LBNE ABSORBER SYSTEM, Version 4: NORMAL OPERATION AND ACCIDENTS

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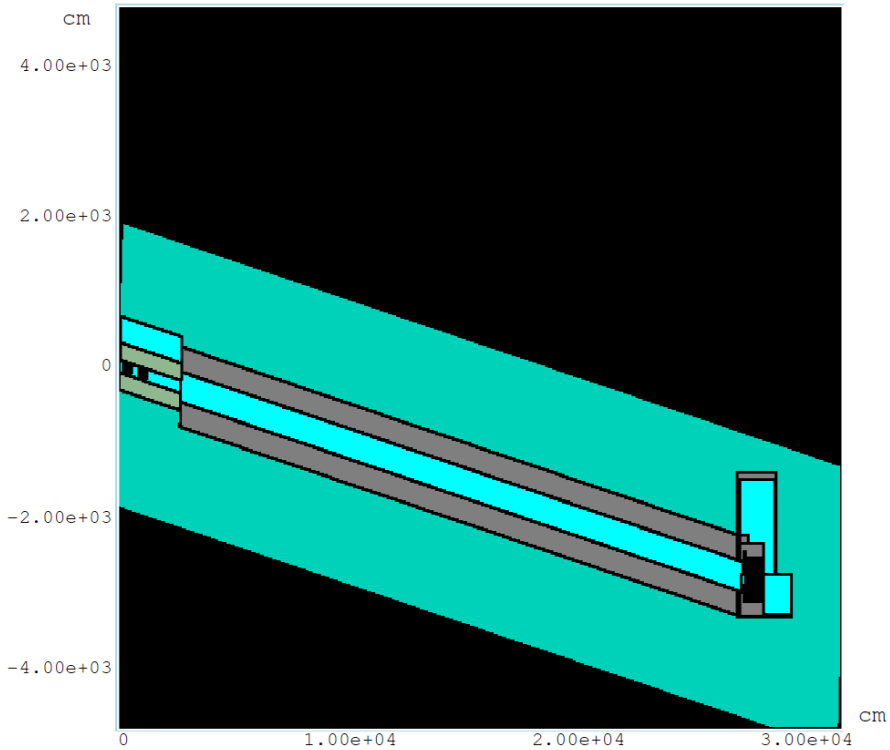
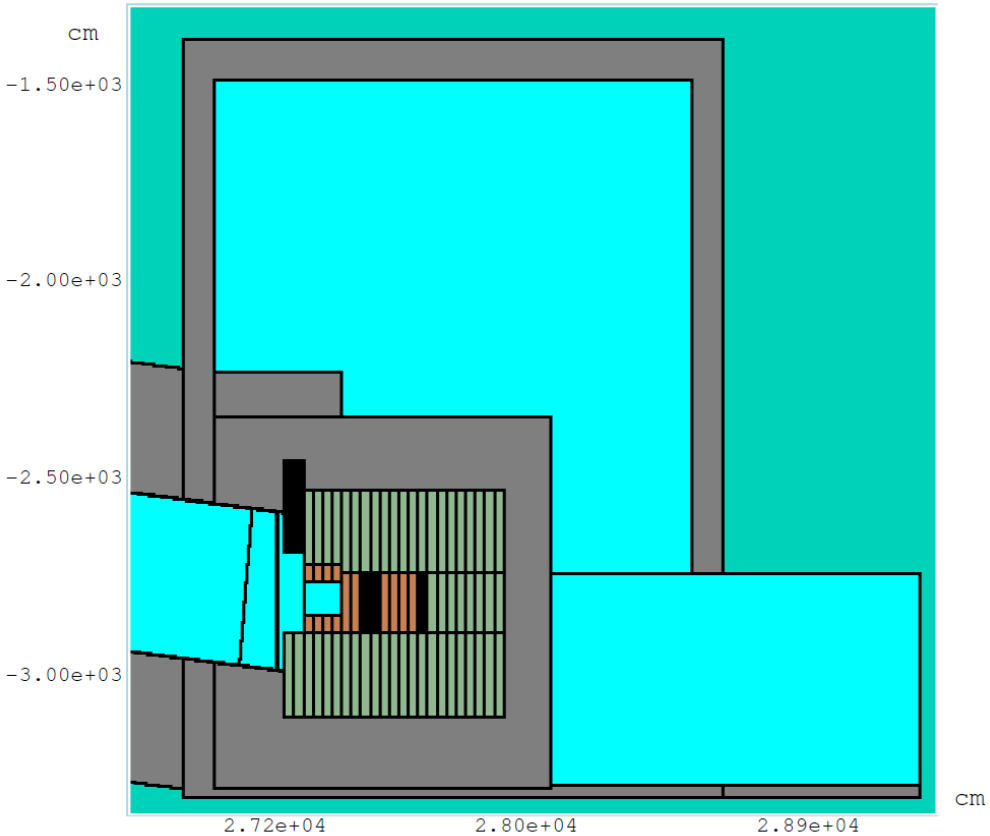
Fermilab

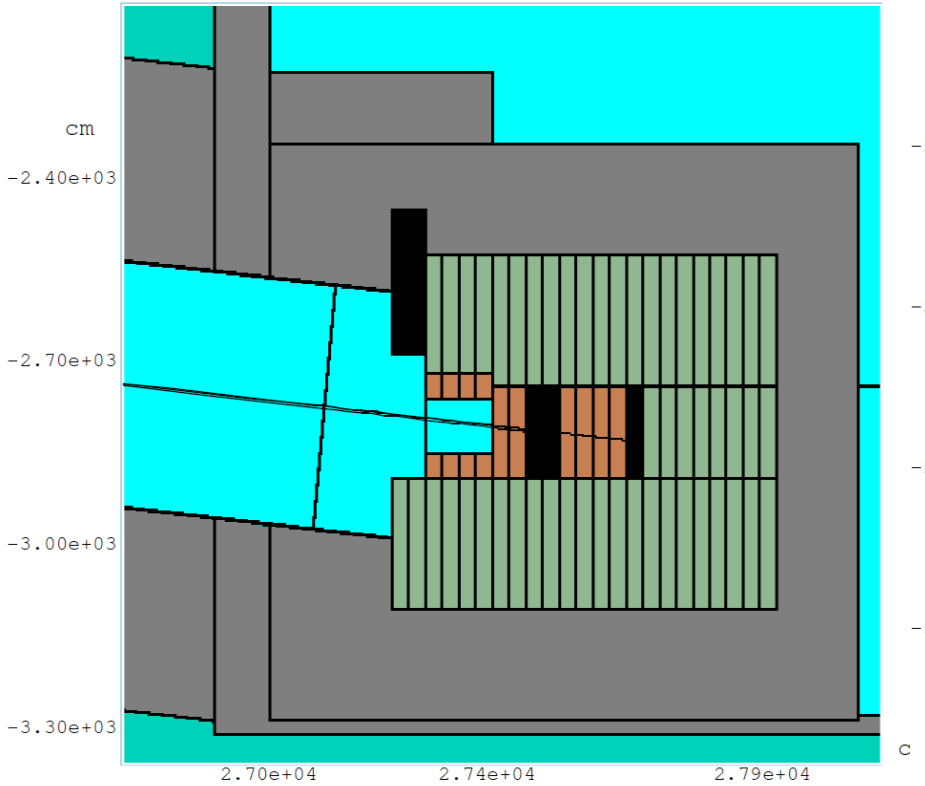
LBNE Absorber Meeting
Fermilab
July 19, 2010

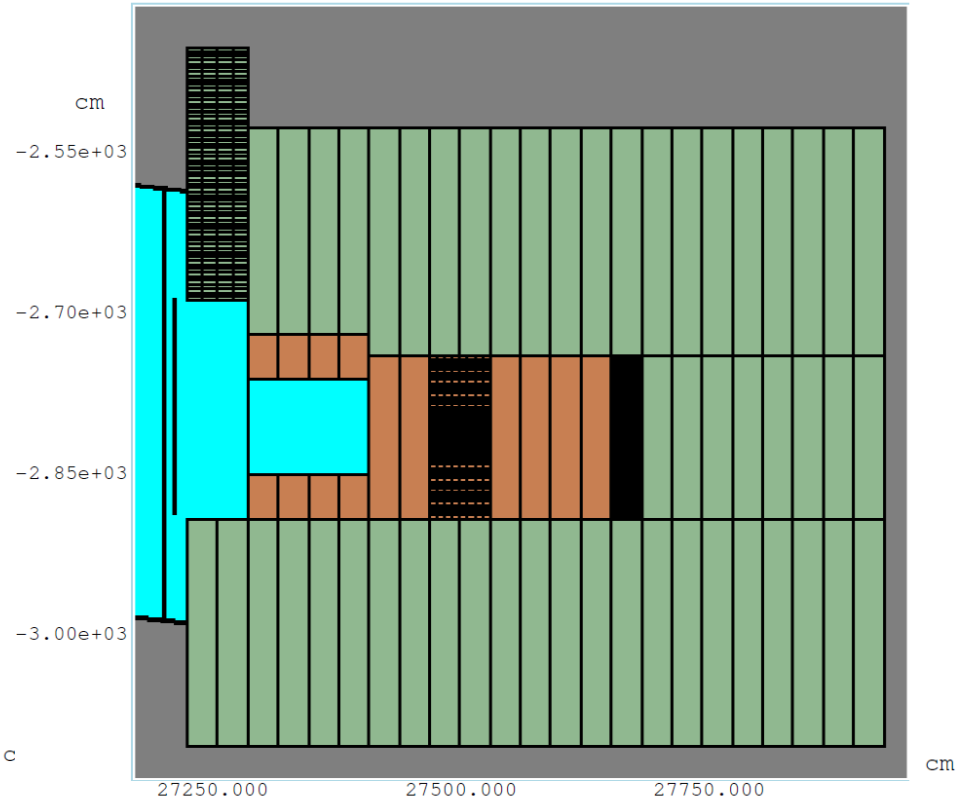
MARS15 Model: Version 4





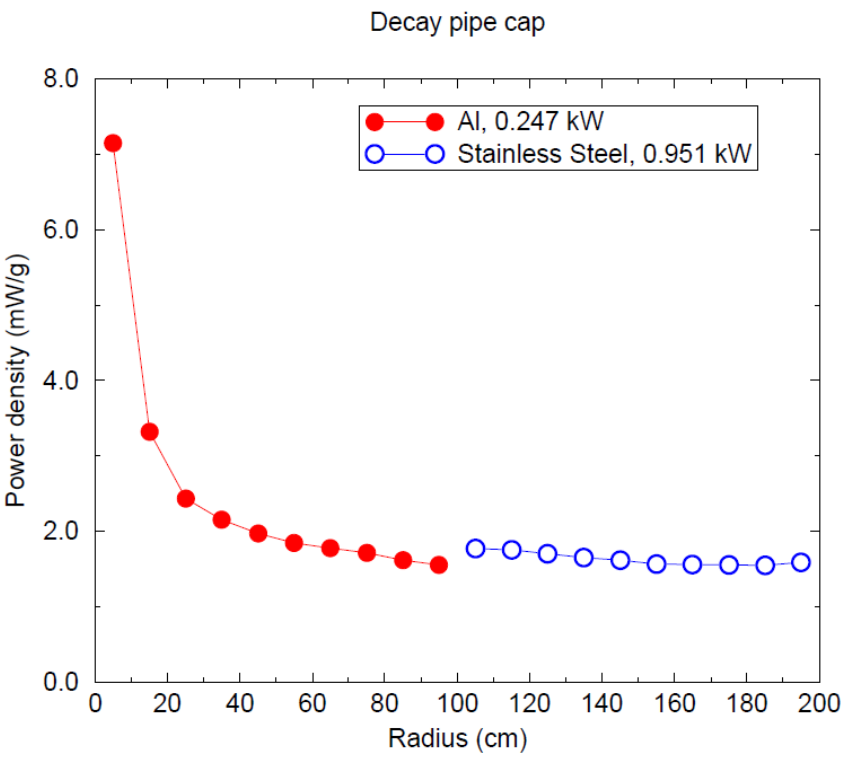
Absorber, Shielding, DK Cap, Hadron Monitor

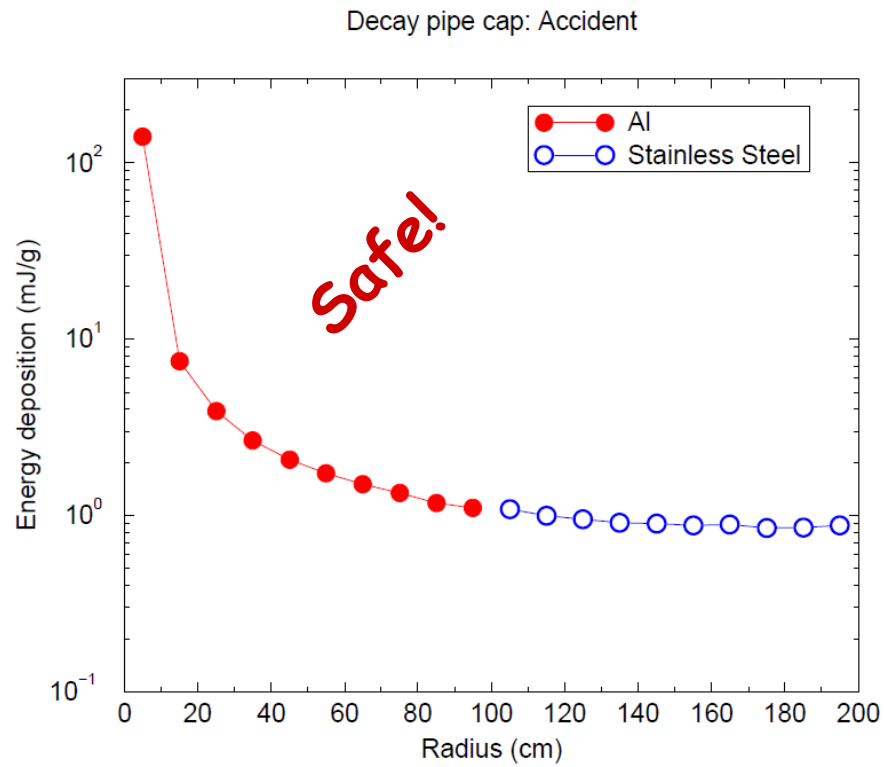




Normal operation and beam accident at 2.3 MW

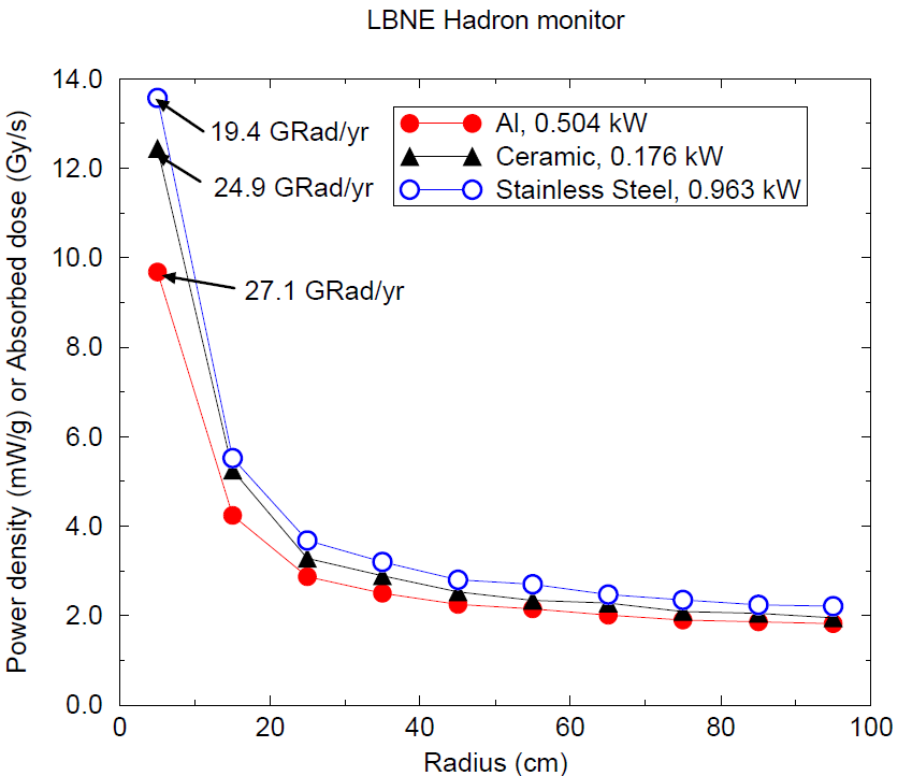
Decay Pipe Endcap: Operational & Accident

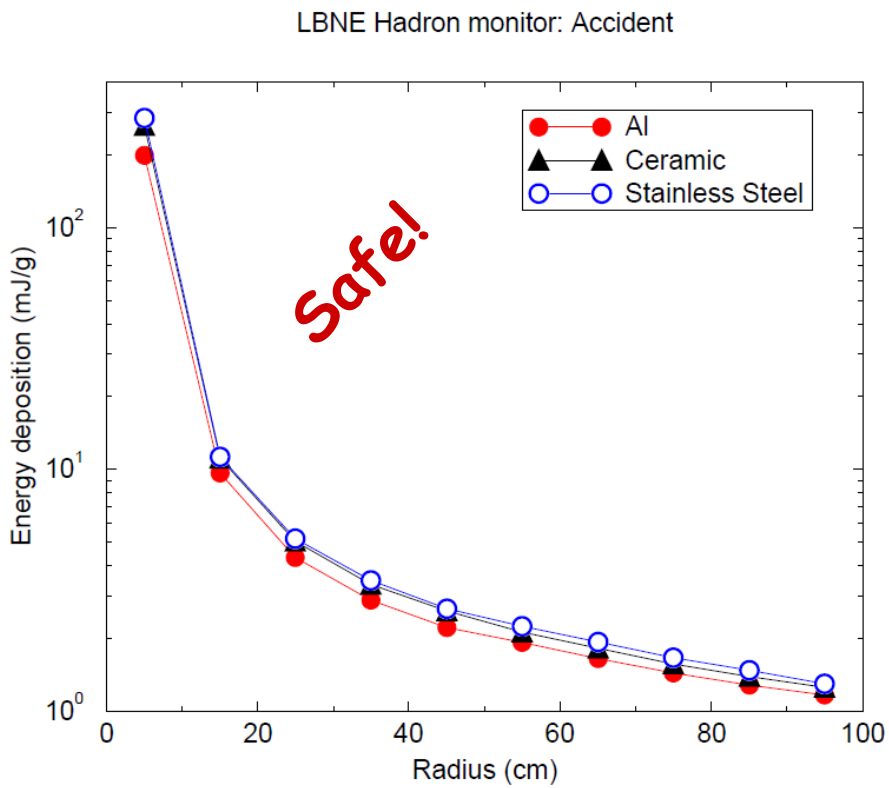




6-mm thick Al (0<r<1m) & SS (1<r<2m): Safe at 2.3 MW

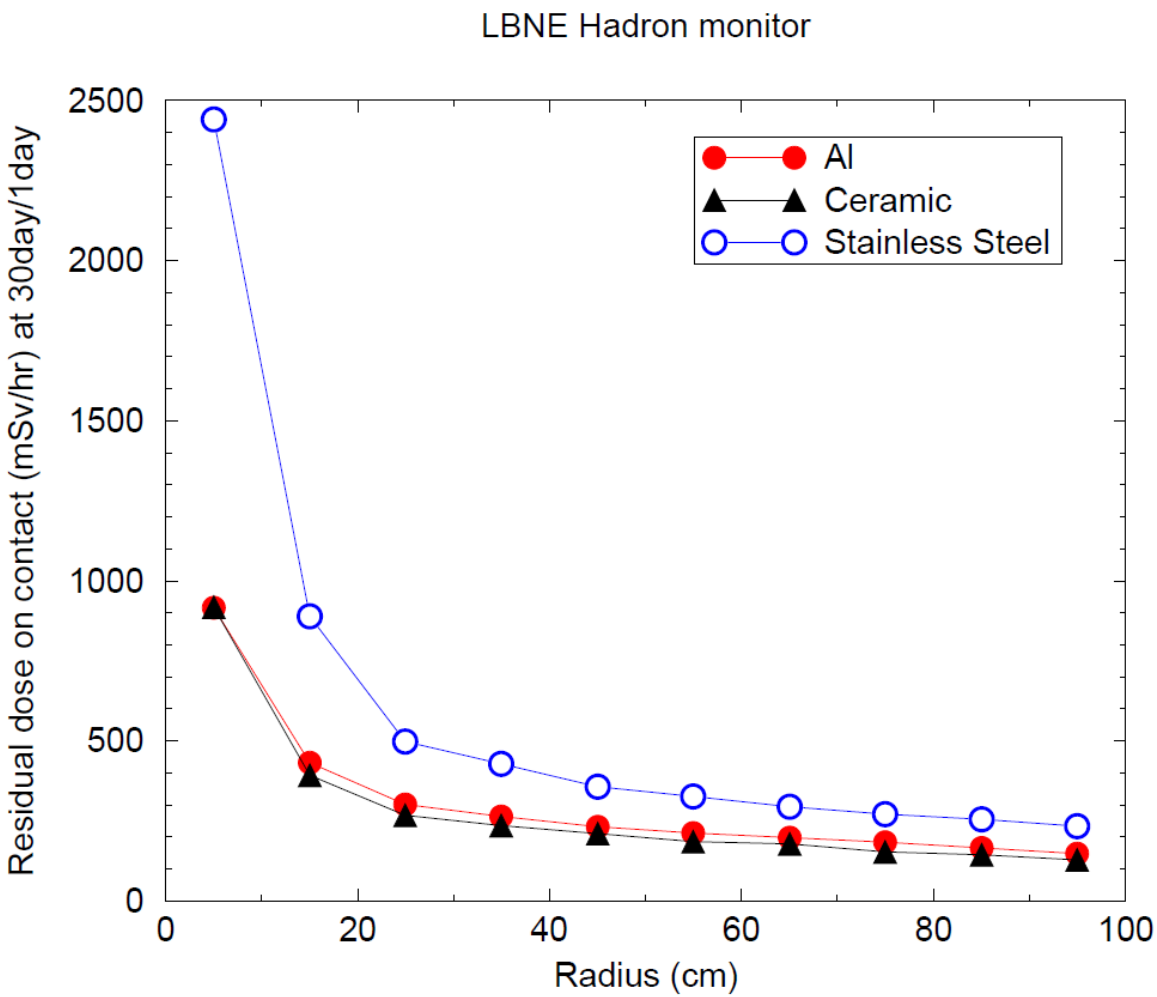
Hadron Monitor: Operational & Accident





10-mm Al, 2-mm Ceramic, 5-mm SS (0<r<1m):
Safe at 2.3 MW

Hadron Monitor: Residual Dose on Contact

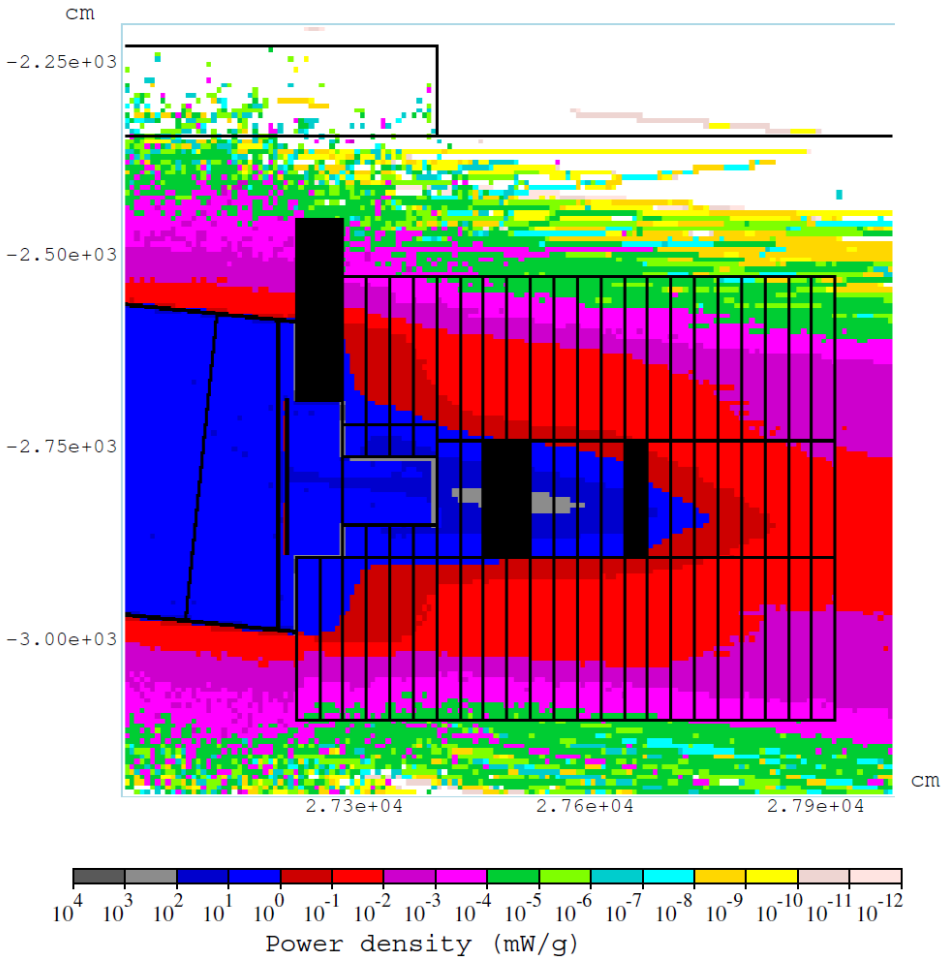


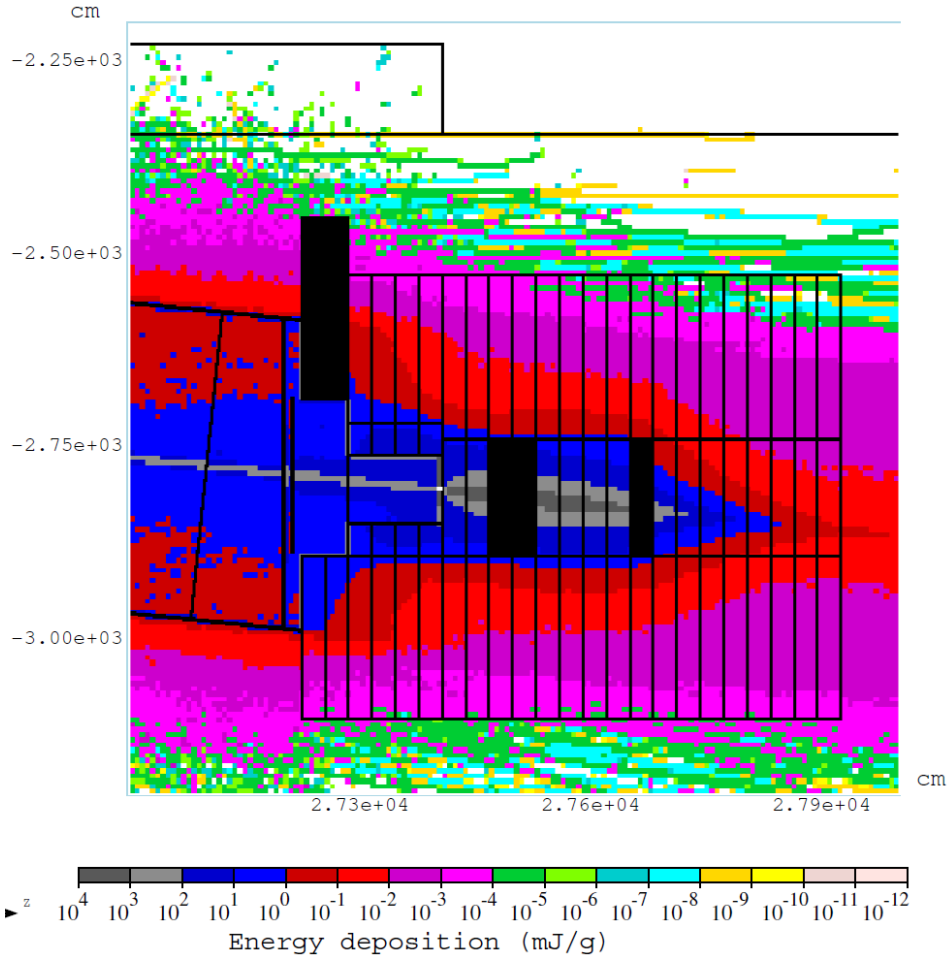
30-day irradiation at 2.3 MW followed by 1-day cooling

1 mSv/hr = 100 mrem/hr

10-mm Al, 2-mm Ceramic, 5-mm SS (0<r<1m)

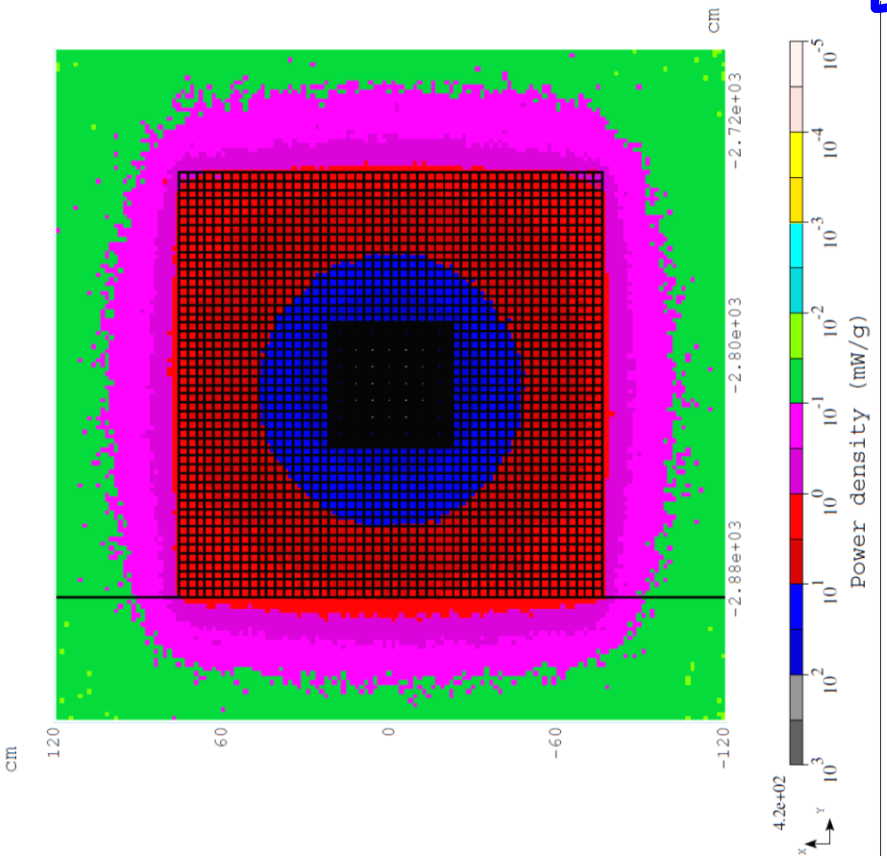
Power Density (operational) & Energy Deposition (acc)

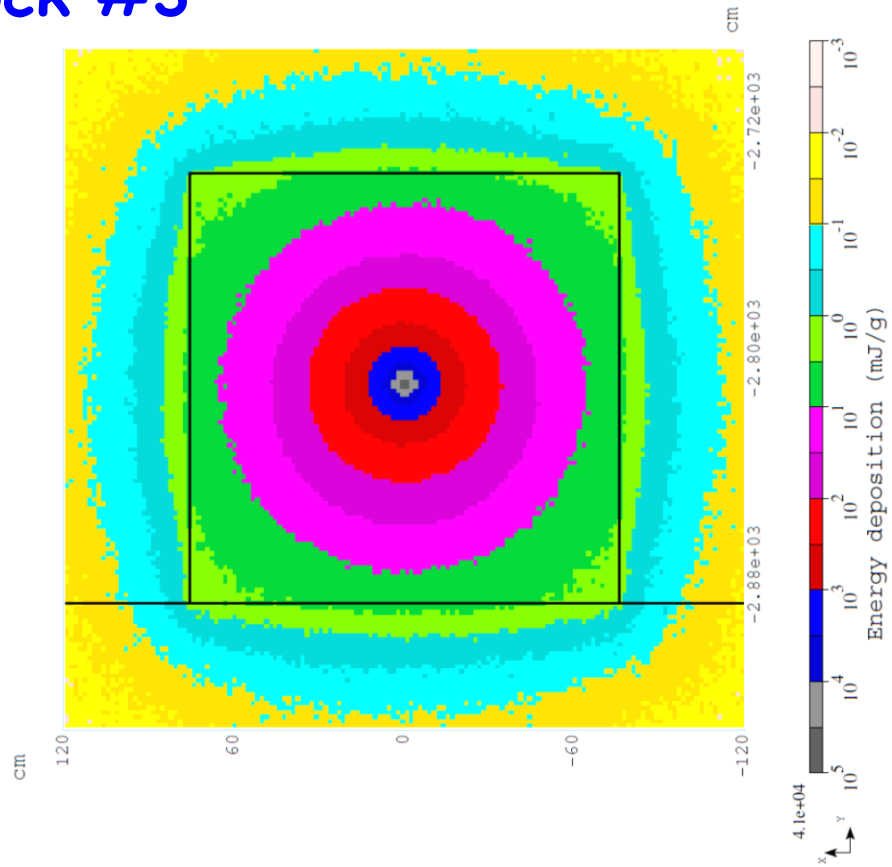




Power Density (oper) & Energy Deposition (acc)

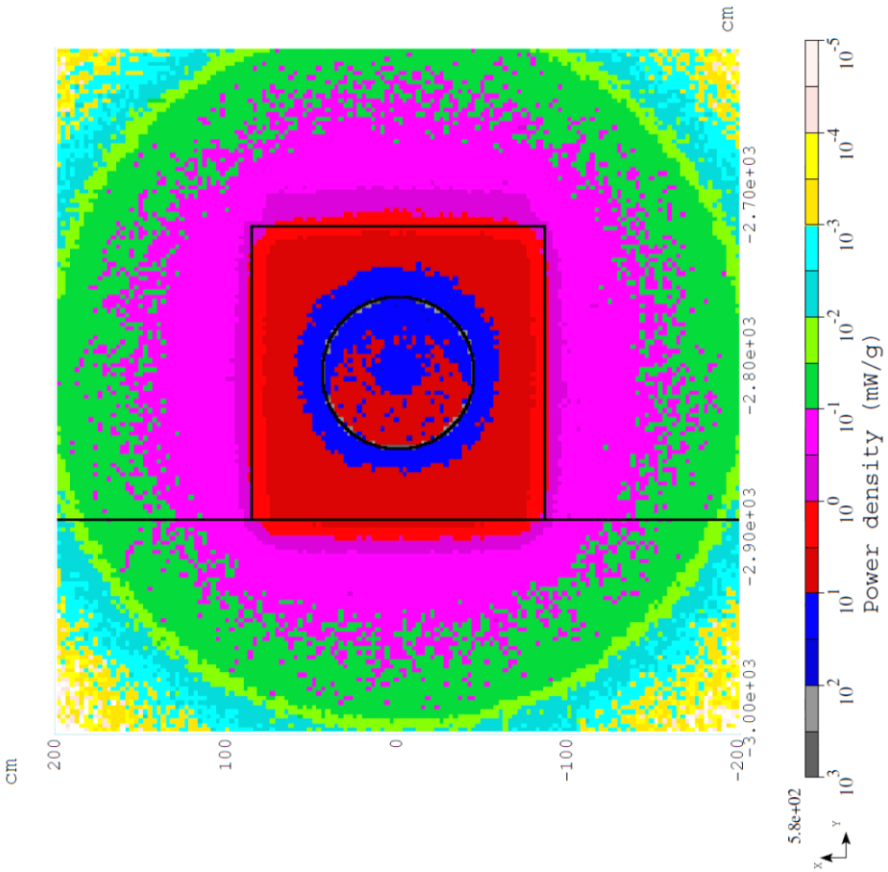
Block #3

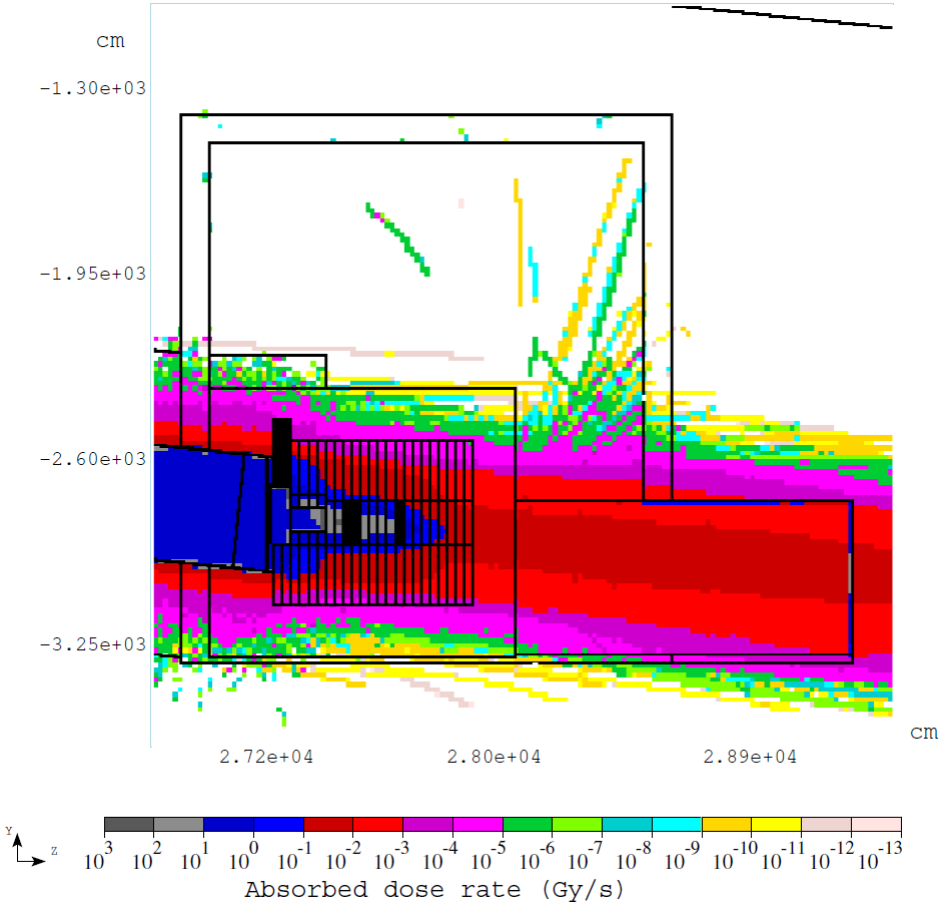




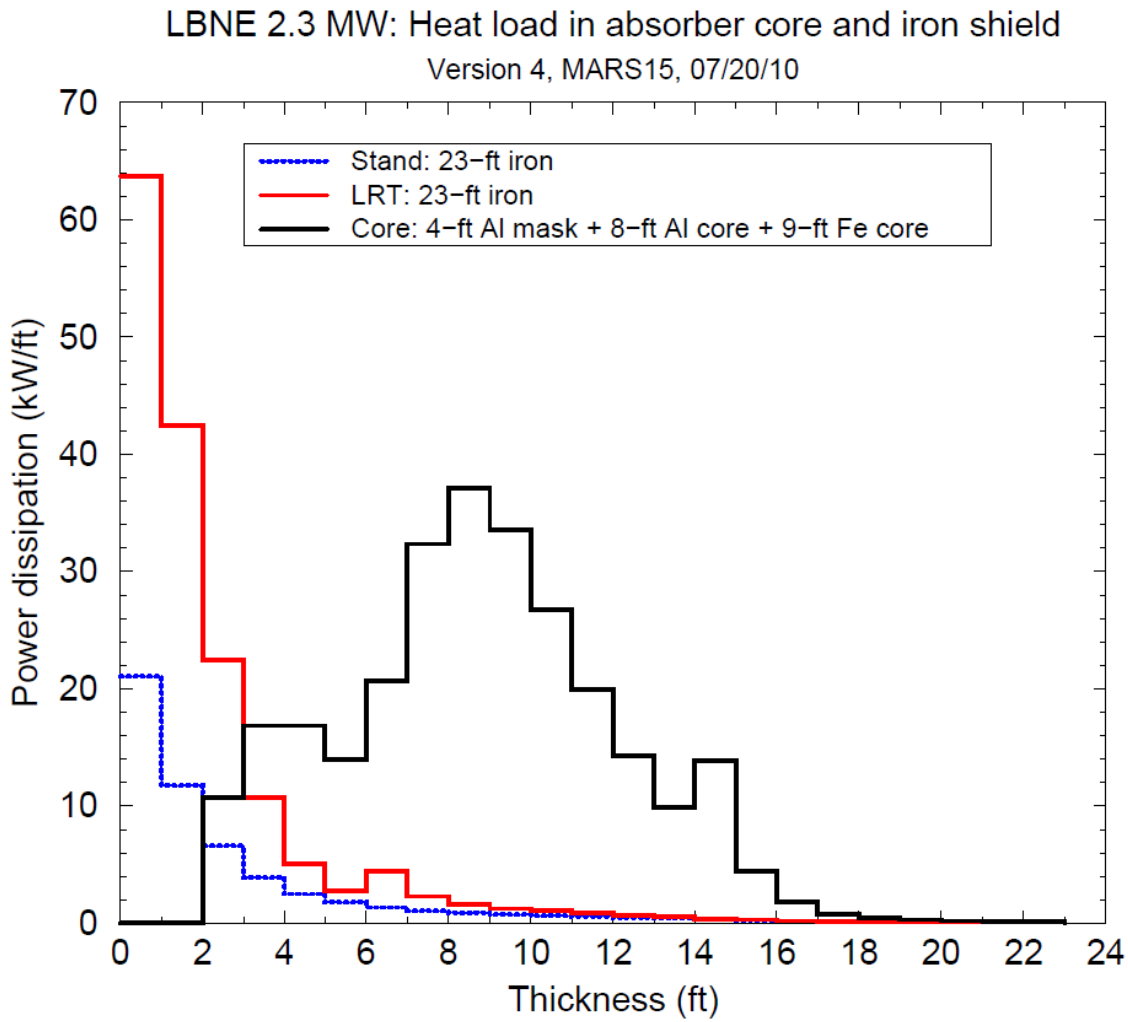
Results sent to Igor for ANSYS analysis

Power Density at Mask & Absorbed Dose



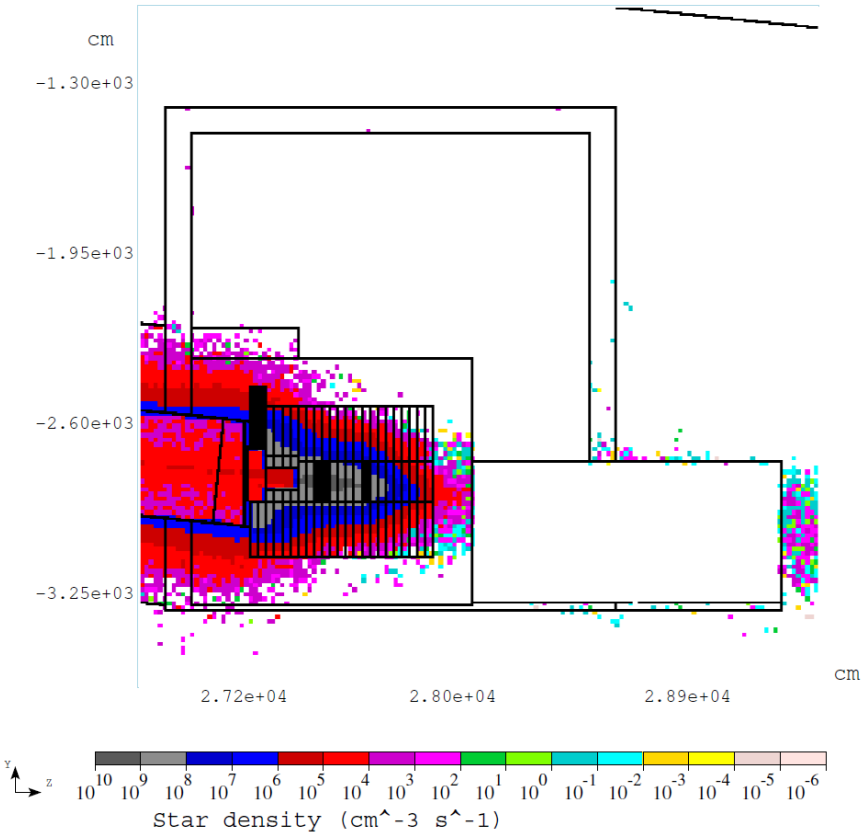


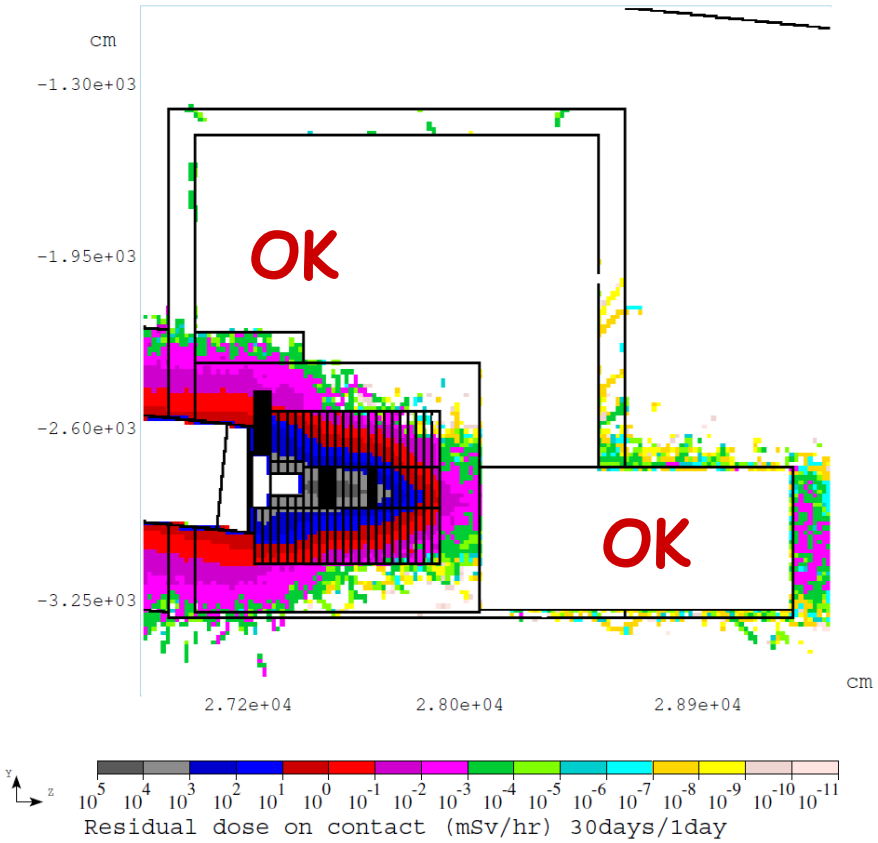
Heat Load



Power dissipation in all absorber components sent to Sasha

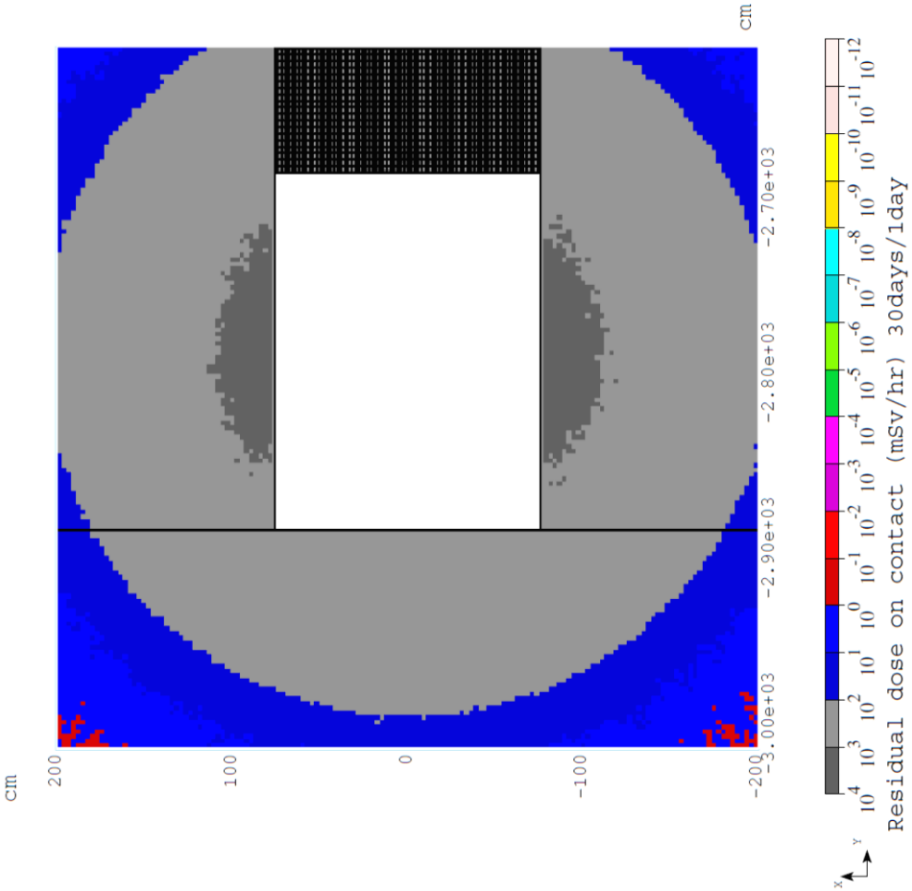
Star Density and Residual Dose



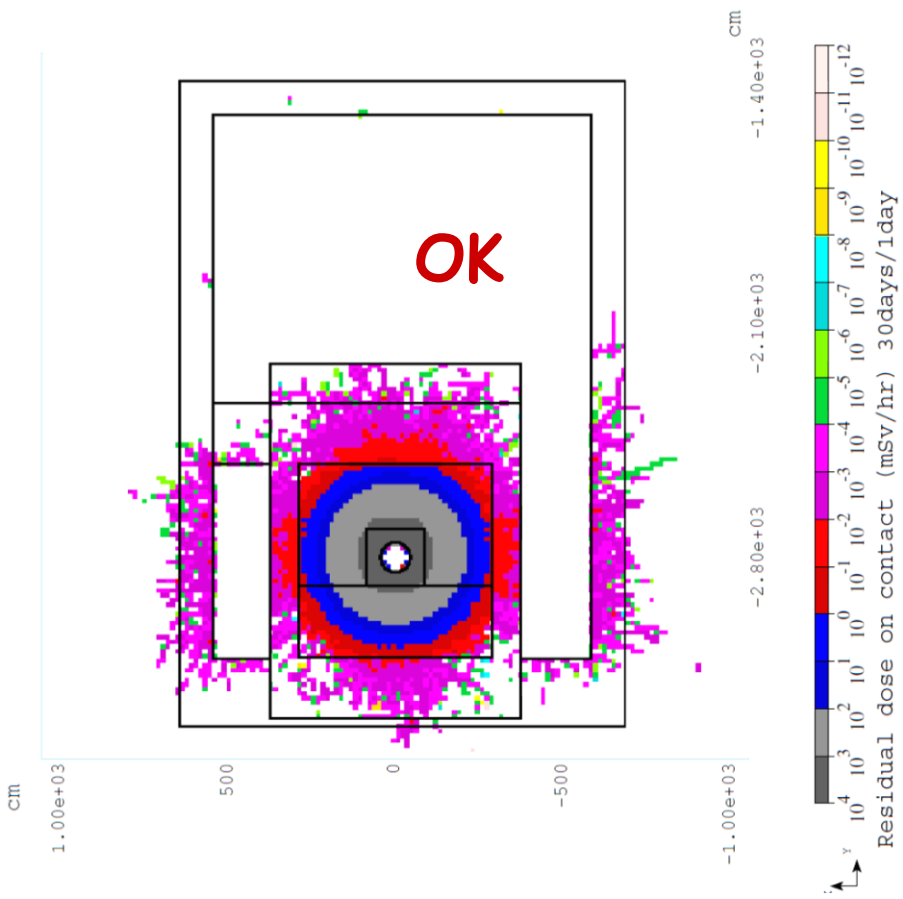


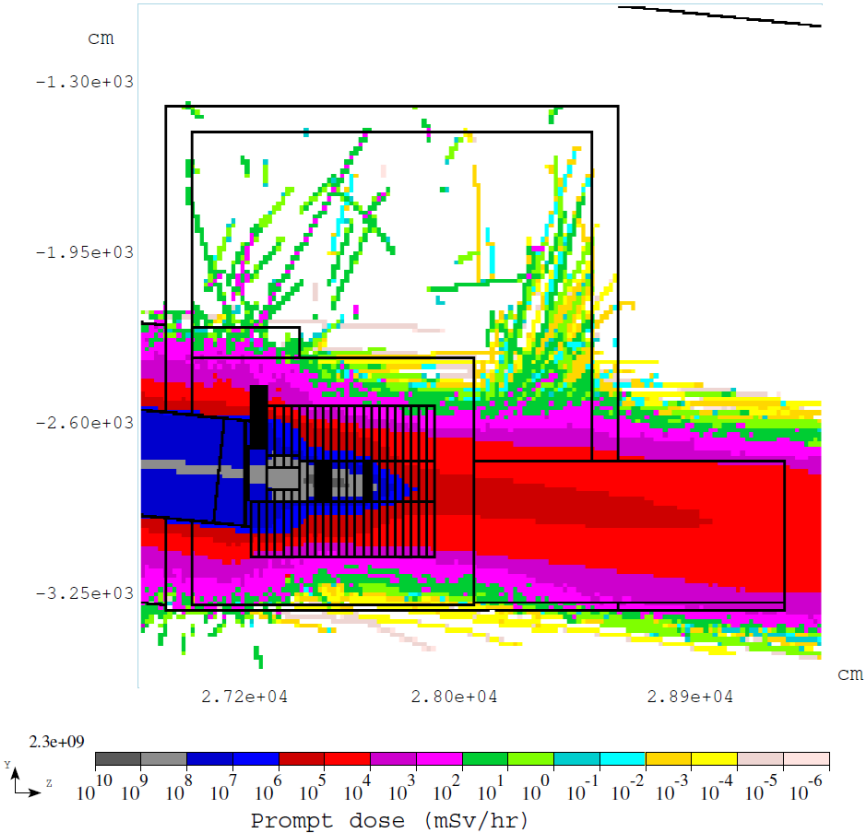
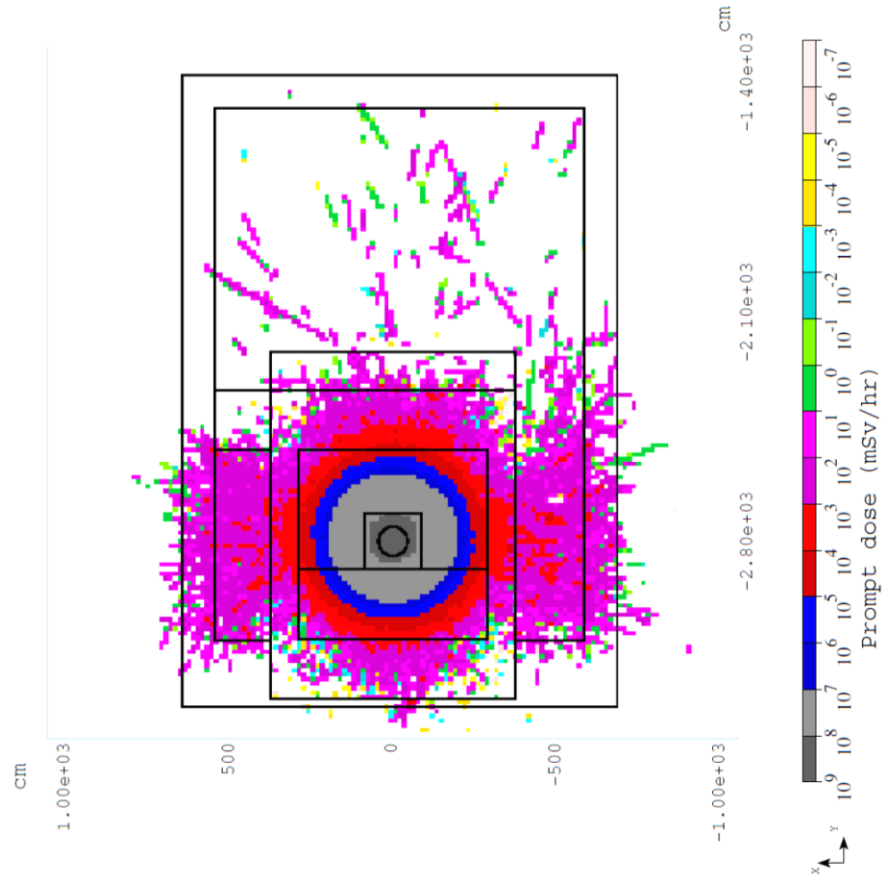
Safe for ground water!

Residual Dose on Contact (mSv/hr) at 30d/1d



Entrance



At shower max

Prompt Dose (mSv/hr)