

MEMORANDUM FOR RECORD

SUBJECT: Laser Incidents in Bosnia

1. Reference: FOUO MFR from Eagle Base Clinic dated 27 October 1998 with subject, Clinical Summary of Aircrew Personnel Exposed to Presumed Laser.
2. The following data were summarized from a conversation between the undersigned (MAJ Brown) and LTC Kenneth T. Furakawa, Deputy Commander for Clinical Services at the 41th Combat Support Hospital (CSH), Eagle Base, Bosnia-Herzegovina and with CPT Glen Nidum, the optometrist at the CSH who performed the examinations.
 - a) Two crew members were involved in a lasing incident on 24 October 1998 while flying in a UH-60 helicopter (see memo). The crew reported seeing a red spot within the cockpit of the aircraft. The aircraft was most likely flying with windows and doors closed due to the current temperatures.
 - b) At the time of landing the crew began to notice ocular discomfort. They reported that they had been rubbing their eyes. Eye examinations were performed at 2300 hours on 24 Oct 98. CPT Nidum reported that the individuals were photophobic and tearing. The examination revealed bilateral superficial punctate keratitis in a horizontal band in the lower cornea. There was mild conjunctival injection inferiorly. The findings were similar in each individual, however the pilot had more punctate defects than did the copilot. Dilated examination revealed no retinal lesions. There was minimal effect on visual acuity. Each soldier was treated with an antibiotic ointment and given pain medication.
 - c) The following day, the corneal findings and symptoms had resolved. The pilot had returned to a visual acuity of 20/15 in each eye. The copilot had a visual acuity of 20/20 OD and 20/25 OS.
 - d) A second incident occurred on the evening of 27 October 1998. Two Apache helicopter crew members reported a similar laser sighting. One individual was examined and released with no ocular findings. The other individual was found to have mild blepharitis (a common, benign, condition of inflammation of the glands along the eyelid margin) with no effect on visual acuity.

3. Initial Assessment: The anterior segment observations in the UH-60 and Apache crew members are probably not directly related to the observation of the red laser spot. The small red laser spot observed by the aircrews was most likely from a sighting laser or an accurately directed laser pointer. While direct intrabeam viewing of such a laser would appear very bright, a standard laser pointer or sighting laser would not emit sufficient power to cause retinal injury for brief exposure epochs. Visible laser radiation is unlikely to cause corneal or anterior segment injury because of the high irradiance required. Rubbing of the eyes or an environmental condition inherent to the mission is more likely the cause of the corneal and anterior segment observations. The aircrew's concern for mission safety when tracked by a laser spot and their concern for their own ocular safety and health are understandable.

4. Recommendation: Recommend additional training and information on lasers and their ocular effects be provided to aircrews and medical personnel assessing hazards and injury. Field assessments of the lasers employed in these actions should be made.

Jeremiah Brown, Jr
MAJ, MC
Chief, Ophthalmology Research

Bruce E. Stuck, GM-15
Detachment Director

MEMORANDUM FOR RECORD

SUBJECT: Further Assessment of Laser Incidents in Bosnia

1. Reference Memorandum for Record dated 28 October 1998 with subject *Laser Incidents in Bosnia*.
2. A tri-service group (USA, USN, USAF) of laser bioeffects experts met on 29 Oct 1998 and concurred with the assessment in Reference 1 with the additional recommendations specific to operational concerns.
3. Operational Concerns:
 - a. Field assessment of the laser source (if and when possible) was highly encouraged.
 - b. The medical risk from the encountered devices is assessed as low assuming that the laser is a sighting laser. If however, the laser appears rapidly pulsing--or flickering - there may be an increased risk and reassessment of the laser source is required.
 - c. Currently, the operational impact should be minimal except for additional caution and immediate reporting of any future encounters. Upon viewing a moving red light as reported in the recent incidents, mission abortion from a medical perspective would seem inappropriate at this juncture. If possible, avoid looking directly into the beam. Avoid rubbing your eyes after exposure.
 - d. Appropriate laser protective eyewear depends on knowledge of the laser. Laser protective eyewear that does not jeopardize flight operations would reduce the brightness of the laser source. However, direct within the beam viewing still may appear very bright. Experience with unexpected laser exposure shows that individuals have a wide range of visual reactions to relatively low levels of laser glare.
 - e. An ocular examination as soon as practical after exposure remains the appropriate procedure if any ocular discomfort is reported. Additional laser incident related questions will be provided upon request.

Jeremiah Brown, Jr
MAJ, MC
Chief, Ophthalmology Research

Bruce E. Stuck, GM-15
Detachment Director