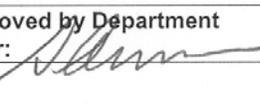


BROOKHAVEN NATIONAL LABORATORY PHYSICS DEPARTMENT	Number: PO-P-ATF-0023	Revision: 1
	Effective: 08/12/2004	Page 1 of 3
Subject: ATF Nd: YAG Laser Operation Procedure		Prepared by: Marcus Babzien
Reviewed by ES&H Coordinator: 	Approved by ATF Head: 	Approved by Department Chair: 

YAG Operations: Turning the System On

1. Prepare Interlock System.

- 1a. Verify that the YAG room, and for photocathode operation, the Gun Hutch are secure by checking the status indicators on the control room laser interlock panel. If not secured, follow the search and secure procedures for the room(s) as specified in the ATF handbook section 1.3.4.2.
- 1b. Obtain the YAG LASER SHUTTER KEY (#1) from the key box in the control room. For photocathode operation, also obtain the YAG TO GUN KEY (#2).
- 1c. Sign out the key(s) in the key log.
- 1d. Insert the key(s) into the appropriate lock on the MCR, YAG room, or Gun Hutch laser interlock panels and open the YAG LASER SHUTTER.
- 1e. For photocathode operation, open the YAG TO GUN SHUTTER.
- 1f. Close the UV shutter (yellow LED OFF).

2. Prepare Equipment.

- 2a. Turn ON the RUN power (circuit A) with the switch next to the YAG room door.

3. Check the Oscillator.

- 3a. Look at the oscilloscope on the SE corner of the table roof and verify proper autocorrelation shape and timing stabilizer phase lock.
- 3b. If no signal is seen, verify that the oscillator controller is not in standby mode.

4. Activate the Amplifiers.

- 4a. Return to the vestibule.
- 4b. Verify that the preamplifier pump voltage is set to its minimum, fully counterclockwise.
- 4c. Turn on the preamplifier key switch.
- 4d. Push the preamplifier HV ON switch.
- 4e. Verify that the amplifier triggering section key switch is on.
- 4f. Verify that the amplifier HV section power is on.
- 4g. Switch the amplifier trigger mode to EXT. Verify that the power supply begins to pulse.
- 4h. Return to the preamplifier and slowly raise the pump voltage to the posted value.

5. Check the Protection System Status.

- 5a. Return to the YAG room.
- 5b. If pulsing stops, or if the red indicators on the protection system panel in the corner rack go on, stop and notify a laser physicist.

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YAG Operations: Turning The System On (continued)

6. Record Data in the Logbook.

- 6a. Enter pump levels from the amplifier and preamplifier power supplies in the vestibule.
- 6b. Enter energy levels from the joulemeter readouts on the SW corner of the table roof.
Remember to return the readouts to normal operation and display channel A.

7. Return to the Control Room.

- 7a. Inform the physicist in charge of the laser status.

YAG Operations: Turning The System Off

1. Close Shutters.

- 1a. Close the UV shutter (yellow LED OFF).
- 1b. Return the key(s) to the key box and sign back in only if operations are to cease for an extended period.

2. Turn Off the Amplifiers.

- 2a. Enter the vestibule following the pass through procedure.
- 2b. Lower the HV pump level (counterclockwise) on the preamplifier power supply to its minimum.
- 2c. Turn off the preamplifier key switch.
- 2d. Set the amplifier power supply to MAN trigger mode.
- 2e. Turn off the power switch for the amplifier HV section, wait 5 seconds, then turn it on again.

3. Turn Off Remaining Equipment.

- 3a. Turn OFF the RUN power (circuit A) and verify the STANDBY power (circuit B) is ON with the switches next to the YAG room door.

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YAG Operations: Restart Following Power Outage

1. Oscillator.

- 1a. Turn OFF the RUN power (circuit A) and turn ON the STANDBY power (circuit B) with the switches next to the YAG room door. This will allow the oscillator to run in the absence of an interlock permit signal by closing an additional shutter.
- 1b. For outages of only a few minutes, the oscillator, timing stabilizer, and RF amplifier will operate on an uninterruptible power supply. For longer outages, the oscillator will shut down, and return to STANDBY mode when power is restored. Switch the oscillator controller from STANDBY to RUN mode to begin warm up. Thermal equilibrium is reached after many hours after a cold start.
- 1c. The small chiller in the vestibule must be running to establish the proper temperature around the oscillator. Verify that it is running and has adequate water level.

2. Interlock System.

- 2a. The interlock system powers up in a failsafe mode that disables all lasers power supplies. Use the Safety Officer Reset (SOR) key to re-enable the system. Every control panel must be enabled independently.

3. Amplifiers and Cooling.

- 3a. The amplifier power supplies are tied into the interlock system, and power switches must be cycled to start the cooling loops. Check that both the preamp and amplifier power supplies in the vestibule show proper temperature regulation on the heater controllers.
- 3b. The power supplies are cooled by the chiller in the high bay. It will not restart after power is restored. Use the START button to restore normal cooling operation.

4. Pulsers.

- 4a. Verify that the SRS DG-535 delay generators have returned to normal operation or restore saved memory settings as required.
- 4b. The DEI high voltage pulser on the YAG table roof must be manually reset after a power outage. Press the OUTPUT ENABLE button to return to normal operation.