
Hall A Unser/0L02 Cross Calibration Procedure

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Estimated Time to Perform: ~25 minutes

Procedure Overview

This procedure is to be used by MCC operators to cross calibrate the Hall A Unser monitor with the BCM at 0L02 and is generally performed immediately following the [Hall A BCM Linearity Procedure](#). At the same time, it also calibrates the Hall A BCMs. This procedure is invasive; i.e., it will interrupt beam delivery to the other halls. The current calibration process consists of six 90-second intervals of maximum-current CW beam to Hall A (the level is determined the Program Deputy), separated by 90-second intervals of no beam (refer to [Figure 2-1 on page 3](#) for a current vs. time plot of the procedure). This procedure is not intended to be performed with less than 30 μA of CW beam. The data taken will be analyzed off-line by Hall A personnel. The setup steps in Section 1.0 are non-invasive and can be performed before turning off beam to the halls.

This procedure is divided into sections as follows:

Section 1.0 [Setup Steps \(non-invasive\) on page 2](#)

Section 2.0 [Taking Cross Calibration Data for the 0L02 BCM and the Hall A Unser \(invasive\) on page 2](#)

Prerequisites

1. The request for the Hall A current calibration must come from the Hall A Run Coordinator and be approved by the Program Deputy. Since this procedure interrupts beam delivery, the Hall A Run Coordinator or Program Deputy must first get approval from the other halls that are receiving beam.
2. 30–120 μA CW beam to Hall A (the current level should be specified by the Hall A Run Coordinator and approved by the Program Deputy).
3. CW beam delivery to Hall A has been set up according to the criteria established in the [Optics Restoration and Finalization Procedure](#) (i.e., you have clean CW transmission to Hall A).



Procedure Steps

1.0 Setup Steps (non-invasive)

NOTE: If you have just performed the *Hall A BCM Linearity Procedure* and have not performed the backout steps in that procedure, you are properly configured to perform the data-taking portion of *this* procedure. Jump directly to Section 2.0, [Step 4 on page 2](#).

1. Open the *Current Monitoring in the Injector/Polarized Source* screen (**J**Tab \Rightarrow **I**njector \Rightarrow **D**iagnos \Rightarrow **C**urrent/**B**CM \Rightarrow **I**nj **C**urrent **M**onitoring) and connect FC#2 to its picoammeter by clicking on the Picoammeter button.
2. Achieve the following conditions in Hall A:
 - Stop beam delivery to Hall A.
 - Mask the Hall A target-movement FSD bit as required for target removal.
 - Call Hall A and ask them to remove the target from the beam path (or verify that it is already OUT).
 - Mask the Hall A fast raster FSD bit on FSD node 1H002.
 - Turn OFF the Hall A fast raster.



2.0 Taking Cross Calibration Data for the OL02 BCM and the Hall A Unser (invasive)

CAUTION: The Hall A target must be removed from the beam path when performing this procedure.

1. Verify that FC#2 is in the “Picoammeter” mode (see Step 1, above). **THIS INSURES THAT THE PICOAMMETER SIGNAL IS AVAILABLE ACROSS THE FIREWALL SO THAT HALL A CAN ACQUIRE DATA.**
2. Call Hall A and verify that all necessary datataking signals are available to them.
3. Stop beam delivery to Halls B, C, and D and close their slits.
4. Switch to CW beam delivery at the highest possible current (this should be specified by the Program Deputy in consultation with the Hall A Run Coordinator and will be $\geq 30 \mu\text{A}$).
5. Insert FC#2.
6. Call the Hall A counting house and ask them to begin their data-logging process (FC#2 should still be in). After they inform you that they are logging data, wait 90 seconds and proceed to the following step.

NOTE: If the tune of the machine is such that injector BLM trips occur when FC#2 is inserted or removed, use FC#1 to “buffer” the insertion and removal of FC#2.
7. Pull FC#2 and wait for 90 seconds.

8. Insert FC#2 for 90 seconds and then return to Step 7, above (repeat Steps 7–8 five more times and then go to Step 9, below). Refer to Figure 2-1, below, for a graphical depiction of the data-logging process.

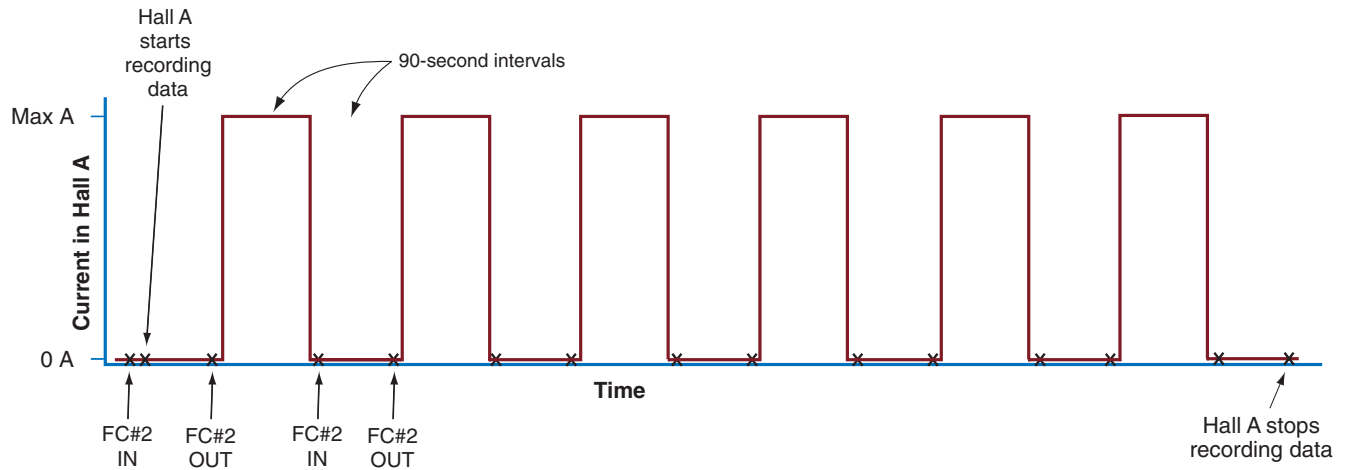


Figure 2-1: Graphical Depiction of Data-Logging Process

9. Wait 90 seconds (so the hall can acquire the last 90 seconds of “no current” data) and then call the Hall A counting house and tell them to stop their data acquisition process (FC#2 should already be inserted at this point).
10. Resume beam deliver to the other halls scheduled to receive beam.
11. Perform the following backout steps.
- Open the *Current Monitoring in the Injector/Polarized Source* screen (**JTabs⇒Injector⇒Diagnostics⇒Current/BCM⇒Inj Current Monitoring**) and reconnect FC#2 to its I to V amplifier by clicking on the I to V Chassis button.
 - Close all Xterm windows associated with this procedure.
- NOTE:** It is a good idea to contact Hall A at this point and verify that the following conditions are what they want.
- Turn ON the Hall A fast raster.
 - Unmask the Hall A fast raster FSD bit on FSD node 1H002.
12. PROCEDURE COMPLETE.

