

To: D. Skopik
From: J. Gomez
Subj.: Updated Moller Polarimeter section of
Hall A General Operations Manual
Date: 23 February 2010

Dear Dennis,

Please find attached the updated Moller polarimeter section of the Hall A General Operations Manual. The updated document reflects the changes made to the Moller polarimeter recently. The changes affect the target section of the polarimeter and can be summarized as:

- ✓ The pair of resistive Hemholtz coils used previously to magnetize the ferromagnetic target were replaced with a pair of superconducting Hemholtz coils. The corresponding power supplies were also replaced.
- ✓ The target holder and motion system was also replaced. The new system has only one degree-of-freedom (horizontal) and can place one of four available targets in the path of the beam. The original system had three degrees-of-freedom (horizontal, vertical and, rotation) and five targets.

Concerning the pair of superconducting Hemholtz coils, they were tested & mapped under the Physics Division document PHY-09-006-OSP, "Moeller Target Mapping" with issue date 06/09/2009 and expiration date 06/09/2012. The magnet tests & mapping were done in the Physics Storage Building 72. The magnet was successfully run up to its maximum design current of 120 A corresponding to a field in the warm bore of about 4 T.

Location and summary of the changes made to the original Moller polarimeter section of the Hall A General Operations Manual are indicated below. It is hoped that this listing will facilitate evaluation of the changes made.

1.1 Purpose and Layout - indicate that magnetization of the iron foil is now accomplished with a superconducting magnet.

1.2 Principles of Operation - remove references to tilted iron foil (foils are now at 90 degrees to beam). Remove foil angle from calculation of longitudinal beam polarization.

1.3.1 Control of the Moller Polarimeter - Update the Moller polarimeter control screen (Figure 1.2.) to show only one linear degree of motion (before there were three degrees of motion). Update procedure to access control screen. Indicate that operation of the superconducting Hemholtz coils are under the user.

1.3.2 Polarized Electron Target - All new. Section 1.3.2.1 "Superconducting Hemholtz Coils" describes the coils and how to operate them properly. Section 1.3.2.2. "Moller Target Foils" describes the new target foils and target motion mechanism. It also indicates how should the new system be operated.

1.5.1 Safety Assessment (Magnets) - added statements about the superconducting Hemholtz coils and power supply.

1.5.2 Safety Assessment (Magnetic field) - new section concerning the potential hazards and mitigation measures taken due to stray magnetic fields form the pair of superconducting Hemholtz coils.

1.5.3 Safety Assessment (Cryogenics) - new section concerning the cooling, warming up and refilling of the magnet cryogenics.

1.6 Authorized Personnel - list updated.

Please let me know if this covers the necessary points to be able to evaluate the update to the Moller polarimeter section of the Hall A General Operations Manual.