STUDY of W target
for 2018 Drell-Yan RUN

- Goals:
  - Verify the variation of the dose in the old DAQ barrack
    - with and without aluminum target
    - Replacing the Al with W

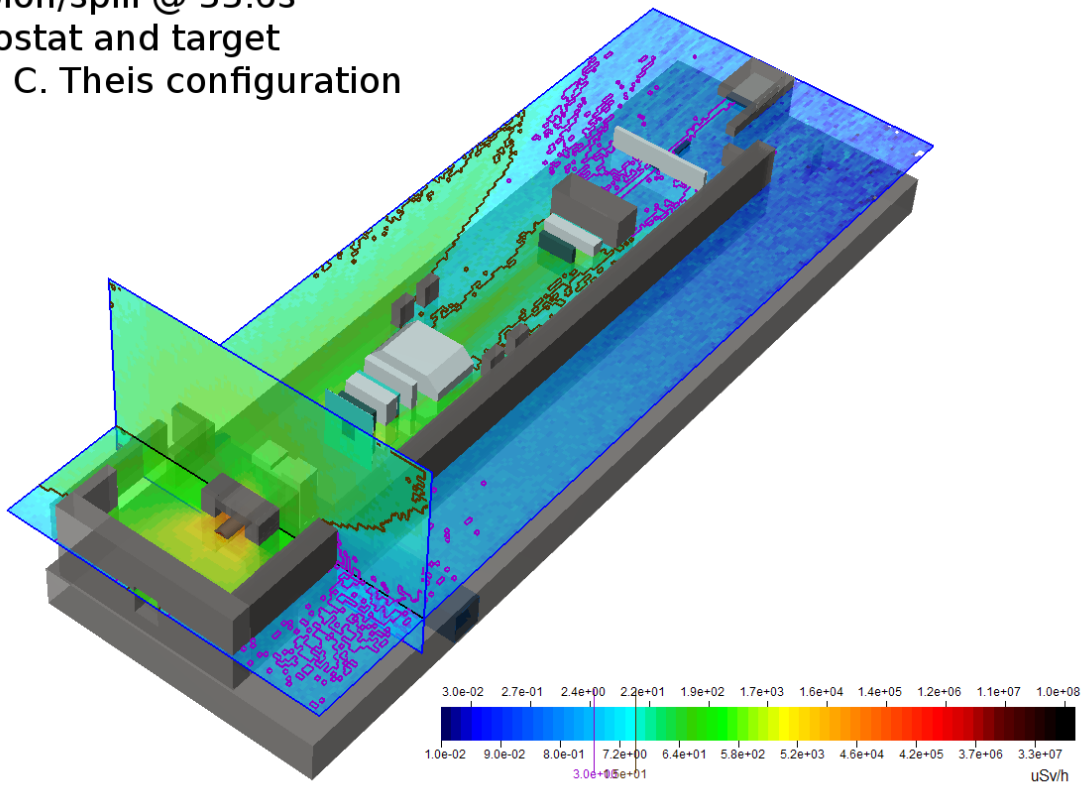
Old starting point: FLUKA and Chris Theis input file (Sept. 2010)

- Dose with C. Theis input files.
  - Beam: π^-
    - p = 191 GeV/c; Δp = 4.22 GeV/c FWHM; gaussian
    - x = y = 0 cm;
    - $\sigma_x = \sigma_y$ = 1cm ; $\Delta x = \Delta x = 0$; **pencil like beam**
  - Absorber:
    - Large external concrete

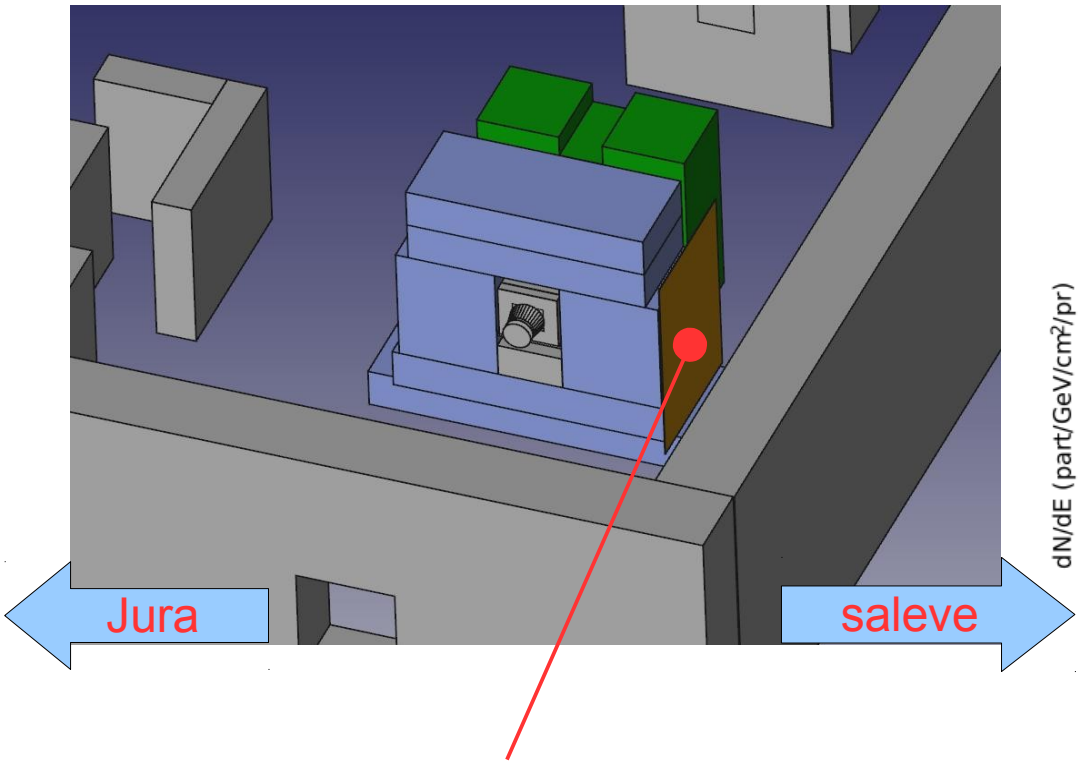
- Conversion from pSv/prim to uSv/h
  - Spill in one hour:
    - SPS cy 33.6s: 107
    - SPS cy 45.6s: 79
  - Beam rate
    - 6×10^8
    - 1×10^9
  - 6e8@33.6s: c = 6.42×10^4
  - 1e9@33.6s: c = 1.07×10^5
  - 1e9@45.6s: c = 7.90×10^4

10^9 pion/spill @ 33.6s
old cryostat and target
screen: C. Theis configuration

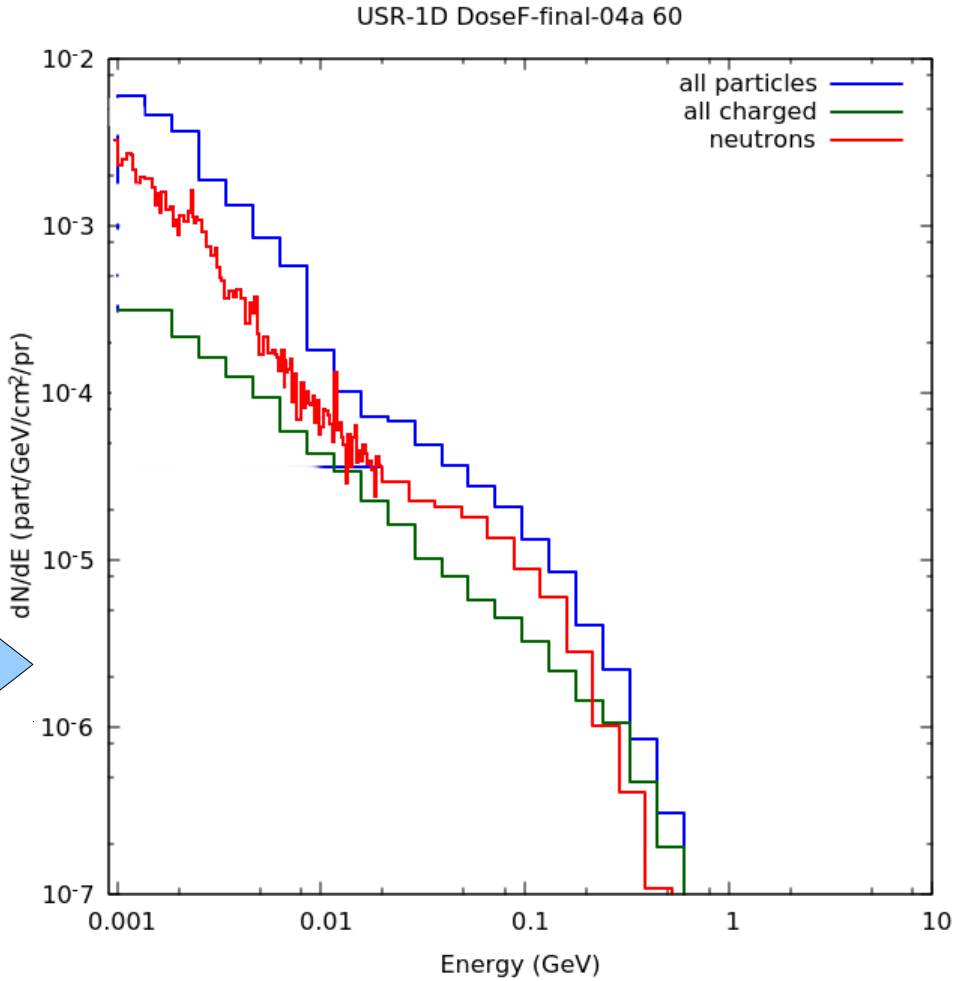
Same results Of C. Theis



Study of outgoing particles from concrete shield



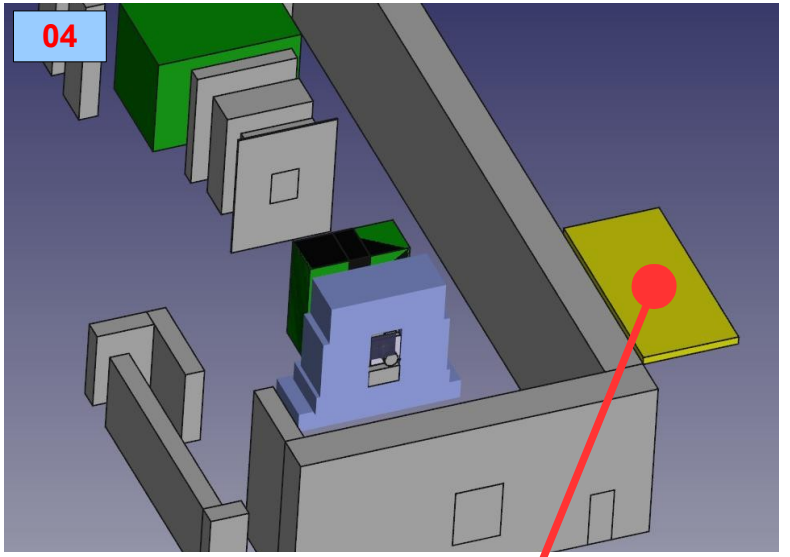
Pseudo-detector 400x300x1 cm^3



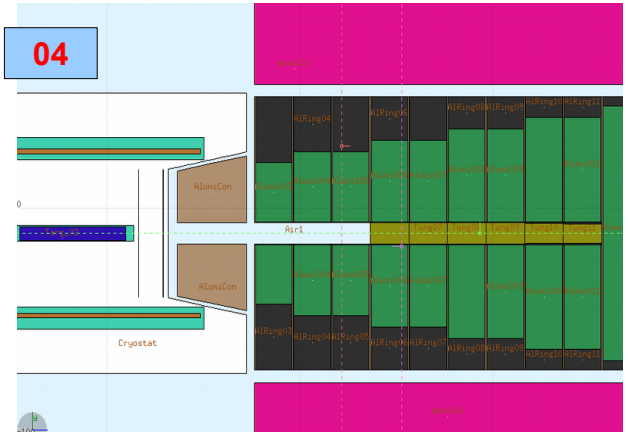
Particles x primary, to be scaled by 10^{9} $spill^{-1}$

Summary of the simulations

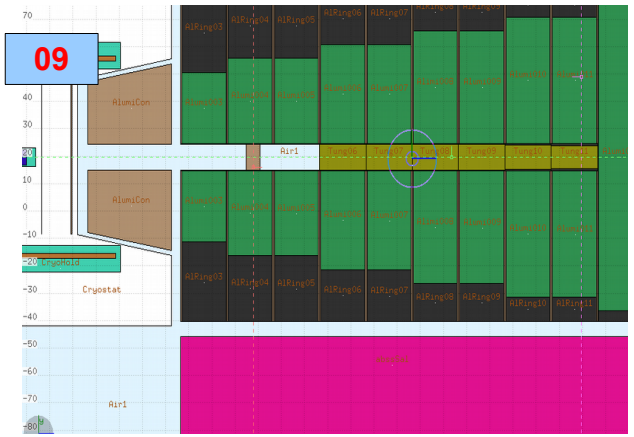
configuration	note
Final-04	configuration of 2015 run
Final-09	Final-04 and aluminum target
Final-10	Final-04 and tungsten target



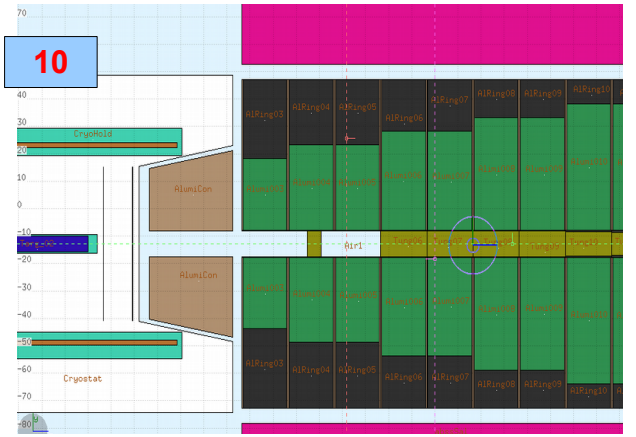
No secondary target



Al target

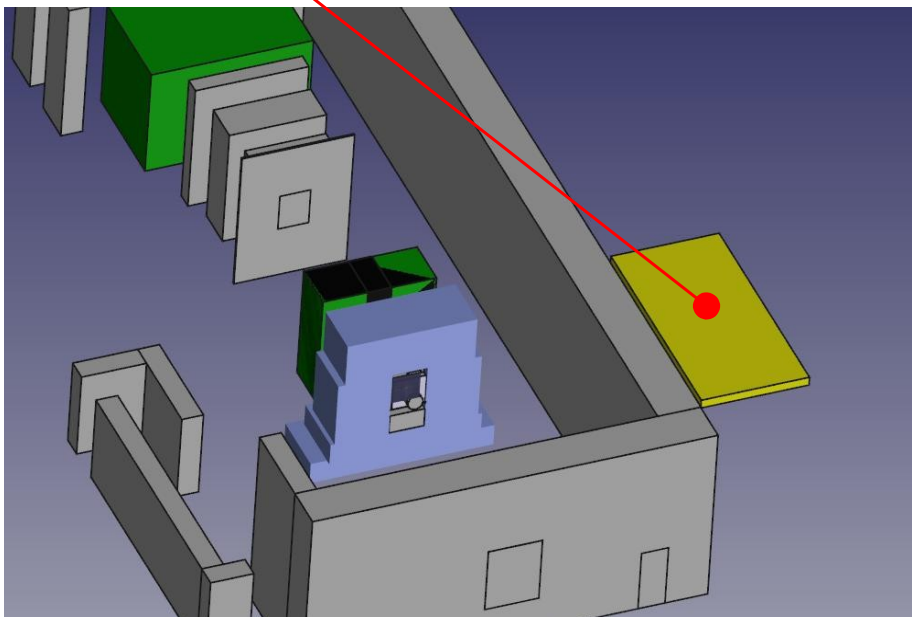


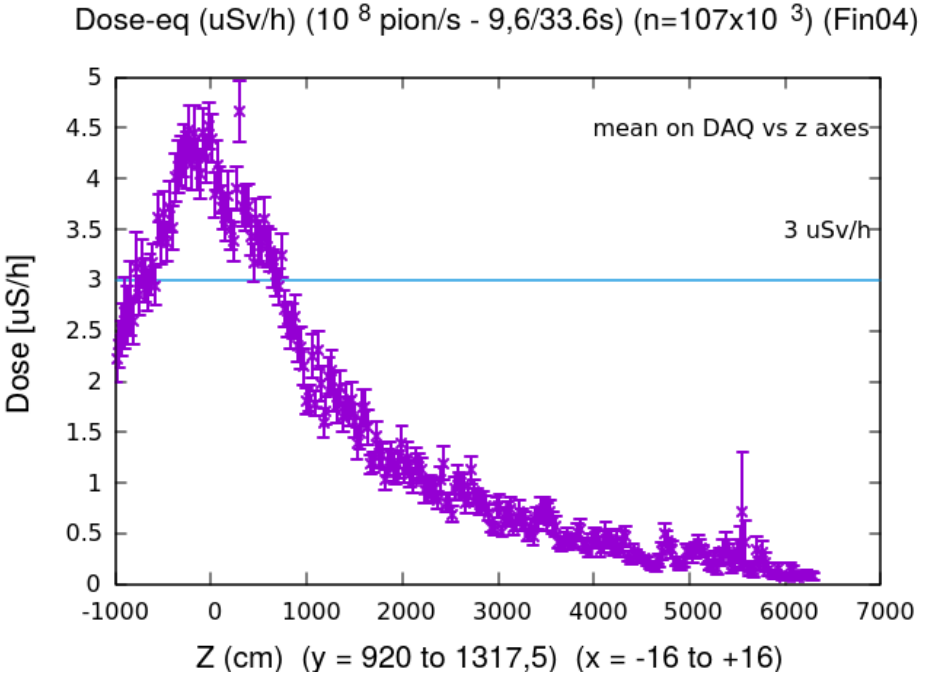
W target

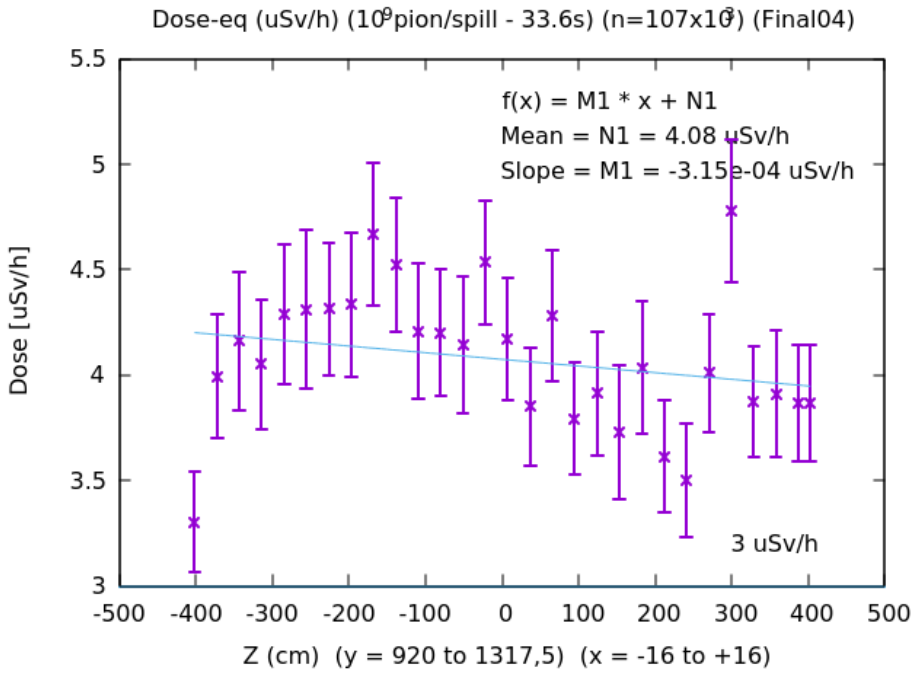


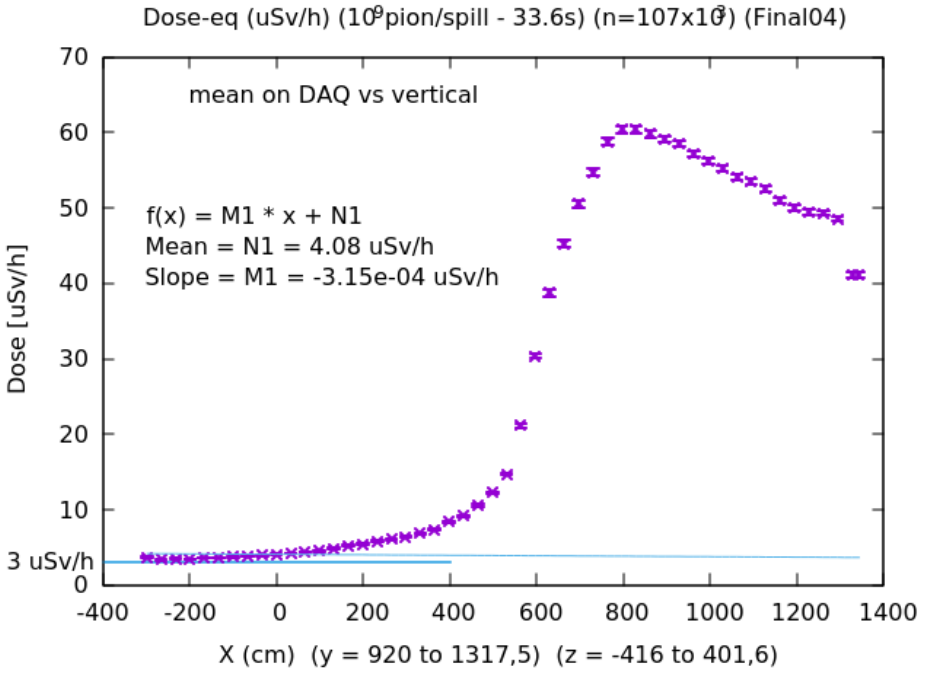
Configuration Final-04

DAQ Mean: 4.08 uSv/h



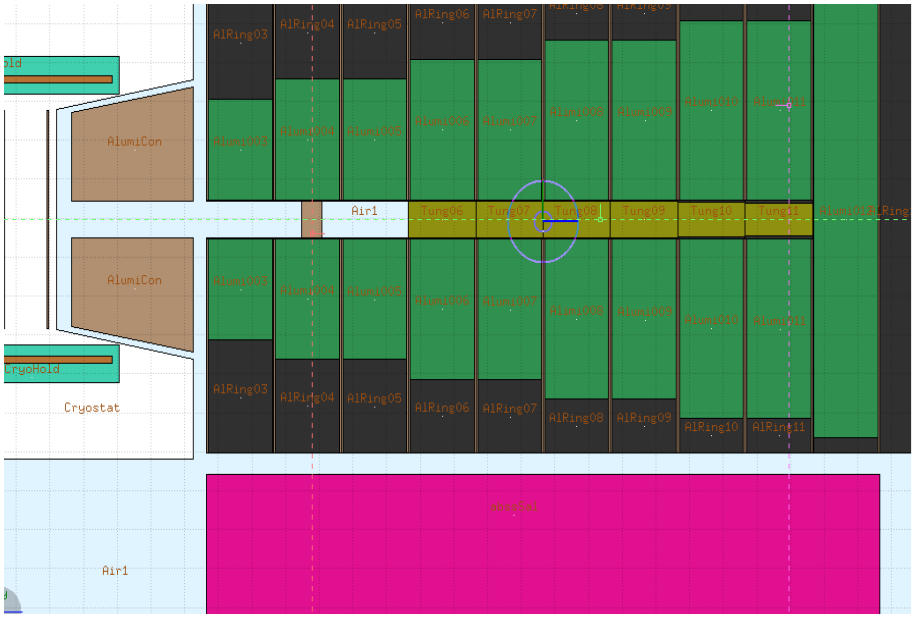


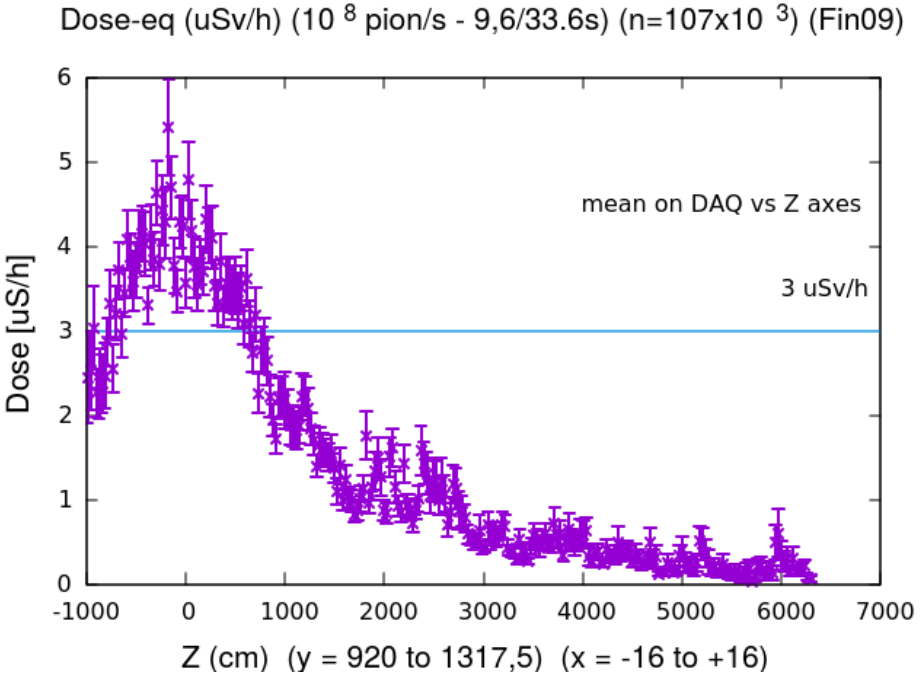


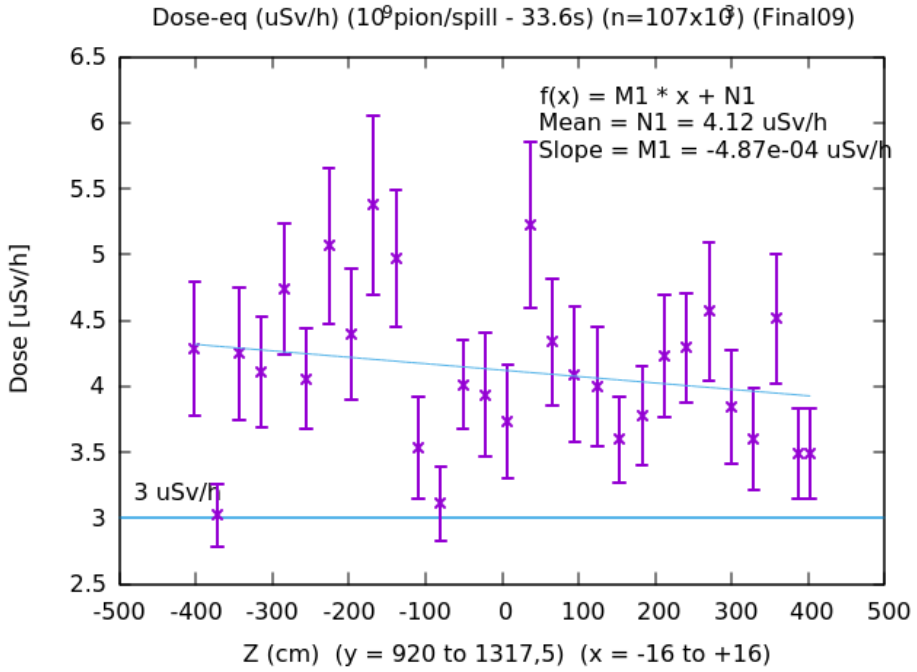


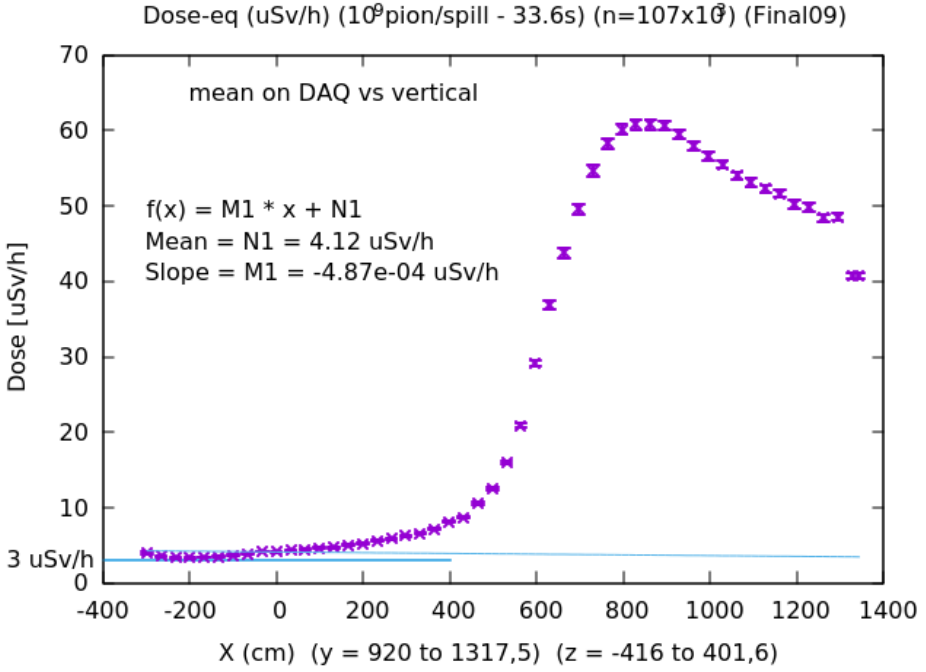
Configuration Final-09

DAQ Mean: 4.12 uSv/h



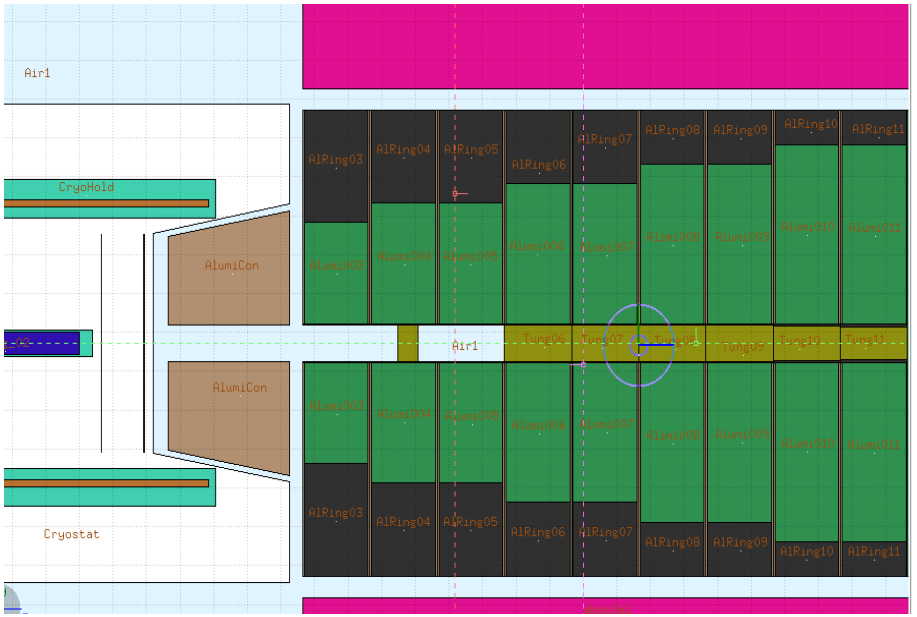


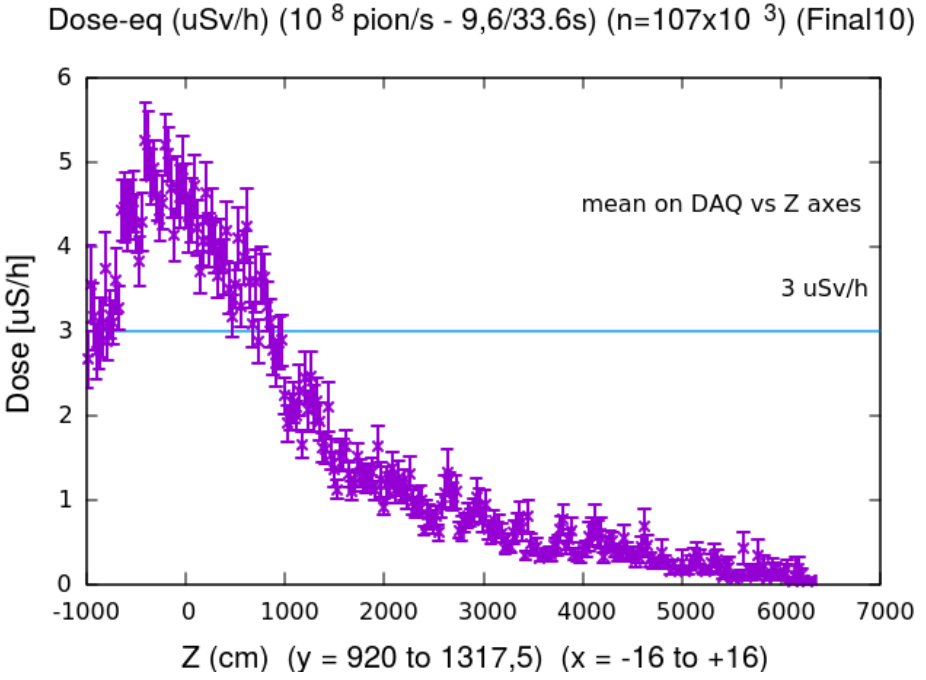


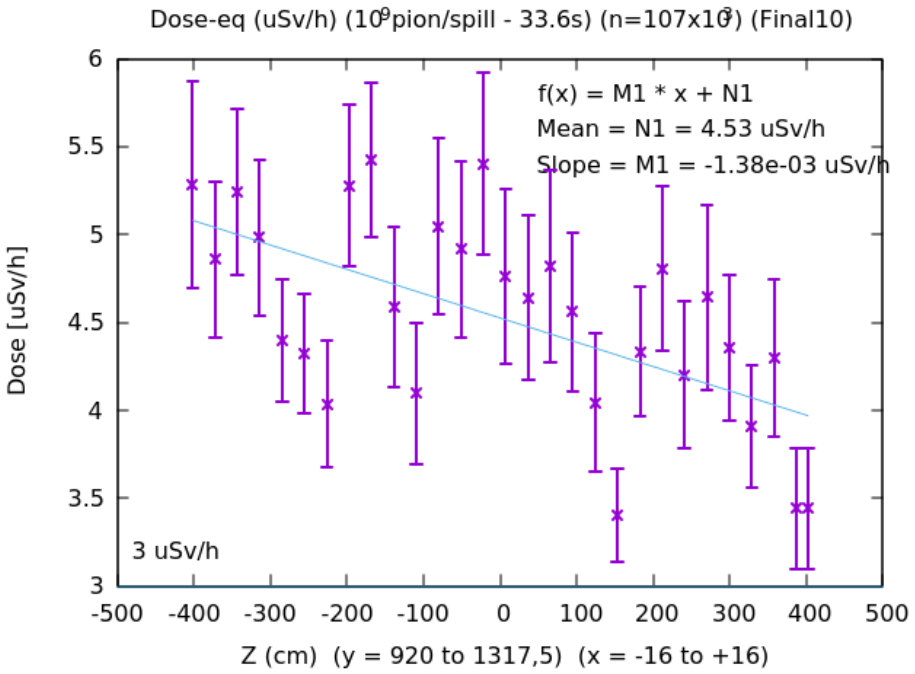


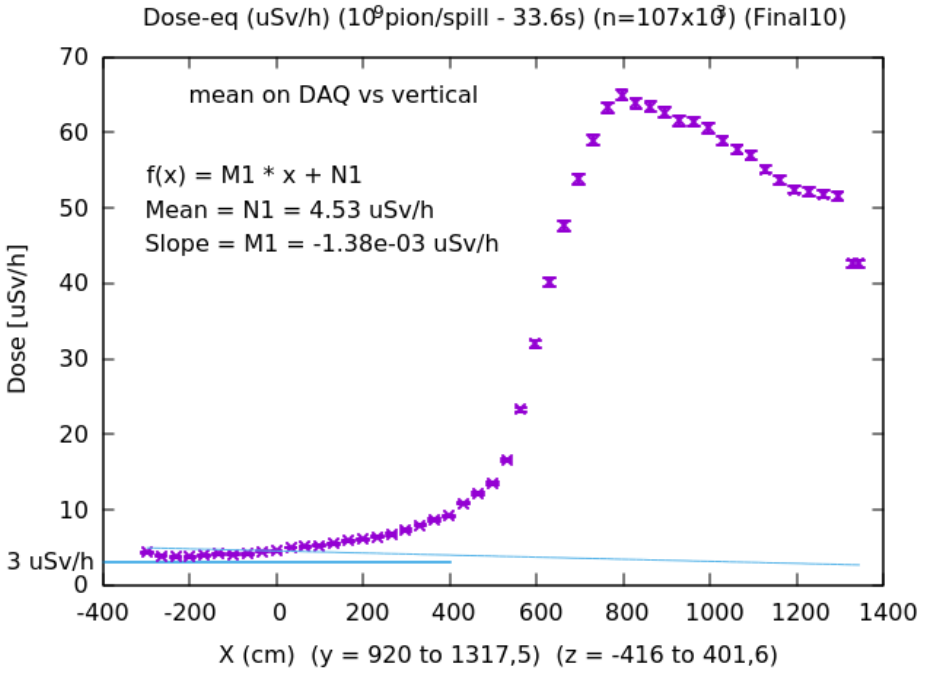
Configuration Final-10

DAQ Mean: 4.53 uSv/h









Conclusions

configuration	Mean dose in control room (µSv/h)	Dose Increment	note
Final-04	4,08	0%	configuration of 2015 run
Final-09	4,12	1%	Final-04 + alu target
Final-10	4,53	11%	Final-06 + w target

radioprotection group check required

- Negligible effect with Al target
- Relevant effect with W target
  - Can be compensated by adding more concrete on Saleve side