Appendix E

Hall A Infrastructure

We discuss below some of the important areas involving infrastructure issues in Hall A where progress has been made over the past eighteen months.

A first-order check of the experiment layout in Hall A has been done and no major obstructions have been found. The layout has both HRSs parked at 90 degrees to the beam line (left and right). Moving along the beam line towards the dump, one would encounter the cryogenic target approximately 7 meters upstream of the nominal pivot, the first (upstream) spectrometer toroid at the HRS pivot followed shortly after by the second (downstream) toroid and, the detectors approximately 19 meters downstream of the pivot. Møller events and degraded beam travel under vacuum all the way to the detectors and beam dump respectively. At this stage, no changes to either HRS (e.g. removing Q1) appear necessary for the upstream toroid and collimators to fit between the two HRS.

Cooling of the collimators and room temperature spectrometer toroids will be done using a closed low conductivity water (LCW) circuit to contain the beam activated water in the hall. A heat exchanger will transfer the heat from the closed system to the JLab wide LCW system. An additional 1 MVA electrical transformer would be added to handle the load brought by the spectrometer toroids.

A one meter thick concrete wall will cover most of the spectrometer length to minimize hall backgrounds. Guidance from JLab's Radiation Control group has been sought concerning various radiological issues brought up by this experiment, such as how best to handle the disassembly and storage of activated parts for a multi-year experiment with other experiments taking place in between.

Moving the target seven meters upstream puts it too close to the existing beam optics elements for them to be effective. A possible solution consists of removing the "ep" energy measuring system and shifting the Möller polarimeter upstream (the polarimeter quadrupoles are always used). This will provide a separation of about 11 meters between the last quadrupole and the new target position. The fast raster will be moved forward so the raster amplitude it is not affected by the beam transport optics as is now. Another quadrupole will be inserted in the present

location of the fast raster.