

## Section 4

# LASER SYSTEM REPORT

### 4.A GDL Facility Report

There was a total of 378 GDL shots during the third quarter of FY91. Most of the target shots were in support of NLUF users from the University of California, Davis and the University of Illinois. The laser system shots were required to realign the laser-amplifier chain and to optimize system performance. Synchronization of the probe laser to the GDL laser was also checked.

The shot summary for the GDL laser this quarter is as follows:

Laser system	238
Calibration	18
Target	<u>122</u>
TOTAL	378

#### ACKNOWLEDGMENT

This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under agreement No. DE-FC03-85DP40200 and by the Laser Fusion Feasibility Project at the Laboratory for Laser Energetics, which is sponsored by the New York State Energy Research and Development Authority and the University of Rochester.

## 4.B OMEGA Facility Report

The OMEGA laser was used for a series of flat-target, long-scale-length plasma experiments at the beginning of the third quarter of FY91. These experiments required OMEGA to be reconfigured, including changes to the timing of several beams relative to each other, and the redirection of one of the OMEGA beams to enter the target chamber through a 12-inch equatorial port. The system has been reset for spherical-target experiments and system-wide maintenance has been performed.

The primary activity on OMEGA has been the installation of a pulse-shaping system on the driver line. This system replaces the oscillator when shaped pulses are required for target experiments. The system consists of a Coherent Optics Antares<sup>®</sup> laser that drives two regenerative amplifiers. One amplifier is used to produce a long (1.1-ns FWHM) pulse and the second amplifier is used to amplify a short (50-ps FWHM) pulse that drives an optically triggered silicon switch. The silicon switch is used to control the voltage across a Pockels cell through which the long pulse is propagated. Thus the desired pulse shape is “carved” out of the long pulse. A series of spherical implosion experiments will be conducted when the installation of this apparatus has been completed.

The shot summary for OMEGA this quarter is as follows:

Software test	10
Driver	116
Laser	200
Target	<u>54</u>
TOTAL	380

### ACKNOWLEDGMENT

This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under agreement No. DE-FC03-85DP40200 and by the Laser Fusion Feasibility Project at the Laboratory for Laser Energetics, which is sponsored by the New York State Energy Research and Development Authority and the University of Rochester.