SLACINJECTOR TN 05-01
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Schedule to Replace Tgun Cathode-Grid (Eimac Y-796)

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Ref: Tgun #1 Logbook, p. 89 (6/7/2005)

-00:30 •Beams off.

•Close VACV 406 and 415 to protect the downstream vacuum from possible vacuum failure at the gun.

•HV $\rightarrow$ 0. Following Gun Safety Procedures, turn off HVPS for both Tgun and Pgun at respective SLAC HVPS CID Interface Chassis. Turn off both HVPS breakers wearing safety glasses, then apply administrative locks (obtain key from MCC key safe).

•Bias $\rightarrow$ 0, run filament (toggle switch on control panel runs variac on HV deck) to minimum value (~4.5 V), turn off control panel, unplug ac power cord.

00 h •Enter CID Vault, ground HV deck and gun ceramic, install metal protective cover on ceramic.

•Close VACV 399 (manual valve†).

•Disconnect cables between HV deck and pulser,* remove pulser, gun extension and corona ring.

•Take pulser to lab to be checked out.

01 h •Relocate UVC HV transformer. Hook up portable pumping/purging station to pumpout port at VACV 401. Evacuate and leak check the pumpout line, open valve at pumpout port, begin N2 purge watching pressure in Y area. Remove old cathode using custom removal bars.

•In shop, vent new cathode with N2, transport to CID in plastic N2 bag.

•Install new cathode using silver-plated hardened gasket from Physical Electronics Department.

•End N2 purge, begin pumping on Tgun.

02 h •Leak check, restart VACP 401, close pumpout port. Remove portable pumping/purging station. Reinstall UVC HV transformer.

03 h •Reinstall pulser.

•Reconnect cables between HV deck and pulser.

•Pump down to $<<10^{-8}$ Torr (about 20 μA on IP) before turning on filament.

•Plug in ac power plug for bias/fil control panel. Set bias to ~80 V. Run (toggle switch on control panel runs variac on HV deck) fil to minimum voltage for initial outgassing (it should already be at minimum voltage).

•Measure filament and bias voltages at deck and simultaneously at control panel and with SCP readback.‡

- Measure filament power vs voltage by increasing voltage in steps. Keep voltage >8 V for at least 5 minutes to flash the filament. Monitor pressure at VACP 401 during initial increase of filament power and during flashing.

04 h
- Set filament and bias to expected running values.

On 6/7/2005, Pgun was brought online at about h=6. The following schedule for a cathode change with no Pgun is an estimate.

05 h
- Remove ceramic metal cover.
- Wipe down gun ceramic and corona shield and HV deck corona rings with ethanol.
- Open VACV 399.
- Open VACV 406 and 415.
- MCC operator search CID Vault and remove grounding hook.
- Set PPS to No Access.
- Remove administrative locks on HVPS breakers and turn on breakers while wearing safety glasses.

16 h
- Turn on Tgun HVPS. Begin HV processing .

24 h
- Complete Tgun HV processing.

†Close to the line for a complete seal. When the valve is closed just to isolate the Tgun from the Y-area vacuum, close short of the line.
*Connections to pulser are made with standard, electrically safe connectors. Thus, until the screen around the HV deck is removed, LOTO is not required.
‡The test points for the bias and the filament (current and voltage) are inside the HV deck screen. Thus an EWP is required since the bias is >50 V.