

Proposed Run Plan Items

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Goals

- Present run plan item requests with the reasons behind them
- Suggest a middle ground that I believe maximizes physics goals and (hopefully) happiness
- Generate discussion so that agreements can be reached

Requests

- On each item, wait until the proposal has been presented to discuss requests so that the discussion will be fully informed
- Allow me to cut you off if the discussions go too long so that we can address all items. Likely on some (or all) of these points, discussion will need to be taken offline.

With First Beam

- MCC would like to send high current beam *before* we start physics.
- *We must* center the beam and do beamline checkout before this can happen. This is non-negotiable per the tritium operational procedures.
 - This entails beam centering, BPM checks, raster sizing, and Ion Chamber checks
- This requires the target to be cooled and shifts to be manned when we have a better idea of when beam will arrive.

Beam Centering

- LHRS: Use π^+ . Zhihong calculated the π^+ rate on the optics target as $\sim 6.5\text{kHz}$ at 3.1 GeV. The π^+ rate on the carbon hole should then be $\sim 125\text{Hz}$ when centered.
- RHRS: Set the momentum to 1.5 GeV to increase rate. This will occur before MCC does their high current beam tests, so the magnets will have time to ramp back up.
- By having two methods in mind, we can ensure that we have backup in case we experience any difficulties.

BCM Calibration

- The BCMs need to be calibrated, especially after we have been down.
- This should not take significant time.

Positrons

- Idea 1: Take positrons at low angle. Analyze on the fly to determine if we should continue.
 - Pro: We have checked and verified that we know what is going on
 - Con: We use time

Positrons

- Idea 2: We skip positrons and check Hall C data when they take positrons
 - Pro: We do not spend the time
 - Con: We did not check it ourselves, introducing uncertainty

Positrons

- Proposal: Stick with idea 1 of taking positrons. We expect the findings to be negligible, which will minimize the time spent. If we do see anything, we will be happy that we checked.

Boiling Study

- Idea 1: Spend about 5 days (assuming 50% efficiency) to collect 100k good events on each target to minimize uncertainties.
 - Pro: It will bring down the uncertainty
 - Con: It is a large time investment

Boiling Study

- Idea 2: Don't do a boiling study. We have one already. Statistics are not the dominant uncertainty.
 - Pro: Save time
 - Con: We have a quantity that we have not studied this run period.

Boiling Study

- Idea 3: Do a very short boiling study. Statistics are not the dominant uncertainty. However, we should verify that nothing has significantly changed.
 - Pro: We check that we correctly understand what it happening
 - Con: Small time investment

Boiling Study

- Proposal: I propose that we go with Idea 3. This does not use a lot of time, but we do check our understanding of the target. This is a middle ground between ideas 1 and 2.
- Hall C has said that they will turn off their beam for a short boiling study if we will turn off our beam for their boiling study. This seems like an ideal solution to ensure quality beam.

Optics

- Idea 1: Do not take optics data. The optics for the HRSs are considered to be very good with little room for improvement.
 - Pro: We have more time for other studies and physics
 - Con: We assume without checking that our optics are good

Optics

- Idea 2: Take optics data. We have not taken optics data at this momentum, so we should verify that we understand our detectors.
 - Pro: We will have confirmation of our optics
 - Con: Takes time and we cannot have raster off

Optics

- Proposal: Meet in the middle. Spend a short amount of time (~1 shift) doing a quick optics check. This way we verify that we know our optics like we believe we do. We also learn of any issues that may or may not be present.
- I have learned that there is discussion of at least one student studying absolute cross sections. This information will be quite useful for them.

Discuss

- This is largely a collection of what has been discussed with me.
- With beam coming in (hopefully) less than 2 weeks, we need to nail down what our initial goals are.
- I do not expect a consensus right at this moment, but I hope that this sparks conversations.