To: Safety Committee

From: Clasby

Re: Safety Review

Attached are assembly drawings for safety review. This is for the G2 cave assembly that will reside within the G2 hutch.

The walls are modeled as ½ inch slabs to represent the typical steel-lead-steel laminate used for shielding walls. The walls are supported by a frame made up of box-beams to allow not only for the support of the walls but also for additional weight on the roof. I will be working with Dana to ensure the seams and corners are sealed with additional lead sheet as required.

The only innovative or unusual feature of this cave is the door, which has two moving panels. This was done to maximize the opening to allow easy access to the optics box as well as allow installation of said box. For the same reason, the door is set at a 45° angle to the hutch walls. As designed, the opening is currently about 28” as opposed to about 18 inches for a single door. Each moving door panel will weigh approximately 250 pounds and is supported by two ball bearing blocks rated at 2100 pounds each.

To prevent x-ray scatter from passing between the two panels there is what I’ve been calling a door labyrinth. This consists of two long plates that overlap each other as shown in the attached drawing #1. With these in place, there is no path for a potential photon to pass without making several ‘bounces’ or passing through multiple layers of the steel plates. By adding another set of these plates to the ‘pocket’ into which the door slides we can potentially eliminate one of the walls as shown in the same and subsequent drawing.

In each of the attached drawings, I’ve only shown the major parts that constitute the shielding wall, as there are many small structural elements that serve to clutter the pictures. As always, let me know if there is further information or clarification needed.

-Clasby