

MAC questions:

- 1) What reliability issues have not been confidently solved (solutions in place)? RF high power: HILL, RF ops: VAN WINKLE, Magnets and power supplies: WIENANDS, Operations: ERICKSON, Diagnostics: FISHER
 - 2) More discussion of mis-matches of IP beam sizes, knowledge of individual beam sizes at ip? WIENANDS
 - 3) Accelerator physics plan for startup - would like more details on decision points, branch structure. SULLIVAN
 - 4) Review measurements with lower beta* optics: WITTMER
 - 5) Phase transient along bunch train as function of gap size: RIVETTA, DECKER
 - 6) (exec session) - what fraction of key people's time will be available Jan 1-Sept 30, 2008? SEEMAN, MACFARLANE
 - 7) At peak luminosity at the end of Run 6, what were the reasons the currents could not be raised during collisions for both rings? SULLIVAN, DECKER
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From: Wittmer, Walter
Sent: Fri 11/16/2007 10:56 AM
To: Seeman, John
Subject: Re: Questions from the MAC committee

Hi John

Answer to 4:

The MD consisted of two stages:

Stage 1:

Test the behavior of the knob in collision: The plan was to dial in the knob with BABAR taking data and checking on dead time and background.
What happened:

We started to dial in the knob in collision while delivering to babar. We took time to have the tune moved back by the operator. This worked fine for the first 20% of the knob. After that the dead time and backgrounds got so bad that BABAR did not want to take data while we put in the knob.

From there we went to 50% in steps with correcting the tunes and at 50% we dialed in a unit of vertical chromaticity. The backgrounds got increasingly worse and the tune moves would not recover that. Also the HER lifetime dropped and could not be recovered. In parallel the luminosity started to drop significant.

At 80% it got so bad that we saw no way to continue in collision to dial in 100%. Mat looked at the beam losses and we saw the losses were reasonable

everywhere except in IR2. We dumped the beam and put in 100% of the solution.

The orbit was monitored up to the point when we dumped the beam. At 50% of the knob we tried a micado steer to take out the waves but it did not do the job so we backed out the correction. As the waves were small (lower than 250 microns at 80% of the solution) we decided to see how far we can get until we have to correct. When we dumped the beam and went to single bunch we had no zero knob reference to compare to so we left whatever the knob does in and took the measurements.

Stage 2:

Characterize the lattice with the knob in in single bunch mode: We took phase advance, mia data and FJD orbits. Additionally we measured chromaticity.

I am putting a couple of slides together to present an overview of all the MDs we have done.

Walter

From: Van Winkle, Daniel
Sent: Fri 11/16/2007 10:34 AM
To: Seeman, John
Cc: Rivetta, Claudio H; Fox, John D.
Subject: RE: Questions from the MAC committee

Hi John,

Here are my responses to the MAC questions. I will not be there at 3:30 today as Friday is a day I work from home, and I have a Dr's appointment this afternoon at 4PM. I also, unfortunately will miss the wrap up tomorrow but I have roped Claudio and John into being there (both tomorrow and today at 3:30) to respond to any questions that may arise concerning RF operations . Both of them are keenly aware of the issues we face and get to listen to my concerns on a daily basis so I think they'll be able to answer any further questions the committee may have.

I think we're in good shape in terms of RF operations (some of that, though, may depend on what occurs in the layoffs, but I assume you guys talk about that in the executive sessions, so I won't include my thoughts on it in my official comments). I'm, however, not super confident how the high power RF stuff will hold up under the maximum beam currents. The fact that we're seeing arcing in the large waveguides is very troublesome.

Anyway, here are my "official comments".

In terms of RF operations, we feel confident that we will be able to meet the increased requirements as we push higher and higher in current. For many years now, we have been able to respond on a proactive basis for ever increasing requirements so in terms of implemented solutions, we feel we are ready.

In terms of reliability, I think it's fair to say (as I pointed out in my talk) that we do not have a solid solution for our two biggest issues; AC power Dips and LR4-4 drive dropouts. However, we have plans to work on both of them and will do our very best to mitigate these issues.

My personal opinion is that we should be carefully evaluating the tradeoffs we see as we push higher and higher in current. That is, if we get increased peak lumi, is it at a cost of lower integrated due to an increase in aborts? I think the PEP-II accelerator physics team is well positioned and keenly aware of this issue so I don't think it will be a problem.

We are moving into a realm where we will be pushing every bit of the RF systems to the very limit of operation. This is bound to break things. We need to be very proactive and attentive to avoid breaking something catastrophically.

Finally, I am not confident that we have solved the problem that cropped up at the end of Run 6 in terms of HR21-1. We were having serious vacuum problems in that cavity that I'm not sure have been fixed by simply ti-nitriding the coupler box. I don't think we'll know until we get current in the machine whether that problem is fixed or not. But, Alan Hill and Heinz Schwarz should have a better handle on that issue than I do.

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