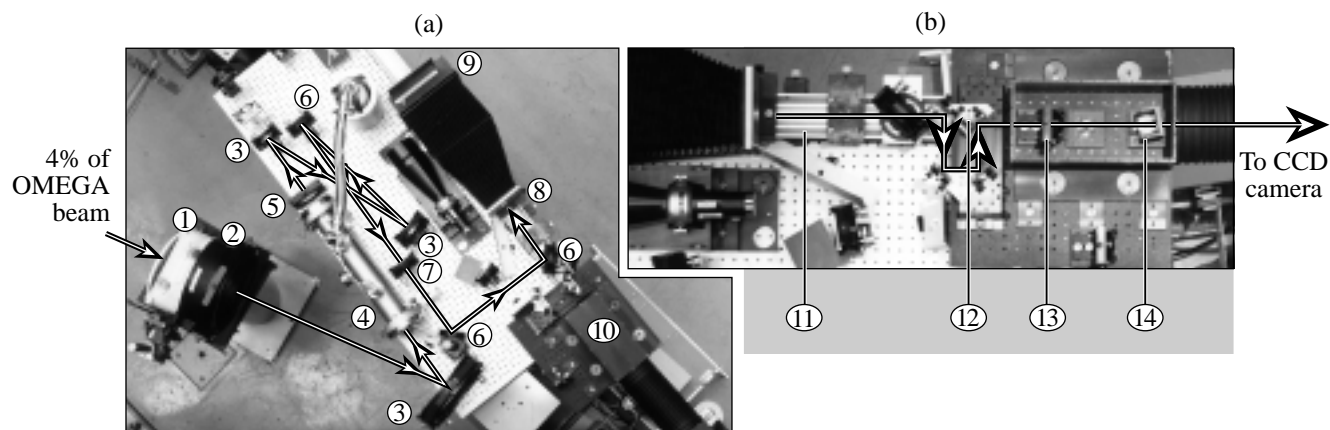


## About the Cover:

Charles Kellogg, Sr. Lab Engineer (left), and Per Adamson, Lab Engineer, align the OMEGA equivalent-target-plane (ETP) diagnostic. The system samples 4% of an OMEGA beam just prior to delivery to target and allows for the capture of magnified images of on-target laser beam profiles. The sample is reflected off an uncoated wedge that is highlighted by a lamp in the background of the image near the target mirror structure. This instrument is a valuable tool for investigating beam-smoothing techniques such as smoothing by spectral dispersion (SSD) and is the diagnostic used for the measurements featured in the article beginning on p. 149. The two photos below show the detailed beam path of the laser beam to the two cameras: (a) an  $8 \times 10$  film camera and (b) a scientific-grade CCD array.



E9705

Photo (a). A full-aperture beam of 1/25th OMEGA intensity is phase scrambled at the DPP in location (1), focused by an  $f/6$  lens (2), and brought through a vacuum image relay (4). As the beam is re-imaged by a collimating optic (5), excess energy is eliminated by reflections off uncoated front-surface mirrors (3). Mirrors (6) send the reduced-energy beam through a 2-m-focal-length lens (7) and into a wedged "rattle plate" (8) that generates an array of spots of decreasing intensity for the film camera (9). Photo (b) is a close-up view of the second arm of the detector where the beam is picked up off the rattle plate (11). Here the fifth beam of the array is redirected through a trombone (12), focusing element (13), and filter array (14) to the CCD detector.

This report was prepared as an account of work conducted by the Laboratory for Laser Energetics and sponsored by New York State Energy Research and Development Authority, the University of Rochester, the U.S. Department of Energy, and other agencies. Neither the above named sponsors, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, mark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by

the United States Government or any agency thereof or any other sponsor. Results reported in the LLE Review should not be taken as necessarily final results as they represent active research. The views and opinions of authors expressed herein do not necessarily state or reflect those of any of the above sponsoring entities.

The work described in this volume includes current research at the Laboratory for Laser Energetics, which is supported by New York State Energy Research and Development Authority, the University of Rochester, the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC03-92SF19460, and other agencies.

Printed in the United States of America  
Available from  
National Technical Information Services  
U.S. Department of Commerce  
5285 Port Royal Road  
Springfield, VA 22161  
Price codes: Printed Copy A04  
Microfiche A01

For questions or comments, contact Samuel F. B. Morse, Editor, Laboratory for Laser Energetics, 250 East River Road, Rochester, NY 14623-1299, (716) 275-9672; e-mail: smor@lle.rochester.edu

Worldwide-Web Home Page: <http://www.lle.rochester.edu/>