

FAAM rules on laser safety

Introduction

Many users of FAAM need to operate lasers as part of the experiments that are carried out, both in the laboratory and on the aircraft. As part of FAAM's overall H&S policy, FAAM have a responsibility to ensure that laser work is carried out safely. Users have a duty to protect both themselves and others from the potential hazards involved. Much of FAAM's laser safety policy, outlined below, derives from BSI Technical Report 60825 [Reference ¹], and AURPO Guidance Note 7[Reference ²].

Role of the Laser Safety Advisor

FAAM's local Laser Safety Advisor (LSA), whose details are in FAMIL 01 has a role to ensure that:

all lasers are identified

lasers are labelled, where appropriate, and designated laser areas are clearly identified

safe systems of work are in place for the operation of lasers (including risk assessments)

a local record of trained laser users is maintained, to include FAAM, Met Office and University staff)

all lasers used within FAAM or on the aircraft are used in accordance with this guidance

Routine surveys are undertaken to ensure compliance with this guidance.

Laser identification and inventory

Full details of all laser instruments to be used on FAAM premises or employed on the FAAM aircraft will be submitted to the FAAM laser inventory. This does not include items such as low power Class 1 devices, Class 2 laser pointers, or embedded lasers within DVD players. If in doubt consult the FAAM LSA. This information will include, as a minimum:

Instrument

Manufacturer

Laser Type

Wavelength

Power output (continuous wave) or pulse power, duration and repetition rate (pulsed lasers)

Laser Class

Laser user Registration and training

A record will be maintained at FAAM of personnel involved in the direct use/operation of laser equipment contained within the FAAM Inventory. FAAM will require the users of lasers of Classes 3R, 3B and 4 to have attended an approved laser safety training course prior to commencing laser work at FAAM. This training will be expected to include at-least the following:

H&S policy for laser use

The risks of harm that may arise in the course of laser use

The meaning of displayed warning signs

The correct use of laser equipment including ancillary items such as personal protective equipment

Safe systems of work

Procedures to follow in the event of an accident

Laser labelling

All lasers used within the aircraft cabin will be labelled in accordance with PD IEC TR 60825-14. Externally mounted instruments will be labelled where practicable. During ground operation of aircraft-fitted lasers of Class 3R, 3B and 4, appropriate placards will be displayed to inform others within the hangar/airfield environment that this is the case.

Risk Assessments

Before use, a full risk assessment must have been submitted to the LSO by the controlling research group (or controlling member of staff within FAAM) for all work carried out using laser instrumentation of Class 3B or Class 4 (by design). This will be expected to cover the range of tasks that may be applicable to the instrument concerned, for example:

Normal Operation

Routine Alignment

Calibration

Servicing

These risk assessments must cover both beam and non-beam hazards associated with the laser equipment. It will be the responsibility of individual research groups to implement any resulting control measures. The FAAM (and Directflight in the case of aircraft work) LSO will need to approve these assessments before any work can be started.

Safe System of Work (SSW) with Lasers at FAAM

Research groups using Class 3B or Class 4 lasers shall be expected to provide a full written scheme of work describing all aspects of the laser use. Similar to the risk assessments mentioned above, this will require separate sections for normal operation, routine alignment and any required servicing tasks. These will be considered alongside the risk assessments by FAAM and Directflight, and kept for reference. The SSW should cover the procedures to follow in the event of accidental exposure to laser radiation from any given instrument. Example risk assessments and schemes of work may be found in the AURPO guidance note. It is anticipated that in many cases such documentation will already have been produced by the research users concerned as part of their own institutions' laser safety policy.

Beam Enclosure

Lasers of Classes 3B or 4 with exposed beams shall employ measures to limit/terminate the possible beam path as part of the risk control measures. As far as is reasonably practicable the beam shall be enclosed at all times during aircraft work on the ground. The hangar environment cannot be seen as a laser controlled area, and unterminated open beam work with laser instruments of Classes 3B or 4 cannot be permitted under normal circumstances owing to the presence of other personnel e.g. hangar staff, bystanders, engineering staff. Such work must take place either in the FAAM laser lab, with an appropriate scheme of work and risk assessments, or off site. Enclosures will bear suitable laser identification information where possible.

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- ¹ British Standards Institute, Safety of Laser Products – A user's guide, PD IEC TR 60825-14:2004 (ISBN 0 580 43659 4) -available from www.bsi.com
 - ² T Moseley and Gus Zabierek, Aurpo Guidance Note No 7 2006 Edition.. Available from www.aurpo.org