

Physics Division Procedure

**ORIGINAL**

Division Laser Safety Procedure

5/27/2008  
Version 1.0

Distribution to DLSO, ESH officer, RS Group Leader,  
Physics Division Web Page, and Division Director

Action	Person	Date	Signature
Originator	DLSO	5/27/2008	CP Haveron
Reviewed	ESH Officer	5/27/2008	Stephen P. Witten
Reviewed	RS Group Leader	5/29/2008	SB Kennedy
Approved	Division Director	5/29/2008	John R. Young

Annual Review	Date	Signature
DLSO	5/04/09	CP Haveron
DLSO	1/15/10	CP Haveron
DLSO	2/27/11	CP Haveron
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## 1. Introduction

To ensure a safe working environment in the Physics Division all laser users will abide by the ORNL requirements as specified in SBMS, the Physics Division Laser Procedure, and any additional requirements as deemed appropriate by the DLSO. SBMS outlines the application of the appropriate ANSI standard, currently ANSIZ136.1 -2000, to the ORNL work/management environment. SBMS Subject Area - LASERS includes procedures for 1. Planning to Work with Lasers, 2. Purchasing or Acquiring Lasers and Laser Systems, 3. Developing Laser Standard Operating Procedures, 4. Ensuring Worker Training and Qualification, 5. Installing Laser Equipment, and 6. Working with Lasers and Laser Systems. SBMS applies to all lasers; however, most requirements apply to Class 3b and Class 4 lasers.

## 2. Definitions

SBMS (Standard Based Management System) accessed from the ORNL home page  
NHZ – nominal hazard zone as defined in the ANSI standard  
DLSO- Division Laser Safety Officer  
MPE – maximum permissible exposure (see ANSI standard specifications)  
PI - principal investigator

## 3. Applicability

No additional requirements beyond SBMS apply for operation of a Class 1 or Class 2 laser. Additional requirements beyond SBMS are given below for Class 3a, 3b, and 4 lasers.

## 4. Requirements

Class 3a Operation: in addition to what is specified in SBMS, the following requirements apply to Class 3a operation:

1. Warning signs and labels as determined appropriate by the DLSO shall be posted by the PI for open beam configurations and for alignment.
2. Class 3a laser pointers shall not be used in spaces where persons in the audience may be exposed above the MPE.
3. Low power laser training is strongly recommended for all participants in Class 3a laser operation.

Class 3b and 4 Operation: in addition to what is specified in SBMS, the following requirements apply to Class 3b and 4 operation:

1. A procedure is required for each laser installation (lasers plus lab space) which shall cover operation, alignment, hazard analysis, signs, engineering and/or administrative controls, service, and interlock check. The procedure will be written by the PI, reviewed by the DLSO, ES&Q officer, lab space manager, and

approved by line management. Original copies will be maintained by the Research Operations Group Leader. Distribution is to reviewers/approver and the Research Support Group Leader.

The procedure will have instructions for a laser interlock check on all doors or panels which define the NHZ. The PI will perform a laser interlock check quarterly and document in a laser log book.

The procedure will be reviewed **annually** by the DLSO.

2. Laser inspections via checklist will be performed **annually** by the DLSO.
3. Eyewear inspection and inventory will be performed **annually** by the DLSO.
4. Each PI shall maintain a laser inventory for distribution to the ORNL laser safety manager.
5. All laser assessments will be entered into *a tracking system* ~~ACTS~~ by the DLSO.

For Class 3b and 4 lasers, temporary operation is allowed with direct supervision of the DLSO and with a temporary procedure. Conditions warranting temporary operation include: initial characterization of laser output, testing of interlocks for a new laser power supply, testing a laser system after delivery for acceptance, or other conditions approved by the DLSO. The shortened procedure most likely in email form would require the following:

1. A hazard analysis for the limited configuration of operation.
2. All participants will be high power laser qualified (as per SBMS).
3. An electrical inspection by the DESO, if appropriate.
4. Appropriate eyewear specified.
5. Administrative or engineering controls as specified in the ANSI standard to establish a NHZ.
6. Notification of the Division ESH&Q Officer and approval by line management prior to operation.