

BROOKHAVEN NATIONAL LABORATORY NATIONAL SYNCHROTRON LIGHT SOURCE		Number: LS-SDL- 0033	Revision: B
		Effective: 9/19/2003	Page 1 of 2
Subject: Laser Operator for the SDL Training Certification Checklist			
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Completion of the items on this checklist and the signature of an authorized trainer will constitute the record of certification for an individual to be a qualified operator of the Laser System. There are two levels of Certification. Level I authorizes the operator to run the Laser under normal operation as long as a Level II operator is reachable on site to deal with more complicated operations or difficult operational problems. Level II authorizes the operator to make optical adjustments to the laser system, the beam steering, and modify the electronics controlling the laser's synchronization with the accelerator.

Safety Requirements:

- 1. Read appropriate safety documentation. This includes the material in the SBMS Laser subject area, and the SDL SBMS Laser Standard Operating Procedures (SOP). It also includes any information specific to a device the operator is working on (e.g safety sections of manuals to lasers, test, and diagnostic equipment). It is the operators responsibility to learn the published safety procedures for any equipment he undertakes to use.
- 2. Take required BNL eye examination
- 3. Complete Laser Safety Awareness Training Course, Compressed Gas Course, and Basic Electrical Safety course..

Minimum Systems Knowledge requirements for qualified operators (both levels). A detailed description of the current system start-up and alignment procedures for basic operation is given in the SOP. Since the SDL is an experimental facility, the details of the SOP procedure may change. . The procedures listed there are effectively the present implementation of the tasks/skills listed below and required of a laser operator

- 1. Become familiar with laser interlock system. This is described in the SOP. Know location and operation of emergency shutdown buttons (two red buttons, one in the SE corner of the laser room, one above the telephone).
- 2. Understand power-up and power-down sequences of the pump lasers.
- 3. Demonstrate the ability to perform normal tune-up of the laser oscillator.

- 4. Demonstrate the ability to verify the alignment of the seed laser through the amplifiers.
- 5. Demonstrate the ability to safely power up the regenerative amplifier and multipass amplifier(s).
- 6. Understand all diagnostics readings, their normal states, and conditions requiring the intervention of a Level II operator.
- 7. Demonstrate the ability to control the laser parameters which may need to be varied during normal laser operation, e.g. laser power, spot size, and timing adjustments.

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Knowledge requirements for qualified Level II operators :

- 1. Demonstrate the ability to align or adjust the alignment of all of the self-contained commercial lasers in the system (pump lasers and oscillator)
- 2. Be knowledgeable of the operation of all of the chirped pulse amplification system, including the stretcher, the regenerative amplifier, the multipass amplifiers, and the compressor. It is required that the operator be capable of aligning or restoring the alignment of all components in each of these stages.
- 3. Demonstrate the ability to align and troubleshoot the frequency tripler.
- 4. Be knowledgeable of the details of the optical beam transport to the photocathode.
- 5. Be knowledgeable of the details of the electronics synchronizing the laser with the accelerator.

Operator Duties:

- 1. Provide light to the SDL in the parameter ranges required.
 - 2. Contact a Level II operator when required.
 - 3. Maintain Laser Operations Log.
 - 3. Shut down any part of the facility within their area of control which may present a safety hazard until that hazard has been removed.
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Trained Operator

Date

Authorized Trainer

Date

[Revision Review Log](#)