Discussion of the MC:
Comparison of Noise and simulated Noise.

Clock Trigger
MC Noise Sim.

Comments:

1) Don't worry about 1PE peak
   1a) Don't worry about calib artifact.
   1b) Overall normalization is forced to be ~correct for AS layer. It is based on scaler rates and probably wrong by a not small amount.
2) Worry only a little about the shape from 0-10 PE.
3) Worry a lot about muon peak position.
Fiddle with parameters to see if the MC/Data improvement can be improved.

1) PMT efficiency - Mult x 0.5 to move muon peak from 250PEs to 125PEs

2) Noise rate normalized so that rate in AS layer PMTs is 20kHz. This is a bad idea because the scaler rate is about 20kHz, not the 1 PE rate. The 1 PE rate is higher.
PMT Eff * = 0.5:

Redo the noise with the 1PE efficiency reduced by 50%. Double the rate of noise events to compensate.

Comments:

1) Muon Peak looks good.
2) Other features look worse.
PMT Eff *= 0.5:
Increase rate to 40kHz (PEs/s)

Comments:

1) This is the best set of plots.

2) Slightly less light in as layer than predicted. Depth? Cover reflectivity?

3) More muons than expected in bottom layer. Sim. threshold? Throw Area?

4) Poor agreement from 100-1000PE in muon layer
Pes/Muon:

Data $\sim 125$
G3 $\sim 250$
G4 $\sim 200$
Conclude: Data shows strong evidence that the PMT efficiency is ~0.5x predicted eff.

Question to simulation: Why?

1) Get more clock triggers.
   a) Confirm results.
   b) Check for agreement with different set of calibrations.

2) PMT simulation.
   a) Hits below low threshold?
   b) Goop on the PMTs?
   b) ????


4) May solve problem that Bob observes with the moon.

5) ????????