable Mike Simpson  
Subcommittee on Energy and Water Development  
Committee on Appropriations  
2362-B Rayburn House Office Building  
Washington, D.C. 20515  

The Honorable Marcy Kaptur  
Subcommittee on Energy and Water Development  
Committee on Appropriations  
1016 Longworth House Office Building  
Washington, D.C. 20515  

Dear Chairman Simpson and Ranking Member Kaptur:  

As you develop the fiscal year (FY) 2019 Energy and Water Development, and Related Agencies Appropriations bill, we write in support of the Inertial Confinement Fusion (ICF) program under the Department of Energy’s National Nuclear Security Administration (NNSA). This program is a critical component of the Stockpile Stewardship Program that maintains a safe, secure, and effective nuclear deterrent. Specifically, we request appropriations of $555 million for ICF. This level of funding is needed for cutting-edge research and operation of state-of-the-art facilities in support of the stockpile stewardship program.  

The ICF program maintains three major, world-leading facilities: the National Ignition Facility (NIF) at the Lawrence Livermore National Laboratory (LLNL), the Z Facility at the Sandia National Laboratories (SNL), and the OMEGA Laser Facility at the Laboratory for Laser Energetics at the University of Rochester. In addition, the Los Alamos National Laboratory (LANL) and Naval Research Laboratory contribute novel approaches to ignition, and General Atomics and Schafer Corporation support target fabrication.  

The ICF program is essential because it supports the only leading-edge experimental facilities that can achieve the high-pressure and high-energy-density regimes found in an operating nuclear weapon. Ninety-nine percent of the country’s nuclear weapon yield occurs in the high-energy-density state. Without underground nuclear testing, inertial confinement fusion research is the only way to understand specific aspects of nuclear weapons performance, weapon effects, and nuclear survivability of our current stockpile. In January 2015, the directors of the three NNSA laboratories wrote to the NNSA Administrator that the pursuit of fusion “is critical for the long-term health of the Stockpile Stewardship Program.”  

The results of experiments at ICF facilities support critical decisions related to the maintenance and modernization of weapons systems and achieving scientific milestones set in NNSA’s ten-year strategic plan. Investment in inertial confinement fusion research is needed to maintain U.S. leadership in this important field. Recent reports indicate that Russia and China are engaged in
extensive nuclear forces modernization programs, including significant investments in research capabilities, and are planning facilities that would rival or exceed the size of NIF.

If Russia or China achieved fusion ignition before the United States, it would create a “Sputnik moment” that would cede long-held U.S. technological superiority and cast doubt on U.S. scientific leadership in the field. In the January 20, 2015 tri-Lab letter to then-NNSA Under Secretary Frank Klotz, the NNSA laboratory directors also expressed their collective view that “the U.S. must continue to strive to be the first nation to demonstrate ignition and high yield in the laboratory.”

In addition to helping maintain U.S. leadership, the ICF program is key to avoiding technological surprise by other nuclear weapons states. ICF experiments are an important vehicle for training and testing the scientists whose judgment we rely on to assesses our nuclear deterrent. These scientists not only ensure the safety and reliability of the country’s nuclear stockpile, they are also the experts called upon to evaluate the capabilities of U.S. adversaries.

The ICF program is a magnet for drawing the talented workers NNSA needs by attracting future scientists and engineers to the nuclear weapons program through focusing on one of the greatest scientific and technical challenges of our generation – achieving controlled fusion in the laboratory – and the long-term implications for energy that will be motivated by ignition. As Lisa Gordon-Haggerty, the recently confirmed Administrator for NNSA testified at her confirmation hearing, “recruiting, retaining, and growing the highly skilled workforce” is a priority for NNSA.

The OMEGA Laser Facility is the NNSA’s, and Department of Energy’s, largest university-based program. It is the only major facility that trains graduate students, thereby serving as a critical pipeline of talent. In addition, the ICF program also supports users from 55 U.S. universities, 35 centers and national laboratories, and sustains beneficial international collaborations, including with the United Kingdom and France.

And finally, while not a primary mission of the NNSA Stockpile Stewardship Program, it is fully recognized that the pursuit and achievement of ignition in the laboratory to benefit the stewardship program has significant overlap with the science and technology needed to further the drive for inertial confinement fusion energy.

It is because the ICF program is vitally important for our national and economic security that we ask that you provide appropriations of $555 million for the NNSA’s ICF program in the FY 2019 Energy and Water Development, and Related Agencies Appropriations bill.

Sincerely,