U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of the Air Traffic Organization
Western Service Area

1601 Lind Avenue Southwest
Renton, Washington 98057

July 16, 2009

Dr. Antonin Bouchez
California Institute of Technology
Palomar Observatory
35899 Canfield Road
Palomar Mountain, CA 92060

Dear Dr. Bouchez:

The Western Service Area, Operations Support Group and Flight Standards have performed an aeronautical study regarding your request for operation of the Laser Guide Star system at the Caltech Optical Observatories at Palomar Mountain, California on the dates and times indicated below. Limitations on laser operations are required to ensure that laser light beams are not propagated into navigable airspace and illuminate aircraft.

We have no objection to your laser operation, provided the operator complies with the following conditions:

- Operations will be conducted at the following location, date, and times:

  Caltech Optical Observatories
  Palomar Observatory
  35899 Canfield Road
  Palomar Mountain, CA 92060
  Latitude 33° 21' 22.3"N/ Longitude 116° 51' 52.7"W
  July 4, 2009 through January 8, 2010

- The laser beam angle will not exceed 45 degrees.

- Certified aircraft spotters or observers are required and must be positioned to observe possible air traffic penetration of the laser area supplemented by three electronic sensors; a visible all-sky CCD camera, a bore sighted infrared camera and a bore sighted radar.

- Observers are to be equipped with instantaneous means of communications with the laser operator to terminate laser emission if aircraft appear to be approaching the outer limits of adverse laser effects.

- Laser beams are to be terminated or directed away from any aircraft that could be adversely affected by the laser beams. This means, within the full distance of any adverse affects to pilots or passengers on aircraft. This stoppage can be at the

discretion of the operator, or as the result of directions from the responsible air traffic control facility, which is the Los Angeles Air Route Control Center (ZLA ARTCC) Military Operations desk at (661) 265-8287 and Southern California TRACON (SCT TRACON) (858) 537-5900.

- It is understood that the onsite person responsible for safety and operating the laser equipment can be instantly accessible during the laser operation at phone numbers (760) 742-2106/2108.

- The operator will use additional airspace safety monitoring systems consisting of a Visual All Sky Camera with a range of 500 to 100,000 feet and a boresighted thermal IR camera with a range of 100 to 60,000 feet and a narrow-beam RADAR.

- The operator will provide notification of any cancellation of laser tests to ZLA ARTCC and SCT TRACON at the phone numbers listed above.

- The operator will advise Prescott Automated Flight Service Station (PRC AFSS) at (877) 487-6867, ZLA ARTCC and SCT TRACON, in the event the laser test is canceled.

- You will contact this office at (425) 203-4535 during regular business hours no within 3 days prior to laser activity and request a NOTAM to be issued with the dates and times of the activity.

This Letter of Determination is only applicable to FAA requirements. Any other necessary approvals must be obtained from the appropriate authorities. This determination does not relieve the sponsor/operator of compliance responsibilities related to laws, ordinances, or regulation of any federal, state, or local government agency.

For further information concerning this matter, please contact Rick Roberts, Operations Support Group, Western Service Center, at (425) 203-4535.

Sincerely,

FOR Clark Desing
Manager, Operations Support Group
Western Service Center

cc: CDRH
ZLA ARTCC
SCT
PRC AFSS