

Section 3

LASER SYSTEM REPORT

3.A GDL Facility Report

There were 208 GDL laser shots during the second quarter of FY92. The 69 target shots were taken by an NLUF user from the University of Illinois. The spatial filter needed by LLE's damage-testing laboratory was completed, and the 26 system shots were used to complete the filter alignment and start UV damage assessment of large-aperture optics. The 113 laser-system shots were used for system maintenance, alignment, repair, and testing.

J. Kelly is managing the GDL refurbishment project, which is projected to begin in June 1992. First, the laser system is to be completed; then a new target chamber will be moved into the target room. This work will be completed in approximately nine months. The old FORTH-based control system will be replaced with a system similar to what will be used on the upgraded OMEGA laser.

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

Laser system	113
Target	69
Damage testing	<u>26</u>
TOTAL	208

3.B OMEGA Facility Report

The OMEGA system fired a total of 497 shots during the second quarter of FY92. These shots were divided among the driver line, the laser system, software testing, noise testing, and target irradiation.

Installation of the pulse-shaping apparatus was completed in the driver line. Thirty of the 106 laser-system shots were used to measure how a fast rise-time pulse was affected when propagated through the OMEGA system. The measured pulse shape compared well with the shape predicted with the RAINBOW simulation code. A measured driver-line pulse shape was used as input for the propagation simulation.

During the pulse-shape measurements, it was found that the system radiated a great deal of noise that caused false triggering of timing electronics in the driver line. The 172 noise test shots were used to check each of the OMEGA pulse-forming networks. It was found that there was arcing from the body of the ignitron to ground. In some cases, this arcing was severe enough to cause spallation of material from the ground plane attachment of the ignitron. All of the 56 system ignitrons were remounted to remedy this problem.

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

Driver line	193
Laser system	106
Software test	21
Noise test	172
Target	<u>5</u>
TOTAL	497

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