Section 1
LASER SYSTEM REPORT

1.A OMEGA Facility Report

During the third quarter of fiscal year 1983 (April-June 1983) OMEGA facility operations involved (a) the conversion of the laser system for the short-pulse campaign, (b) an x-ray laser campaign, and (c) the manufacturing engineering and equipment installation for the ultraviolet conversion of OMEGA.

Following preparations for the short-pulse campaign in April, we supported the x-ray laser program by verifying the operation of various target diagnostic systems from the Lawrence Livermore National Laboratory (LLNL). Due to the nature of the diagnostics, and the impossibility of cycling targets through a shot without loss of vacuum, the laser system was operated "on demand." The facility was prepared in the early morning and shots taken when the target systems were ready, often late in the evening. During the final week, nearly 24-hour operation was maintained; on the final two days of the campaign, the system was in operation for 32 consecutive hours.

The following is a summary of all activities in OMEGA operations during this quarter:

Target Shots		127
Driver Centering and Calibration		99
Beam Balance		29
Miscellaneous		97
	TOTAL	352

In addition, approximately half the operations group was involved, during this quarter, in manufacturing engineering for the upcoming OMEGA frequency conversion. Activities such as parts procurement, tooling, assembly, and component testing continued during this report period. It is noteworthy that despite the high level of system operations the frequency-conversion schedule has been maintained.

With the conclusion of the x-ray laser program, we temporarily suspended OMEGA operations, and began installation of all the components for converting six beams of OMEGA from 1054-nm to 351-nm wavelength. By the conclusion of the quarter, all spatial filters in the converted beams were completed; the large-aperture, optical retarder rails were modified to house frequency conversion crystals; structures for holding beam-diagnostic hardware were in place; one conversion crystal was assembled; and a number of beam transport optics were installed.

1.B GDL Facility Report

GDL operations continued during this quarter. Through April, the laser-matter interaction experiments consisted of hydrodynamic efficiency measurements, Raman scattering, harmonic generation, and a Yale-UCLA NLUF experiment. Shots into the x-ray chamber were taken for both the x-ray devices group and users from the Naval Research Laboratory. A number of shots were used for damage testing.

A summary of GDL operations this quarter follows:

Beta Chamber	102*
X-Ray Chamber	44**
Damage Testing	102
GDL and Miscellaneous	134
TOTAL	382

*included 23 UCLA/Yale shots
**includes 25 NRL shots.