

Section 4

LASER SYSTEM REPORT

4.A GDL Facility Report

During the first quarter of FY91, a regenerative amplifier was built near the GDL oscillator to test concepts for pulse shaping of Gaussian laser pulses. A 100-ps pulse from an oscillator synchronized to the GDL oscillator was used as a seed to the regenerative amplifier. The amplified 100-ps laser pulse is used to drive either a GaAs or Si photoconductive switch. Tests were conducted on GDL to study the time synchronization of the two oscillators, the performance of the photoconductive switches, and the ability to predict the ultimate pulse shape from a model of the electrical characteristics of the switch when connected to a Pockels cell.

There was general system maintenance done of the high-power amplifier section of GDL while the pulse-shaping experiments were being conducted. This included routine amplifier maintenance as well as replacement of several damaged optical elements in spatial filters and up-collimators. GDL will be available for full-system shots during the second quarter of FY91.

ACKNOWLEDGMENT

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4.B OMEGA Facility Report

The OMEGA Laser Facility was used for target experiments, laser development, and driver-line development. OMEGA continues to be used at the rate of 800 to 1200 shots per year. This rate will continue because several OMEGA Upgrade projects will use one or more of OMEGA's beamlines.

The target shots for the first quarter of FY91 were all implosion experiments. CD shells were used as surrogate cryogenic targets to study high-density compression, the implosion of D2-filled plastic shells was studied as a function of SSD bandwidth, and a series of burnthrough targets were used to study implosion stability.

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

Driver line	125
Laser test	94
Target	151
Software	<u>7</u>
TOTAL	377

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