

Title: Development of a 100 mJ, 5 Hz, Flashlamp-Pumped, Cr,Tm:YAG  
Coherent Lidar Transmitter

Investigators: S. Henderson/CTI, S. Johnson/MSFC/EB23

Background of Investigation:

A contract to develop a 100 mJ, 5 Hz, flashlamp-pumped Cr,Tm:YAG coherent lidar transmitter has been awarded to Coherent Technologies, Inc. (CTI). The lidar transmitter will operate at an eyesafe wavelength of 2.01 microns. The development complements work being performed under an SBIR Phase II with Electro-Optics Technology (EOT). EOT is developing continuous wave, low and medium power Tm:YAG oscillators of a unique design. One of the low power oscillators will be used as the injection seeder/local oscillator in the CTI lidar transmitter. The lidar transmitter will require the addition of a receiver section. Once completed, the lidar will be used in atmospheric performance studies, allowing comparison with that of the more mature CO<sub>2</sub> lidar technology.

Significant Accomplishments in the Past Year:

The CTI contract was awarded in December, 1991. The final design should be completed during FY92.

Focus of Current Research and Plans for Next Year:

The CTI contract has an 18 month period of performance. Delivery of the transmitter to MSFC is scheduled for June, 1993. Installation of a receiver section and lidar performance tests are planned for the remainder of FY93. The low and medium power, continuous wave, Tm:YAG oscillators should be delivered in August, 1993.