

**ORDER**

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

WESTERN-PACIFIC REGION

AT  
WP 7400.3C

8/10/99

**SUBJECT: OUTDOOR LASER AND HIGH INTENSITY LIGHT ACTIVITY**

1. **PURPOSE.** This order provides guidance for all Federal Aviation Administration (FAA) facilities and offices receiving requests from proponents for approval of outdoor laser light demonstrations. It establishes notification procedures for laser light activity and identifies a rapid response protocol in the event of aircraft illumination.
2. **DISTRIBUTION.** This order is distributed at the branch level in the Executive Resource Staff, Operations Center, Flight Standards, Aviation Medical, Air Traffic, Civil Aviation Security, Military Representatives; also one copy each to all air traffic field facilities, Flight Standards District Offices and Civil Aviation Security Field Offices. Information copies to Air Traffic Airspace Management, Air Traffic Operations, Office of Aviation Medicine, Civil Aeromedical Institute, Western-Pacific Public Affairs Officers and Office of Public Affairs.
3. **CANCELLATION.** Order WP 7400.3B, dated November 4, 1991, is canceled.
4. **EFFECTIVE DATE.** September 3, 1999.
5. **BACKGROUND.** The Food and Drug Administration (FDA), Center for Devices and Radiological Health (CDRH) is the regulatory agency and the designated approval authority for the use of all radiation emitting products, including lasers. Outdoor laser light shows require a variance from the FDA and a letter of "no objection" from the Manager, Air Traffic Division, Airspace Branch, AWP-520. Laser beams propagated into navigable airspace have the potential of causing permanent eye damage to pilots and passengers. The Air Traffic Division, Airspace Branch, AWP-520 is responsible for conducting an aeronautical study of the effects of proposed laser activity on the safe and efficient movement of aircraft and to determine limitations required to integrate laser activity into the National Airspace System.
6. **ACTION.**
  - a. The proponent is responsible for compliance related to laws, ordinances, or regulations of any federal, state, or local government. Proponent notification to the Airspace Branch, AWP-520, shall include the information in accordance with FAA Order 7400.2, Procedures for Handling Airspace Matters; Part 8, Chapter 34, Outdoor Laser Operations (Appendix 1), in order to provide an aeronautical study of the proposed laser activity:
  - b. FAA field facilities or offices receiving notification of proposed outdoor laser activity or high intensity lights shall forward the information, or refer callers to the Air Traffic Division, Airspace Branch, AWP-520.

(1) If an Air Traffic Control (ATC) field facility receives information from a specialist, pilot, or passenger, that laser/high intensity light from an FAA authorized source has illuminated an aircraft, the supervisor shall contact the proponent using the "emergency" telephone number and instruct the laser activity be terminated. Notify the Regional Operations Officer (ROO) and file an Incident Report, FAA Form 8020-11, in accordance with FAA Handbook 8020.11, Chapter 3, Air Traffic and Other Initial Notification and Reporting Responsibilities.

(2) If an ATC field facility receives information from a specialist, pilot, or passenger, that laser/high intensity light from an unauthorized source has illuminated an aircraft, the supervisor shall contact the nearest law enforcement aviation unit listed in Appendix 2. A law enforcement aviation unit will be dispatched to the location to identify the light source. Notify the ROO and file an Incident Report, FAA Form 8020-11, in accordance with FAA Handbook 8020.11, Chapter 3, Air Traffic and Other Initial Notification and Reporting Responsibilities.

(3) If an ATC field facility receives notification of laser/high intensity light activity after the Regional Office is closed and that activity is proposed prior to regular business hours, the supervisor shall notify the ROO of the proponent name and contact telephone number.

c. The ROO shall, upon notification of a proposed laser/high intensity light show or illumination report, notify the designated Regional Air Traffic Division, Airspace Branch Specialist.

d. The Regional Air Traffic Division, Airspace Branch, AWP-520, will provide an aeronautical study of proposed laser light activity in accordance with FAA Order 7400.2, based on the information received from the proponent. The aeronautical study will include the following coordination with affected ATC facilities:

(1) Contact the affected ATC facilities prior to the event and consider all safety and procedural concerns identified.

(2) Provide the affected ATC facility or FAA coordination facility with an emergency telephone number for the purposes of terminating laser activity.

(3) Issue a notice to airmen (NOTAM) in accordance with FAA Order 7930.2.

(4) When notified of a laser/high intensity light illumination report from the ROO the designated Airspace Branch specialist will contact the pilot and as soon as possible, obtain pilot responses to the Suspected Laser Exposure Questionnaire (Appendix 3) and Suspected Laser Incident Report (Appendix 4). The pilot responses will be distributed to the following concerned organizations:

- (a) Aviation Medical Division, AWP-300.
  - (b) Flight Standards District Office, AWP-200.
  - (c) Civil Aviation Security Division, AWP-700.
  - (d) Civil Aeromedical Institute, CAMI, AAM-3.
  - (e) Food and Drug Administration, Center for Devices and Radiological Health (CDRH), Office of Compliance/Division of Enforcement, 2098 Gaither Rd., Rockville, MD 20850.
  - (f) Armstrong Laboratory, AS/OEOV, 8111 18th St, Brooks AFB, TX 78235-5215.
- e. The Civil Aviation Security Division shall coordinate with the Air Traffic Division, Airspace Branch, AWP-520, during an investigation of laser/high intensity light illumination of aircraft.

*William C. Withycombe*

William C. Withycombe  
Regional Administrator

**APPENDIX 1.**  
**FAA NOTIFICATION REQUIREMENTS**

The required information is to be submitted to AWP-520 (see Par 6a).

- (1) Laser group/company (point of contact).
- (2) Business address, and telephone number.
- (3) CDRH variance number and expiration date.
- (4) Date(s) and time(s) of setup and alignment.
- (5) Date(s) and time(s) of show(s).
- (6) Location of show.
  - (a) Showplace name and address.
  - (b) Latitude and longitude of showplace.
  - (c) Maps.
- (7) Class/Type of Laser (CW or Pulsed).
- (8) Maximum emitted peak power (watts)/ frequency of operation (Khz) at the system as certified to CDRH.
- (9) Azimuth direction of beams.
- (10) Maximum and minimum elevation of beam in degrees above the horizon.
- (11) Beam divergence (milliradians).
- (12) Maximum distance from source for irradiance of 2.6 mW/cm<sup>2</sup>, 5μW/cm<sup>2</sup>, 100μW/cm<sup>2</sup> based on emitted peak power.
- (13) Maximum altitude above source for irradiance of 2.6 mW/cm<sup>2</sup>, 5μW/cm<sup>2</sup>, 100μ W/cm<sup>2</sup> based on emitted peak power.
- (14) A diagram depicting all beam arrays terminated or unterminated.
- (15) Laser safety officer/operator.

- (a) Local address and telephone number, to include an operational telephone number at the site.
- (b) Additional safety procedures.
  - 1. Communications procedures during the show.
  - 2. Visual aircraft spotters.
  - 3. Other.
- (16) Quality Assurance Program, describing physical or procedural control of:
  - (a) Laser power.
  - (b) Beam divergence.
  - (c) Azimuth and elevation of beam paths.
  - (d) Beam termination surfaces.
  - (e) Emergency shutdown procedures.

**APPENDIX 2.**

<b>Law Enforcement Aviation Unit</b>		
San Diego County	San Diego County Sheriff	619-565-5030
City of San Diego	San Diego Police Department	619-495-7890
San Bernardino County	San Bernardino County Sheriff	909-356-3800
	Ontario Police Department	909-391-0615
Riverside County	Riverside County Sheriff	909-925-9591
	Riverside Police Department	909-351-6118
Los Angeles County	Los Angeles County Sheriff	310-421-2701
Sacramento County	Sacramento County Sheriff	916-440-5111
San Francisco City/County	San Francisco Police Department	415-671-3138
Las Vegas/Clark County	Metropolitan Police Department	702-229-3552
Phoenix/Maricopa County	Maricopa County Sheriff	602-256-1000

**APPENDIX 3.****SUSPECTED LASER EXPOSURE QUESTIONNAIRE**

1. Did you see a bright light? Did anyone else see the light?
2. What was the color(s) of the light? Did the color(s) change during the exposure?
3. Did the light come on suddenly, and did it become brighter as you approached it?
4. Was the light continuous or did it seem to flicker? If it flickered, how rapidly and regularly?
5. Did the light fill your cockpit or compartment?
6. How would you describe the brightness of the light? Was it equally bright in all areas or was it brighter in one area?
7. Did you attempt an evasive maneuver? If so, did the beam follow you as you tried to move away? How successful were you in avoiding it?
8. Do you know the source of the light emission?
9. Can you estimate how far away the light source was from your location? Was it moving?
10. What was between the light source and your eyes (windscreen, glasses, contact lenses, etc.)? Did any of these sustain damage by the light?
11. Was the light coming directly from its source or did it appear to be reflected off other surfaces? Were there multiple sources of light?
12. Did you look straight into the light beam or off to the side?
13. How long was the exposure? Did the light seem to track your path or was there incidental contact?
14. At what time of the day did the incident occur?
15. What was the visibility? What were the atmospheric conditions (clear, overcast, precipitation, fog, haze, sunny)?
16. What tasks were you performing when the exposure occurred? Did the light prevent or hamper you from doing those tasks, or was the light more of an annoyance?
17. How long did any symptoms you experienced from the exposure last? Are the symptoms (tearing, light sensitivity, headaches, etc.) still present?

18. Did you touch or rub your eyes at the time of the incident?
19. Did you have your eyes examined after the incident? If so, by whom and when?
20. Did you report the incident? If so, to whom (ATC, medical personnel, safety officer, etc.) and when?

### SUSPECTED LASER INCIDENT REPORT

Date and local time of incident: \_\_\_\_\_

Date and local time report is being completed: \_\_\_\_\_

Location of incident: Near \_\_\_\_\_ (airport/city)

VOR Radial/DME (Distance Measuring Equipment): \_\_\_\_\_

Phase of flight: \_\_\_\_\_

Name of approach or departure: \_\_\_\_\_

Heading/approximate heading if in turn: \_\_\_\_\_ Altitude: \_\_\_\_\_

Aircraft bank and pitch angel: \_\_\_\_\_

Did the light hit your eye(s) directly or off-axis: \_\_\_\_\_

Light description:

Color \_\_\_\_\_ Static or moving \_\_\_\_\_

Relative intensity (flashbulb, headlights): \_\_\_\_\_

Duration of exposure (minutes/seconds): \_\_\_\_\_

Was the beam visible prior to the incident: \_\_\_\_\_

Position (geographically): \_\_\_\_\_

Circle the window where the light entered the cockpit: left, left-front, right-front, right

Circle the elevation where the beam came from: front, 45° below, directly below

Effect on crewmember(s): \_\_\_\_\_

After effect(s): \_\_\_\_\_

Weather condition and relative darkness: \_\_\_\_\_

\_\_\_\_\_

Crewmember age: \_\_\_\_\_ Glasses/contact lenses, etc.: \_\_\_\_\_

Type of aircraft: \_\_\_\_\_ Airline name and flight number: \_\_\_\_\_

Name: \_\_\_\_\_ Phone: \_\_\_\_\_

SAMPLE