

LANL LBNE 3QFY14 Quarterly Report

August 2014

1. Design of Improved Cherenkov Detector for NuMI Alcove 1

As shown in Figure 1, a medium pressure Tee has been designed for the improved Cherenkov detector in alcove 1. This medium pressure Tee will allow for pressures in the Cherenkov detector between vacuum and 300 psig with a safety factor of 4. A total of five Tees will be fabricated this summer.

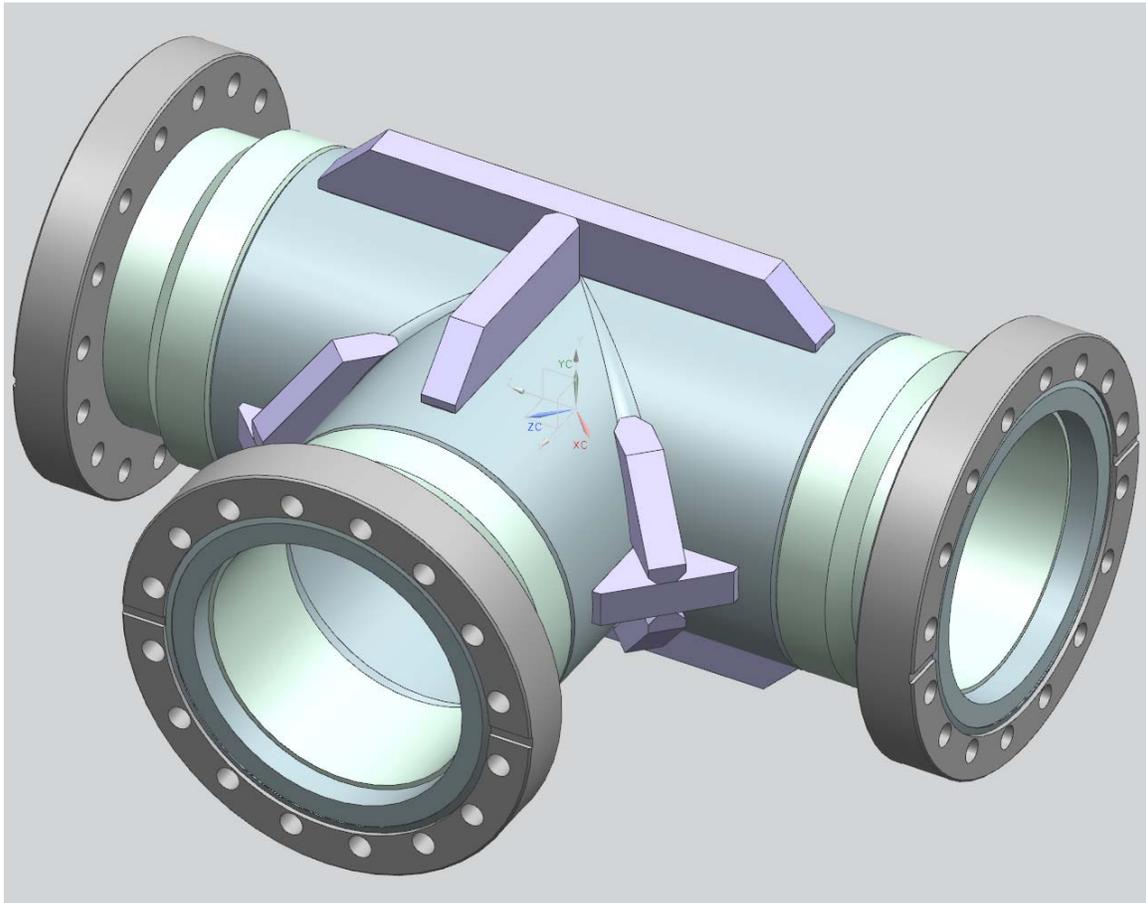


Figure 1: Design of a medium pressure Tee for the Cherenkov detector in alcove 1.

2. Conceptual Design of an Oil-Filled Stopped Muon Detector

A conceptual design has been made for an oil-filled stopped muon detector. As shown in Figure 2, the 8" diameter inner oil volume will be viewed by four gated phototubes. The phototubes are gated (i.e. the phototube voltage will be turned off during the beam spill) in order to prevent the high beam flux during the spill from

causing sagging of the phototube voltage. Outside the inner volume is a 12" diameter outer oil volume with scintillator, which will serve as a veto region. This outer volume is viewed by two gated phototubes connected to wave shifting fibers. Once constructed, this stopped muon detector will be tested in alcove 2.

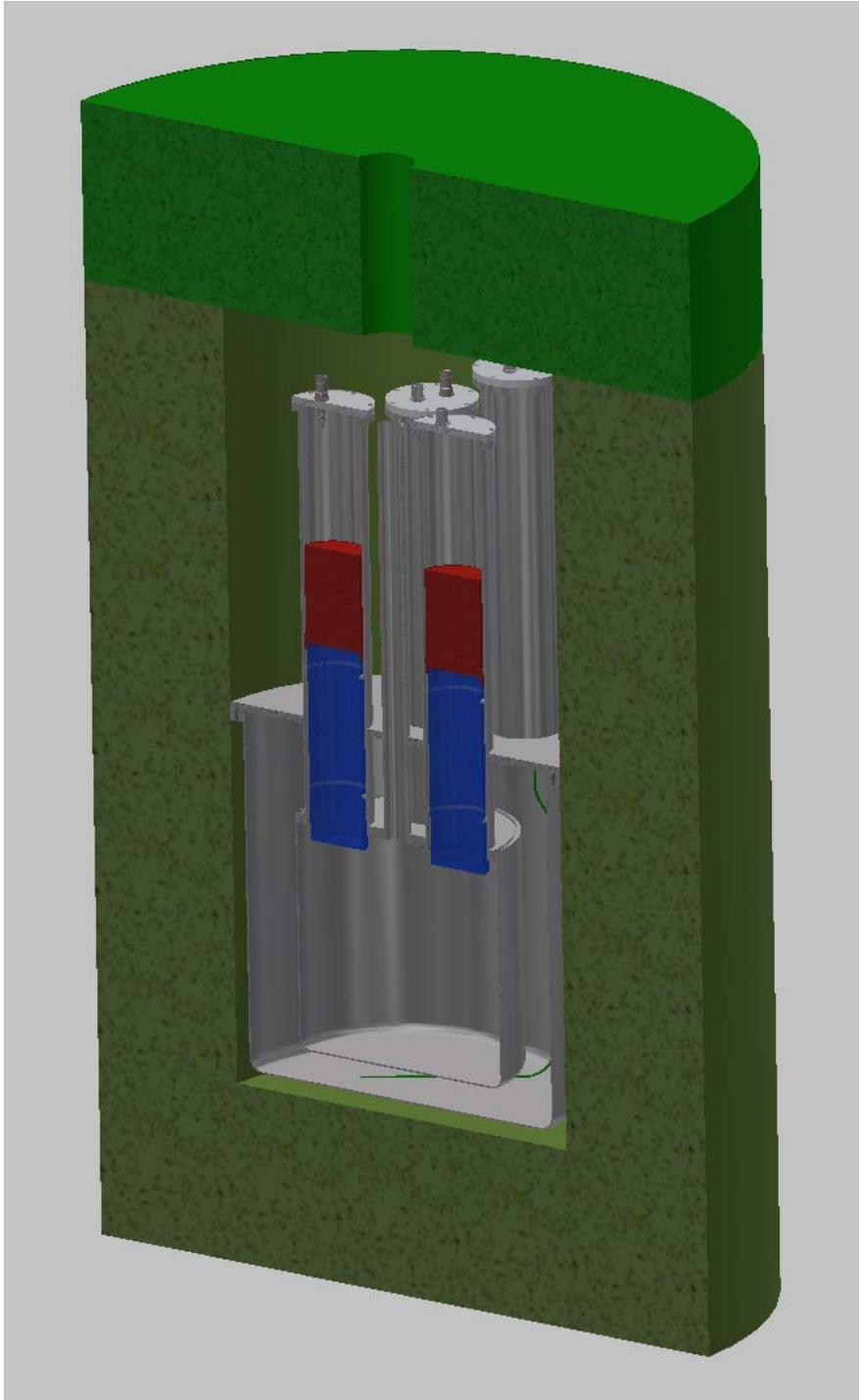


Figure 2: A schematic drawing of an oil-filled stopped muon detector.

3. Dimensions and Layout of Alcove 1

Progress has been made on the alcove 1 dimensions and layout and on the design of the alcove 1 detectors. Figure 3 shows a laser scan of alcove 1, looking downstream of the absorber. The scan has determined the useable dimensions of alcove 1 and has confirmed the extra 1.3 m of space on the beam left side of the hall.



Figure 3: A laser scan of alcove 1.

4. New FGT Model

A new model of the FGT has been generated that makes changes from the BARC magnet design. As shown in Figure 4, the magnet “C” modules have slots for the RPCs and ports for the STT/ECAL services.

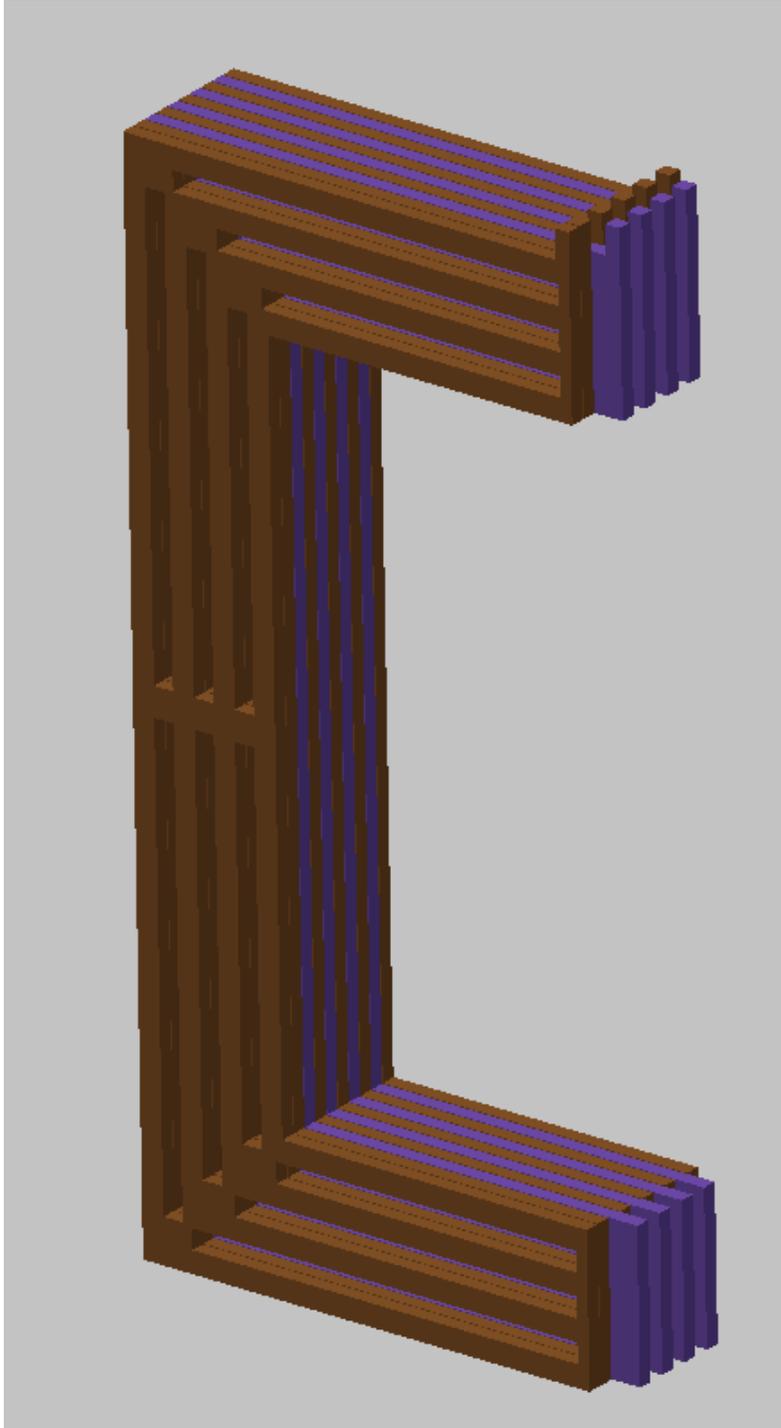


Figure 4: A schematic drawing of one of the magnet "C" modules, showing the slots for the RPCs and ports for the STT/ECAL services.