

# Appendix B

## Laser Operations Safety Audit Form

### Audit Information:

Auditor: \_\_\_\_\_ SOP#: \_\_\_\_\_ Audit Date: \_\_\_\_\_

Type of Audit:  Annual  New  Self-Assessment  Other

Facility Name: \_\_\_\_\_ Building: \_\_\_\_\_ Rooms: \_\_\_\_\_

Responsible Individual: \_\_\_\_\_

Room Contact During Audit: \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### Laser System Information

Class:  Class 4  Class 3B  Class 3R  Class 2M  Class 2  Class 1M

Class 1 embedded Embedded Class: \_\_\_\_\_

Commercial Laser System  Modified Commercial System  Homebuilt

Manufacturer: \_\_\_\_\_ Model: \_\_\_\_\_ Serial Number: \_\_\_\_\_

Laser Type (HeNe, etc.): \_\_\_\_\_ Wavelength (nm): \_\_\_\_\_

Continuous Wave Beam Power (W): \_\_\_\_\_

Single Pulsed  Repetitively Pulsed

Energy per Pulse (J): \_\_\_\_\_ Pulse Duration (sec.): \_\_\_\_\_

Pulse Repetition Frequency (Hz): \_\_\_\_\_

Beam Diameter (mm): \_\_\_\_\_ Divergence (mrad): \_\_\_\_\_

Collecting optics used (microscopes, binoculars, telescopes):  Y  N  NA

Comments: \_\_\_\_\_

\_\_\_\_\_

### Administrative and Procedural Controls

Written Standard Operating Procedures for operations and maintenance:  Y  N  NA

Alignment procedures (Class 3B and 4):  Y  N  NA

Laser safety training and authorization records available/current:  Y  N  NA

Laser eye exams (Class 3B and 4):  Y  N  NA

Written interlock procedures:  Y  N  NA

Interlock check sheet available and current:  Y  N  NA

Comments: \_\_\_\_\_

\_\_\_\_\_

### Posted Documentation and Security Measures:

Access door interlocks and status panel functional:  Key  Code  Badge  Y  N  NA

Laser status indicator outside room:  Y  N  NA

Access door signs current:  Y  N  NA

Emergency contact information current:  Y  N  NA

Unattended operation signs:  Y  N  NA

Posting on ancillary doors:  Y  N  NA

Eyewear requirements posted:  Y  N  NA

Nominal Hazard Zone established and demarcated for unenclosed systems:  Y  N  NA

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Laser Unit Safety Controls:

Laser classification labels present on commercial units:  Y  N  NA  
Protective housings in place:  Y  N  NA  
Housing interlock present and functioning:  Y  N  NA  
Beam shutters interlocked and functioning as per interlock check sheet:  Y  N  NA  
Interlock bypass functioning (=15 seconds):  Y  N  NA  
Key operation on operating console:  Y  N  NA  
Laser activation indicator on operating console:  Y  N  NA  
Emergency shutoff available:  Y  N  NA  
Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Engineering and Administrative Laser Safety Controls:

Beam path:  Totally open  Completely enclosed  Combination  
Beams enclosed where available:  Y  N  NA  
Beam enclosure methods:  
 Tubes  Perimeter guards  Panels/Curtains  Fiber optics  
Lasers and optics secured to table:  Y  N  NA  
Beam blocks secured to optical table:  Y  N  NA  
Fiber optics in use:  Bare  Enclosed  
Fiber ends/connectors labeled:  Y  N  NA  
Fiber conduit labeled:  Y  N  NA  
Beam properly contained (Not a hazard to persons sitting or standing):  Y  N  NA  
Adequate controls where beams leave table or leave enclosure:  Y  N  NA  
Entry curtains on door(s):  Y  N  NA  
Windows/door openings covered:  Y  N  NA  
Beams blocked from open by-passed doors:  Y  N  NA  
Non-essential reflective materials out of beam paths and surroundings:  Y  N  NA  
Administrative controls employed, barriers, demarcates:  Y  N  NA  
Upward directed beams are labeled:  Y  N  NA  
Evidence of stray beams (Marks on walls, etc.):  Y  N  NA  
Housekeeping acceptable:  Y  N  NA  
Alignment lasers in use (specify type): \_\_\_\_\_  Y  N  NA  
Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Personal Protective Equipment:

Properly labeled eyewear available for all personnel:  Y  N  NA  
Wavelength(s): \_\_\_\_\_ OD(s): \_\_\_\_\_ General  
condition of laser eyewear:  Very Good  Good  Fair  Damaged  
Observable cracks or scratches on lens:  Y  N  NA  
Properly stored (where): \_\_\_\_\_  
Proper skin protection available and employed for UV hazards:  Y  N  NA  
Viewing cards available for non-visible beams:  Y  N  NA  
Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Additional Class 4 Laser System Hazards

Class 4 Fire Hazard:  Y  N  NA  
Housekeeping fire hazards minimized:  Y  N  NA  
Class 4 Diffuse Reflection Hazard:  Y  N  NA  
Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Non-beam Hazards:

Metal fumes, chemical vapors, gases, and biological plumes controlled:  Y  N  NA  
Exhaust ventilation adequate:  Y  N  NA  
High voltage hazards minimized:  Y  N  NA  
Optical tables bonded to building ground:  Y  N  NA  
Electrical equipment certified by Nationally Recognized Testing Laboratory (UL, CSA, etc.):  Y  N  NA  
Compressed gases stored and used safely:  Y  N  NA  
Ionizing radiation (x-rays):  Y  N  NA  
Good housekeeping on optical tables:  Y  N  NA  
Container for sharps:  Y  N  NA  
Proper disposal of chemical wastes:  Y  N  NA  
Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Corrective actions required: \_\_\_\_\_