

LASERS

RHIC PROJECT

The ES&H Coordinator shall classify lasers used in the Project with concurrence from the Safety and Health Services Division (SHSD) Laser Safety Officer in accordance with BNL ES&H Standard 2.3.1, Tables A1 and A2.

I. LASER CLASSIFICATION

- A. **Class I, Exempt Lasers** cannot emit levels of radiation above the Maximum Permissible Exposure under any exposure condition inherent to the design of the laser. There are no specific safety requirements for operating Class I lasers. Currently, there are no Class I lasers in the Project.
- B. **Class II, Low-Power Visible Continuous Wave Lasers** can only emit visible radiation of sufficiently low power. Precautions for Class II lasers prohibit continuous focus into a direct beam or a beam reflected from a mirror-like surface. There is a Class II laser in the located in Building 902, Room 32.
- C. **Class III A and III B, Medium-Power Lasers** are potentially hazardous if the direct beam or a reflected beam is intercepted by the unprotected eye. The operation of Class IIIB lasers requires that authorized personnel have access exclusively. There is a Class IIIB laser located in the Building 1008 Annex. It is a Laser Science VSL-337ND, BNL# 89469.
- D. **Class IV, High-Power Lasers** may cause skin injury and represent a potential fire hazard. The operation of Class IV lasers requires the entire beam path be controlled. The laser shall be operated in designated areas where safety interlocks are used to prevent unexpected entry into the controlled area. Access shall be limited to persons wearing laser protection eye wear. Class IV lasers shall be provided with master key interlock devices controlled by an authorized user. There are 3 Class IV lasers assigned to the Project at this time. Two are located in Building 1006 and are associated with the Time Projection Chamber (TPC). They have the following properties:

Laser 1	
Type	ND:YAG
Manufacturer	SPECTRA PHYSICS
Model	GCR 130-10
Serial Number	118
Year of Production	1994
Maximum Energy	(mJ) 290 @ 1064 nm
Wavelength	(nm) 1064, 532, 266
External Wavelength	(nm) 266
Energy Used	(mJ) 35 @ 266 nm
Pulse Length	(ns) 5-8
Pulse Repetition Rate	10 Hz

Laser 2	
Type	Nd:YAG
Manufacturer	SPECTRA PHYSICS
Model	GCR 150-10
Serial Number	1367G
Year of Production	1997
Maximum Energy	(mJ) 690 @ 1064
Wavelength	(nm) 1064, 532, 266
External Wavelength	(nm) 266
Energy Used	(mJ) 50 @ 266 nm
Pulse Length	(ns) 5-8
Pulse Repetition Rate	10 Hz

One is located in Building 1008 and has the following properties:

Laser 3	
Type	Nd:YAG
Manufacturer	CONTINUUM
Model	Surelite II-10
Maximum Energy	(mJ) 650 @ 1064
Wavelength	(nm) 1064, 532, 266
External Wavelength	(nm) 266
Maximum External Energy Used	(mJ)215
Maximum Repetition Rate	10 Hz

II. LASER AREA POSTING

The ES&H Coordinator shall post "CAUTION" warnings outside Class II Laser Areas and "DANGER" warnings outside Class III and IV Laser Areas.

III. LASER INVENTORY

The ES&H Coordinator shall maintain an inventory of all Class IIIB and IV lasers used by Project staff or associated visiting scientists or students. This said inventory is documented herein.

IV. LASER SAFETY REVIEWS

The ES&H Coordinator for each Project shall coordinate with the BNL Laser Safety Officer (LSO) to ensure that each inventoried laser is subject to a safety review by the LSO each year and/or each time its use alters. Documentation of these reviews is maintained by the ES&H Coordinator.

V. LASER MEDICAL EXAMS

All Project staff, visiting scientists, or students who use the inventoried lasers must have laser eye exams before they begin work and upon finishing such work. The Project shall identify these individuals, refer them to the BNL Occupational Medicine Clinic, and ensure that these exams are obtained as required.

VI. LASER SAFETY TRAINING

- A. The Training Coordinator shall obtain and maintain Laser Safety training records and schedules for future training from the SHSD.
- B. The Training Coordinator shall disseminate training schedules and information to RHIC personnel and shall schedule training upon request.
- C. Line Supervisors shall ensure that their employees are trained to safely use lasers which they are authorized to use.

APPROVED _____
Satoshi Ozaki
RHIC Project Director

7/30/99
DATE _____