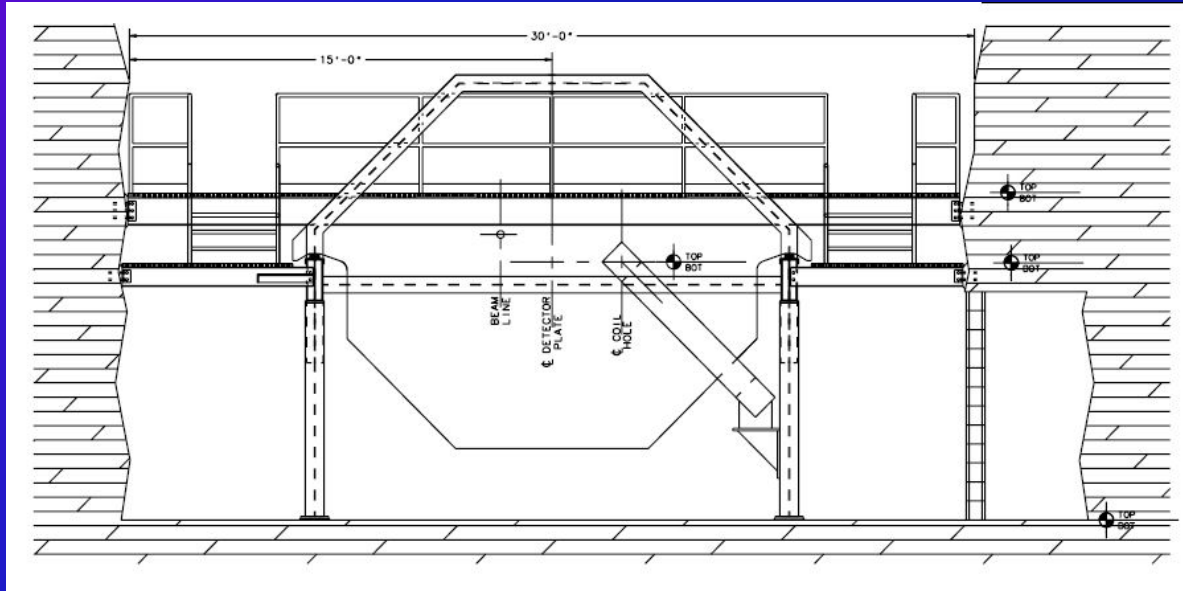
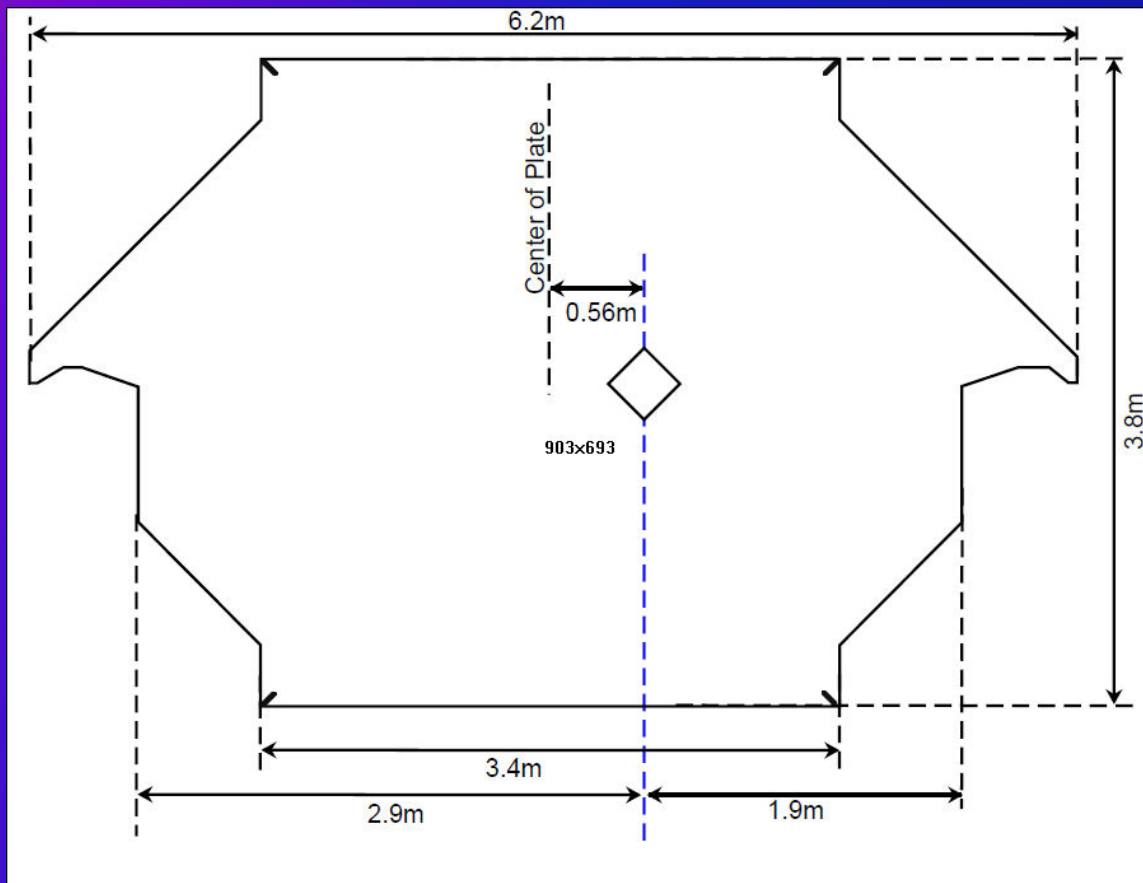


Far Detector Engineering



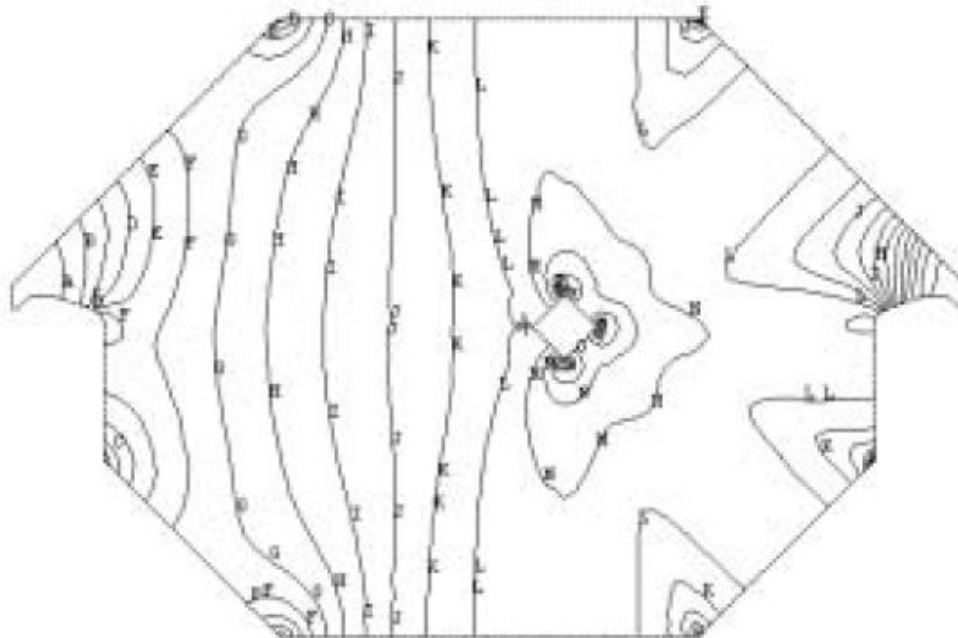
- We are using the MINOS near detector as a starting point
 - ◆ $\approx 1\text{kT}$
 - ◆ Plates are 1" thick and roughly 4 X 5 m
 - ◆ $B > 1T$ (for most of area)

MINOS ND Plate



- 30 cm square hole for Cu (and H₂O cooling)
- 40 kA-turns

MINOS ND Field Map



```

ANSYS 5.1 35
AUG 21 1998
08:59:56
NODAL SOLUTION
STEP=1
SUB =1
TIME=1
ESUM (AVG)
SMN =-0.002112
SMX =-2.859
A =0.1
B =0.25
C =0.4
D =0.55
E =0.7
F =0.85
G =1
H =-1.15
I =-1.3
J =-1.45
K =-1.6
L =-1.75
M =-1.9
N =-2.05
O =-2.2
P =-2.35
Q =-2.5
R =-2.65
S =-2.8
T =-2.95
U =-3.1

```

VLENF Far Detector

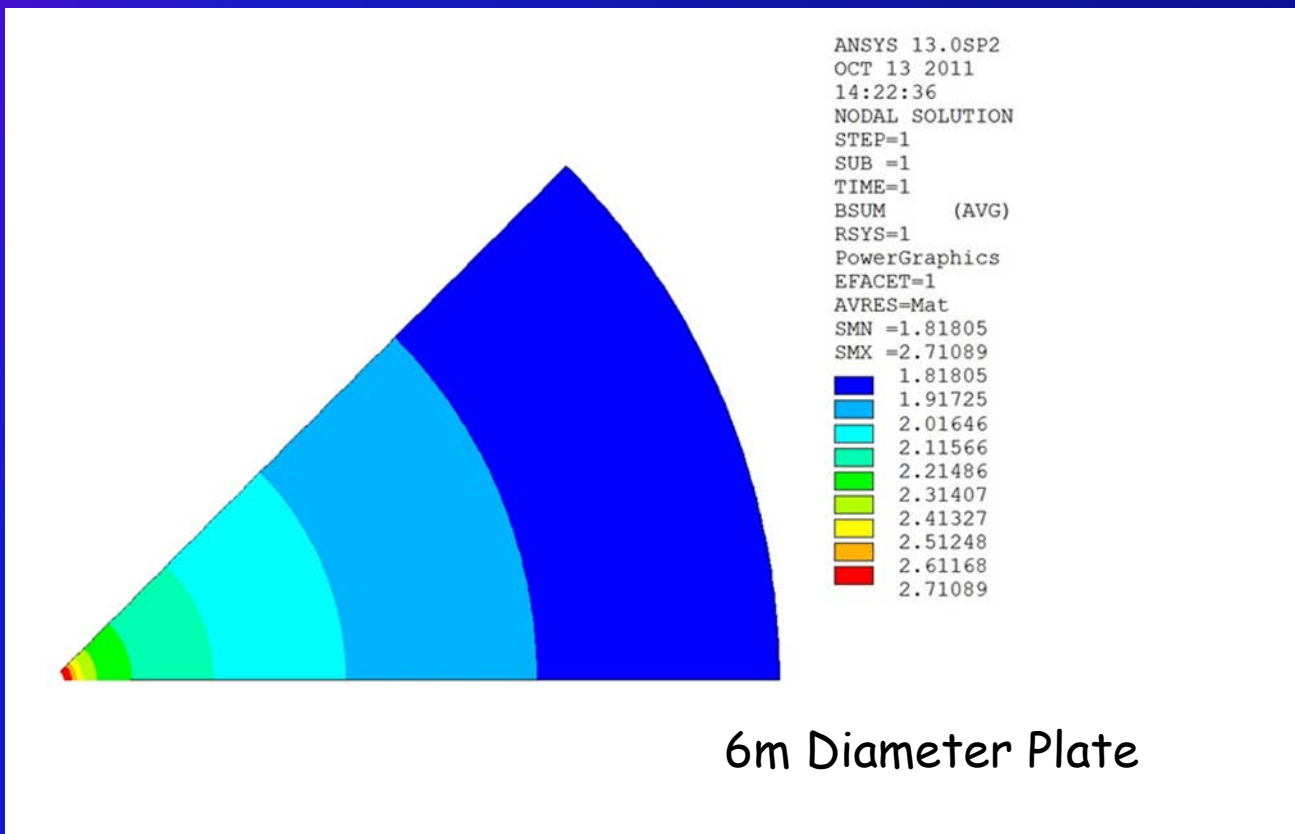
Must do better w/r to muon charge ID than MINOS currently is capable of doing with their ND

- VLENF-FD assumptions:

- ◆ 5-6 m diameter plate (round) with 20 cm hole in the middle
 - Approach "ideal" toroidal field
- ◆ 1 cm thick
 - Welded together from two $\frac{1}{2}$ circles
- ◆ X-Y measurement (2 scintillator planes) between each plate
- ◆ ≈ 270 kA-turns excitation current
 - 3 turns of SCTL

Far Detector - SuperBIND

Quick first pass at B (Bob Wands)
 $B > 1.8T$ everywhere



Outlook



- PPD mechanical is working on detailed design for plate
- Once that is done, the ANSY group can generate a detailed field map
- At that point, we would be ready to do full GEANT4 simulation