



BWXT • FLUOR • AMENTUM

My SRMC Internship Experience

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Who am I?



Texas A&M Nuclear Engineering
& Science Center reactor
confinement building



Top of Dragon's Tooth
Trail, VA



Self made radiation detector
(cloud chamber)

Internship Experience Overview

Radiological Engineering and Health Physics Group

Manager: Ron Sykes

Mentors: Alec Salakovich, Carson Swanek, Tarun Nair

- Monte Carlo N-Particle (MCNP) models
- Gamma and alpha spectroscopy
- Instrumentation / radiation detection support

Dose rates down, safety up

Monte Carlo N-Particle (MCNP) transport code

Engineering Drawings



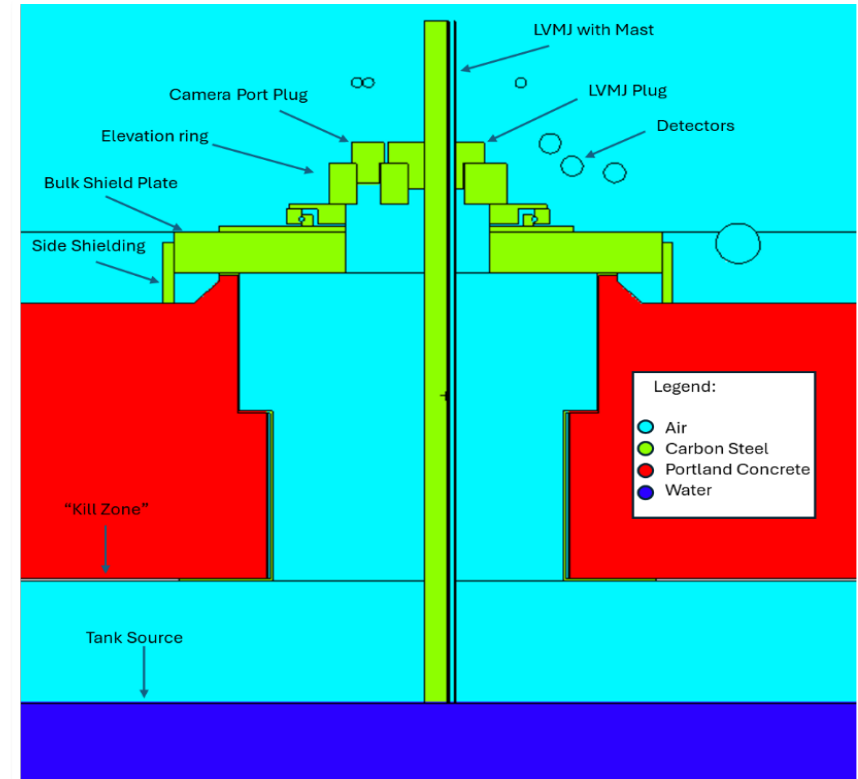
Monte Carlo Model



Dose Rate Estimates

```
Tank 46 CSMP/LVMJ Riser Cover
c
c %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
c                               Cell Cards
c %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
c
c Riser
c
1 2 -0.001205 (-1:-3:-7:-9:-11) 701 703 imp:p=1          $ Inside Air
2 3 -7.872 (1 -2 -900):(3 -4):(7 -8):(9 -10):(11 -12) imp:p=1  $ Carbon Steel Liner
3 2 -0.001205 (-5 4) imp:p=1          $ Air Between the Linear and Sleeve
4 3 -7.872 (5 -6) imp:p=1          $ Lower Riser Steel Sleeve
c
c Surrounding Concrete
c
5 5 -2.3 (-13 10):(-14 2 6 8 10): (-20 13) imp:p=1          $ Concrete
c
c Waste Tank
c
6 2 -0.001205 -15 16 2 701 703 imp:p=1          $ Air inside the tank
7 1 -0.997 -15 -16 imp:p=1          $ Tank Source
c
c Air Outside the Tank & Riser
c
8 2 -0.001205 (2 12 13 14 15 20 -999 #30 #31
   115 105 125 135)          imp:p=1 $ Outside Air
c
c
30 3 -7.872 -30 -35 31 33 imp:p=1
31 3 -7.872 -32 30 imp:p=1
```

Beginning of an MCNP input deck representing
a waste tank model



Cross sectional view of a waste tank
model created using MCNP

Nuclear for the Next Generation

- **What I Knew Coming In:**
 - “Front end” perspective
 - Reactor operations, reactor physics
- **What I Know Now From SRMC:**
 - “Back end” perspective
 - Fuel cycle & non-proliferation
 - **More wholistic perspective gained**
- **For Future Generations:**
 - Use rising support for nuclear as advantage to keep innovating



Conclusion

- **Meaningful work, meaningful mission**
- **Sense of pride knowing work is directly helping people / environment**
- **Thank you !!!**



SRMC Rad Engineering BBQ hangout