## LCLS-II Traveler for the Class 1A Corrector Magnets

May 5, 2017

This traveler is intended to cover magnetic measurements of the Class 1A corrector magnets.

**Receiving:**

The following information is to be noted upon receipt of the magnets by the SLAC MFD group:

|  |  |
| --- | --- |
| Received by (initials): | SDA |
| Date placed on test stand (dd-mmm-yyyy): | 11/9/2017 |
| SLAC barcode number: | 4609 |
| Vendor serial number from magnet label: | 006 |
| SLAC approved electrical safety covers? (Y or N): | Y |
| SLAC approved lifting eyes? (Y or N): | n/a |
| Shipping Damage? (Y or N): | N |
| Vendor tests passed on magnet label? (Y or N): | N |
| SLAC drawing number (enter number): | SA-380-314-26 |

**Preparation:**

A beam direction arrow, with text “beam direction”, is to be applied to the top and/or connector side of the magnet, preferably by stenciling or rubber stamp, or by sticker supplied by LCLS-II. Place the beam direction arrow pointing as shown in Fig. 1.

|  |  |
| --- | --- |
| Beam-direction arrow in place (initials): | SDA |

**Fiducialization:**

No fiducialization needs to be done for these small steering coil magnets.

**Magnetic Measurements:**

Enter URL of on-line magnetic measurements data (please modify or correct if necessary):

|  |
| --- |
| http://www-group.slac.stanford.edu/met/MagMeas/MAGDATA/LCLS-II/Corr/4609/ |

1. Determine connection polarities (with power supply outputting positive current) for both the coils, which produce a “positive” field polarity as shown below:

 

**Figure 1**. All steering coils are defined as “positive” and are powered by bipolar supplies.

1. Mark the polarities near both pairs of magnet leads with clear “+” and “” labels as shown above.

|  |  |
| --- | --- |
| Labels and polarities have been marked (initials): | SDA |

1. Connect the magnet terminals, in the correct polarity as established above, to a bipolar power supply with maximum current *I* ≈ ±6 A.
2. Measure the dipole field *Bx* in the center of the gap with Hall probe from 6 to +6 A in 1-A steps, including zero (13 ‘up’ measurements), and then back down from +6 A to 6 in 1-A steps, including zero (13 ‘down’ measurements).

|  |  |
| --- | --- |
| Filename & run number of *Bx* data: | Bhvszdat.ru2 |

1. Measure the dipole field *By* in the center of the gap with Hall probe from 6 to +6 A in 1-A steps, including zero (13 ‘up’ measurements), and then back down from +6 A to 6 in 1-A steps, including zero (13 ‘down’ measurements).

|  |  |
| --- | --- |
| Filename & run number of *By* data: | Bhvszdat.ru1 |

1. For one magnet only, measure the length-integrated dipole field, ∫*Bxdl*, from 6 to +6 A in 1-A steps, including zero (13 ‘up’ measurements), and then back down from +6 A to 6 in 1-A steps, including zero (13 ‘down’ measurements).

|  |  |
| --- | --- |
| Filename & run number of ∫*Bxdl* data: | N/A |

1. For one magnet only, measure the length-integrated dipole field, ∫*Bydl*, from 6 to +6 A in 1-A steps, including zero (13 ‘up’ measurements), and then back down from +6 A to 6 in 1-A steps, including zero (13 ‘down’ measurements).

|  |  |
| --- | --- |
| Filename & run number of ∫*Bydl* data: | N/A |

1. Measure the inductance and resistance of each of the two coils on this magnet:

|  |  |
| --- | --- |
| Inductance of XCOR coils (mH): | 0.756 mH |
| Resistance of XCOR coils (Ohms): | 0.159 Ohm @ 22.1 oC |
| Inductance of YCOR coils (mH): | 0.597 mH |
| Resistance of YCOR coils (Ohms): | 0.147 Ohm @ 22.1 oC |

1. Upon completion of tests, send data link to Mark Woodley who will produce a data analysis file. Place data analysis file in magnetic measurements data directory

|  |  |
| --- | --- |
| Magnet data accepted and data analysis file produced | Via email |

Enter URL of on-line magnetic measurements analysis data :

|  |
| --- |
| http://www-group.slac.stanford.edu/met/MagMeas/MAGDATA/LCLS-II/Corr/4609/Type 1a.pptx |