***If you are using a printed copy of this procedure, and not the on-screen version, then you MUST make sure the dates at the bottom of the printed copy and the on-screen version match. The on-screen version of the Collider-Accelerator Department Procedure is the Official Version. Hard copies of all signed, official C-A Operating Procedures are kept on file in the C-A ESHQ Training Office, Bldg. 911A.***

C-A OPERATIONS PROCEDURES MANUAL

# 12.47 TR-2 65 Degree Line Startup

Text Pages 2 through 5

Hand Processed Changes

| HPC No. | Date | Page Nos. | Initials |
|---|---|---|---|
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Approved: _____***Signature on File***_____ _____
Collider-Accelerator Department Chairman Date

C. Carlson

## 12.47 TR-2 65 Degree Line Startup

### 1. Purpose

The purpose of this procedure is to define the sequence of activities required to set up the TR-2 65 degree line.

### 2. Responsibilities

It is the responsibility of the person or persons executing this procedure to observe all safety rules.

### 3. Prerequisites

The person or persons executing this procedure shall have all formal training required of a TVDG Operator.

### 4. Precautions

None

### 5. Procedure

Checklist (when indicated by "___", initial step upon completion)

5.1 Perform the steps outlined in Setup For Target Room Operation

5.2 **Target Room**

5.2.1 _____ Downstream diagnostic chamber valve is closed.

5.2.2 _____ Target room radiation monitor plugged in and located adjacent to the diagnostic chamber.

5.2.3 _____ Target room upstream slits set to 0.250 each.

5.2.3.1 Record values. _____

5.2.4 _____ Diagnostic chamber vertical slits set to 1 3/4" opening.

5.2.5 _____ Cryo pumps are on, cold and open to the beam line.

5.3 **Accelerator Room Setup**

5.3.1 _____ Image Horizontal Slits set to 0.050/0.050.

5.3.1.1 Record values. _____

5.3.2 _____ 65 degree west fast valve sensor connected to the fast valve high voltage. Fast valve controller on and armed.

5.3.3 _____ 65 degree west beam plug removed.

5.4 **Control Room Setup**

5.4.1 _____ -200 VDC bias supply patched.

5.4.2 _____ Check for bias leakage on all (6) cups by observing leakage on the Kiethleys

5.4.3 _____ Beam monitoring signal connected.

5.4.3.1 _____ Right inner cup connected to chart recorder

5.4.3.2 _____ Chart recorder speed set to 0.025mm/sec

5.4.4 _____ Camera outputs patched to control room monitors.

5.4.5 _____ Intercom patched terminal in rack 18.

5.4.6 _____ 65 degree west beam line selected on the panel in rack 16.

5.4.7 _____ Connect upstream cup (rack 17) to keithly signal.

5.4.8 _____ Switch velocity selector to off.

5.4.9 _____ Switcher set to right polarity and predicted value.

5.4.10 _____ 65 degree west wall valve open.

5.4.11 _____ Image quad set to program values. Polarity set to reverse.

5.4.12 _____ Insert the upstream cup.

5.5 **Beam Setup**

5.5.1 _____ Aperture open source output should be 2 - 3 times required for run.

5.5.2 _____ Rotary aperture should reduce the intensity from 1/2 to 1/3 of source output, not to exceed 750na.

5.5.3 _____ Adjust the stripper gas flow for optimum beam, then reduce the beam current by reducing gas flow. This insures a minimum gas load on ion pumps in the machine.

5.5.3.1 _____ Record the ion pump current

5.5.3.2 _____ Record the stripper gas leak meter readings.

5.5.4 _____ Beam centered between the upstream slits with the image steerers at 500 using the switcher magnet.

5.5.5 _____ Beam about 3/8 inch in diameter and slightly elliptical, having its major axis horizontal in the upstream viewer

5.5.6 _____ Upstream viewer and cup removed.

5.5.7 _____ Beam is vertical line approximately 11/2 - 2 inches high in the downstream viewer.

5.5.8 _____ Downstream viewer removed.

5.5.9 _____ Beam centered in center faraday cup using target room steerer. Record center cup current. _____

5.5.10 _____ Dump cup in.

5.5.11 _____ Remove center cup.

5.5.12 _____ Open web valve. Beam in dump cup should equal the image cup current less the upstream slit currents.

5.5.13 _____ At this time center the beam vertically.

5.5.14 _____ Turn on trek amplifiers.

5.5.15 _____ Sweep generator set to a frequency of 1KHz, triangle wave.

5.5.16 _____ Calculate and record the flux in particles/cm2/sec as follows:

Flux(p/cm2/s)=Beam current(na) in center cup no sweep * 6.24E9/Q of delivered beam.

5.5.17 _____ Peak amplitude of the sweep generator set so the current in the left outer and right outer cups equals approximately 1/2 the intensity of the current in the left inner and right inner cups and adjust sweeper offset to center the beam.

5.5.18 _____ Image cup inserted.

5.6 **Running**

5.6.1 _____ If the beam current is stable (the source output has been stable for 30 minutes and machine transmission is good) roll is ready to start.

5.6.2 _____ Center cup removed.

5.6.3 _____ Diagnostic chamber downstream valve open.

5.6.4 _____ Web transport to speed.

5.6.5 _____ Image cup removed, run started. Record the time.

5.6.6 _____ Left and right outer cup readings close to equal. Record values on log sheet.

## 6. Documentation

The "___" (lines) in this procedure are for place-keeping only. This procedure is not a record.

## 7. References

None

## 8. Attachments

None