CMS ECAL Laser System Operation Procedure

By Caltech Group, August 27, 2001

- Turn on the Laser System:
  1. Turn on the Chilled Water:
     - Open the bypass:
       * Open the out valve in the bypass;
       * Open the in valve in the bypass;
       * Checking status of the chilled water, and make sure it is OK.
     - Close the bypass:
       * Close the in valve in the bypass;
       * Close the out valve in the bypass;
     - Open the chilled water for the laser system:
       * Open the out valve in the laser channel;
       * Open the in valve in the laser channel.
  2. Turn on the Electrical Power:
     - Quantronix 224 power supply unit;
     - Neslab cooler;
     - Quantronix laser controller;
     - CAMAC;

- DG535 digital delay;
- HP54616C digital scope;
- Home made laser diagnostics;
- Home made laser safety box, and check the status of the door interlock and flashing warning lamp;
- Computer and monitor, and run *laser1* control program;
- Newport 1835C laser power meter, if necessary.

3. Turn on the Lasers:
   - Turn the key on the remote control box from **off** to **controls**;
   - Wait a few seconds then turn the key to **cooler**;
   - Wait until the water temperature in Quantronix 224 reaches 28 to 29°C then turn the key to **laser**;
   - Open the YLF laser shutter, green light (527 nm) will appear;
   - Gradually increase the pump laser current to the required value, e.g. 25 A, when passing threshold blue (440 nm) light will appear;
   - Turn on the Ti:Sapphire laser shutter by pushing the software button on the *laser1* program display;
   - Measure the Ti:Sapphire laser pulse energy with power meter if necessary.

- Turn Off the Laser System:
  1. Turn off the Lasers:
     - Turn off the Ti:Sapphire laser shutter by pushing the software button on the *laser1* program display;
     - Close the YLF laser shutter;
     - Turn the key on the remote control box from **laser** to **cooler**;
     - Wait 5 minutes, then turn the key on the remote control box to **controls**;
     - Wait a few seconds then turn the key to **off**.
  2. Turn off Electrical Power for all equipment.
  3. Turn off the Chilled Water:
     - Close the in valve in the laser channel;
     - Close the out valve in the laser channel.