# 2003

### **Funding and Construction** of OMEGA EP Begins



*OMEGA EP groundbreaking* (Capt. Steven J. Loucks, Dr. Robert L. McCrory, Mr. Samuel F. B. Morse, and Mr. R. Wayne LeChase)

A major enhancement to the OMEGA Laser System, OMEGA EP (extended performance), included four new high-energy beamlines, a versatile high-intensity capability, and a new auxiliary target chamber. Construction began on 1 April 2003 with \$13 million in FY03 funding. The National Nuclear Security Administration (NNSA) approval of "Mission Need" followed in May 2003. The University of Rochester authorized funding for an 82,000-square foot addition to LLE to house the new facility located adjacent to the existing OMEGA laser. Building construction began in August 2003 and was completed in January 2005.



### **OMEGA EP** Amplifiers



Prototype laser amplifier with Jack Kelly, Milt Shoup, Drew Maywar, and Mike Miller

Work continues on the design of the OMEGA EP amplifiers. The LLE-designed amplifier configuration is similar to amplifiers currently used in the 60-beam OMEGA Laser System. However, each OMEGA amplifier uses four laser disks, while the OMEGA EP prototype amplifier will contain a single rectangular slab. Ultimately, 11 of these modules will be used in the main amplifier and five will be used in the booster amplifier. Other requirements include a modular design (three major assemblies: the amplifier frame assembly, the slab frame assembly, and the pump module); water-cooling for glass components; the ability to take at least one shot every two hours (i.e., the optics must cool down within this time frame to prevent damage); the ability to accommodate a 40-cm square laser beam, and maintenance similar to the existing OMEGA amplifiers.

### Laboratory for Laser Energetics

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## 2004

### **Plasma-Electrode Pockels Cell**



Photograph of OMEGA EP plasma-electrode Pockels cell assembly

Based on NIF technology and developed with the assistance of LLNL scientists, a new plasmaelectrode Pockels cell (PEPC) was developed at LLE for the OMEGA EP system. The LLEengineered PEPC was assembled and active plasma testing was initiated. This single-unit electro-optic switch is an adaptation of the NIF PEPC design with circular windows and a single-beam plasma channel.

### **OMEGA EP Building Construction Completed**



View of the OMEGA EP Laser Bay from the visitors gallery

The OMEGA EP building construction was completed in December 2004. This facility was completed in 2008.

### **Defense Programs** Award of Excellence



The Defense Programs Award of Excellence

On 18 August 2004, Capt. Steven J. Loucks (USN Ret.), LLE Deputy Director and the Director of the LLE Engineering and Administrative Divisions, received the Defense Programs Award of Excellence from Dr. Everet H. Beckner, Deputy Administrator for Defense Programs of the Department of Energy National Nuclear Security Administration (NNSA). The Award was presented to Capt. Loucks for outstanding project management and operational performance of the OMEGA Laser Facility. This prestigious award is usually given to someone from a national laboratory. Only one or two such awards are given annually.



