Minutes GTOCC Meeting 10/6/00

Attending: Ronaldo Bellazzini, Toby Burnett, Seth Digel, Arache Djannati-Atai, Eduardo do Couto e Silva, Tune Kamae, Robert Johnson, Hartmut Sadrozinski,
N. Johnson, S. Ritz and D. Thompson send their apologies.
E. Bloom kibitzing.

Agenda:

> TKR simulations: tray material Hartmut
> Science simulations SG3.5 Seth
> BTEM results vs simulations Eduardo
> Review of report to WEA Hartmut
> Discussion and vote on recommendation All

1) TKR Simulation status:

Everybody agreed that the calorimeter response is not a decision driver.
The tracker response has been evaluated with the idea to slightly increase the converter layers in the front part, with corresponding or slightly larger reduction in the back part. The motivation comes from the realization that the present design of the trays contains material of the order 1.7%R.L., of which about half has a fair distance from the converter, where the conversion is assumed to occur. The AO simulations had this at 1.3%. Earlier simulation showed a 3% increase in PSF68 for every mm of the distance conversion point - converter. This effect is being simulated as we speak, with both a 2.5%RL and a 3.5%RL converter layout having both 1.3%RL and a 1.6%RL tray material, respectively. We have now good evidence that the front PSF68 increases by 10% when increasing the tray material from 1.3% to 1.7% in the AO layout (GLAST25).

To finish this work, including proper science simulations, we will need about 2 more weeks.

Issues:

The simulations of GLAST25 at the time of the AO and now show agreement at 100MeV, but a difference of about 20% in the PSF68 at high energy. The effective area's are within 10%. We will continue to hunt down the cause.

2) Science Simulations:

Seth discussed his simulations of an "hybrid" layout, mixing the parameters from the layout with 3.5% converters in front with those from the back of the AO layout with 25% converters. The relative effective areas were adjusted such that the total effective area will come out at 11,000cm^2. Seth's still incomplete study is attached. It is clear that this layout compares well with GLAST25: in all three science drivers: Flux limit for high latitude sources, Source separation and transient signals. Seth made the point again that he simulates the sky coverage of the non-pointing operation of GLAST, and that we should compare the off-axis performance (~35deg) of different layouts.

3) BTEM Analysis

For the front of the BTEM tracker, Eduardo showed nice agreement between the BTEM simulations and the AO simulations when scaled to 3.5% converters. He also showed good agreement between simulation and data above 1GeV, but disagreement at the 30% level below 1GeV. One large correction (~30%) applied is the extrapolation to zero foil thickness in the tagged photon beam from the data with 0.9%, 2.7% and 8.9%. The question was raised if this could not be included in the Monte Carlo. The PSF68 in the back section is about a factor 2x worse than in the front, about as expected.

4) Review of the Group Report to the IPM William E Althouse

The structure of the report was discussed. The slightly modified new version is attached as Appendix A. Arache volunteered to write a section on "Analytical Model of the Science Drivers", which will be Appendix D of the report. A dead line of two weeks (Oct 20) was established. It was pointed out that most of the background material is already available in form of either a report or a presentation, so early submission by authors is encouraged. The Chair will communicate this delay to WEA (the original dead line is Oct 10.)

5) Discussion of and vote on the recommendation.
The original proposal of the recommendation as sent out was modified slightly both in the first and second paragraph. This will allow further simulations into the effect of the tray material before a final decision on 3.0 vs. 3.5% is done. The committee asked for a fourth paragraph expressing our confidence in the cosmic ray rejection power of the instrument. Steve Ritz was volunteered to write this.
A vote was taken and all attending agreed with the proposed recommendation (Appendix B). Hartmut will circulate within two weeks data which permit to decide between 3.0% and 3.5% converter thickness in the front section.

Appendix A

Outline Version 2 10/6/2000
GTOCC Report

Section	# of Pages	Author:
Executive summary	0.5	Sadrozinski
Issues with AO layout	1	Sadrozinski *
a) Calorimeter response		
b) TKR response		
c) Effective Area Goal		
Summary: Simulation of Calorimeter Response	1	Johnson/Djamati-Atai
Summary: Simulation of Tracker Response	1	Sadrozinski/Hernando
Summary: Science Simulations	1	Digel
Summary: Comparison with BTEM data	1	do Couto e Silva
Detector Layout Questions	0.5	Sadrozinski
Recommendation	0.5	Sadrozinski

Appendix A:	
Simulation of low-energy calorimeter response	Djamati-Atai *
Simulation of low-energy calorimeter response in the last two TKR layers	Johnson *
Appendix B:	
Simulation TKR layouts	Sadrozinski *
Appendix C:	
Science simulations GLAST3.5 vs. GLASTx	Digel *
Appendix D:	
Analytical Model of science simulation	Djamati-Atai

* essentially done

Appendix B

Recommendation as per GTOCC decision 10/6/00:

1) increase the converter thickness in the front from 2.5% in the AO layout to 3.0% OR 3.5% (TBR within 2 weeks, subject to understanding the effect of the tray material) to decrease the relative influence from the distributed mass of the tray.
2) given that the effective area goal of the instrument is 10,000cm^2, we will set as our design goal an effective area of 11,000cm^2. This allows for some margin in the MC simulation. This will allow to change the converter from Pb to W without a mass penalty.
3) a decrease in the converter thickness in the back section has been favored by a majority of the committee. The proposed layout will reduce the converter thickness in the back section from 25% to 18%.
4)< S. Ritz' positive statement about C.R. rejection>