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NEWS

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National Ignition Facility Reaches Milestone Early

Generates 43 kilojoules of energy 18 months ahead of schedule

LIVERMORE, CA – The National Nuclear Security Administration's (NNSA) National Ignition Facility (NIF) at Lawrence Livermore National Laboratory reached a major milestone this week in activating the first four of its 192 laser beams a year-and-a-half ahead of schedule.

Last week, scientists and engineers powered up the laser beams in a series of increasing energy test runs. At the end of this series of shots on Wednesday, these four laser beams generated a total of over 43 kilojoules of infrared light in a pulse lasting five-billionths of a second. That performance shattered the milestone of 10 kilojoules. This corresponds to a power level of over 8,000 gigawatts, which is about 10 times more power than the entire U.S. electrical generating capacity, but only lasting 5-billionths of a second. The energy contained in the 43 kilojoule pulse is equivalent to a 1 ton automobile traveling at about 20 miles per hour.

NNSA Acting Administrator Linton Brooks said, "This important milestone marks the transition of the NIF from a construction project to an integrated light producing facility. It will help us model and simulate nuclear explosions to ensure the safety and reliability of our nuclear weapons stockpile without underground nuclear testing. The scientists and engineers at Lawrence Livermore should be commended for moving this important project ahead of schedule."

NIF will use cutting edge laser and optics technologies to create conditions of extreme temperatures and pressures in small targets. Its 192 laser beams will be focused on a target the size of a "bb." Experiments on NIF will be used as a key part of the NNSA's critical mission to maintain and certify the safety, security, and reliability of our nation's nuclear deterrent without underground nuclear testing. NIF is the only NNSA facility that can achieve fusion ignition with energy gain, which is important for understanding the performance of nuclear weapons as well as for inertial fusion energy production for future energy security. Other experiments on NIF will advance basic understanding in areas such as materials science and astrophysics.

According to Lawrence Livermore Laboratory Director Michael Anastasio, "We used all of the critical NIF systems: the beam path with supporting utilities, laser components and optics, power conditioning system, diagnostics, and computer controls. NIF is well on its way to becoming an unequalled national scientific research venue."

The next major milestone, scheduled for this spring, is to transport the four laser beams into the 10-meter diameter, one-million pound target chamber. The infrared light will be converted into ultraviolet light and focused on the first targets. This milestone will mark the beginning of commissioning of scientific diagnostic instruments for NIF experiments.

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