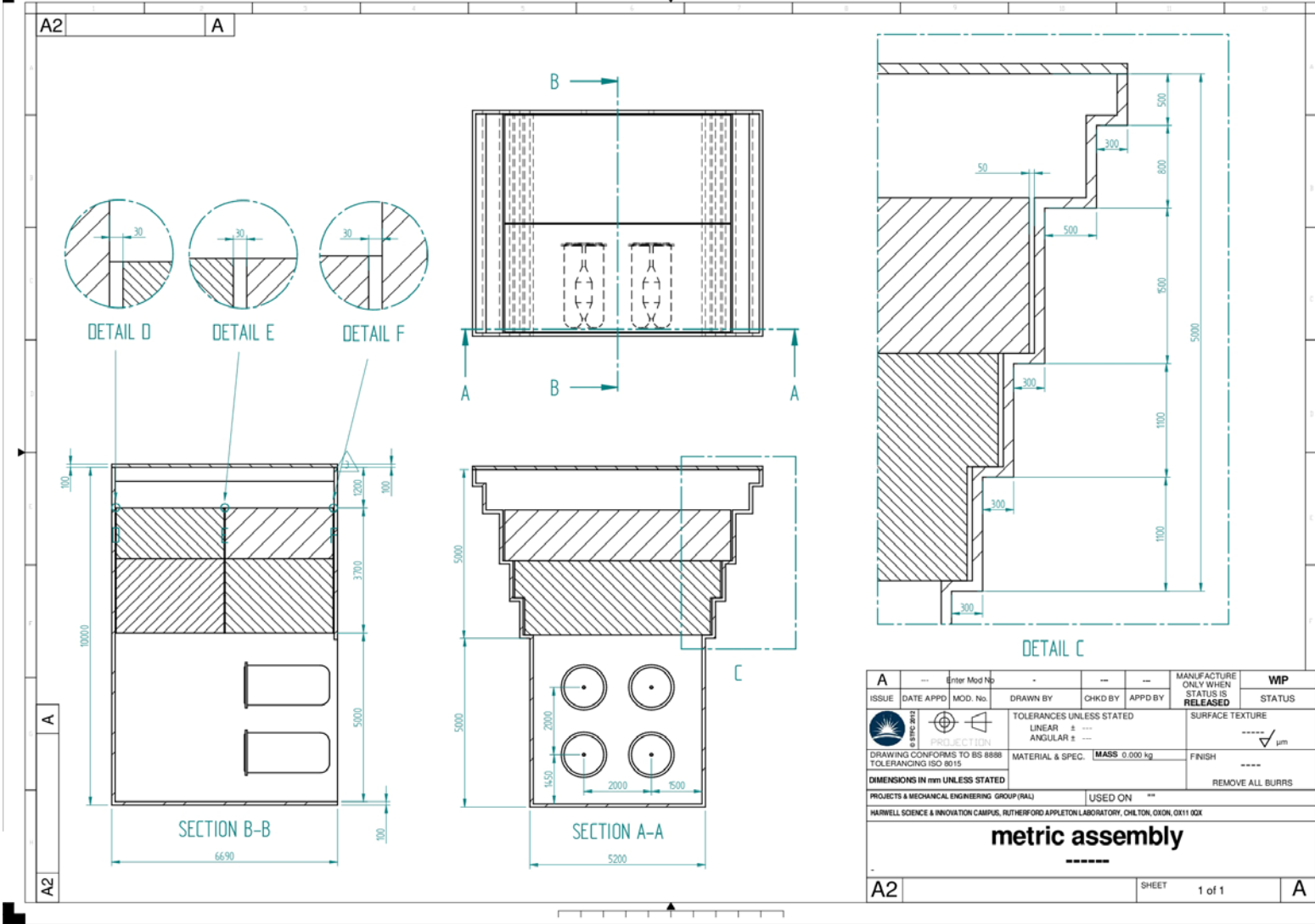
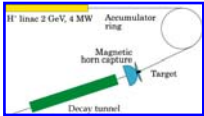


Radiation Updates

Eric Baussan on behalf of IPHC group



Target Station

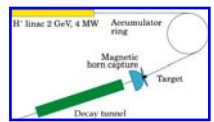


A		Enter Mod No		-	-	-	MANUFACTURE ONLY WHEN STATUS IS RELEASED	WIP
ISSUE	DATE APPD	MOD. No.	DRAWN BY	CHKD BY	APPD BY		STATUS	
				TOLERANCES UNLESS STATED			SURFACE TEXTURE	
DRAWING CONFORMS TO BS 8888 TOLERANCING ISO 8015		LINEAR ± ANGULAR ±						----- µm
DIMENSIONS IN mm UNLESS STATED		MATERIAL & SPEC.			MASS 0.000 kg		FINISH -----	
PROJECTS & MECHANICAL ENGINEERING GROUP (PM)				USED ON				
HARWELL SCIENCE & INNOVATION CAMPUS, RUTHERFORD APPLETON LABORATORY, CHILTON, OXON, OX11 0QX								
metric assembly								

A2						SHEET 1 of 1		A

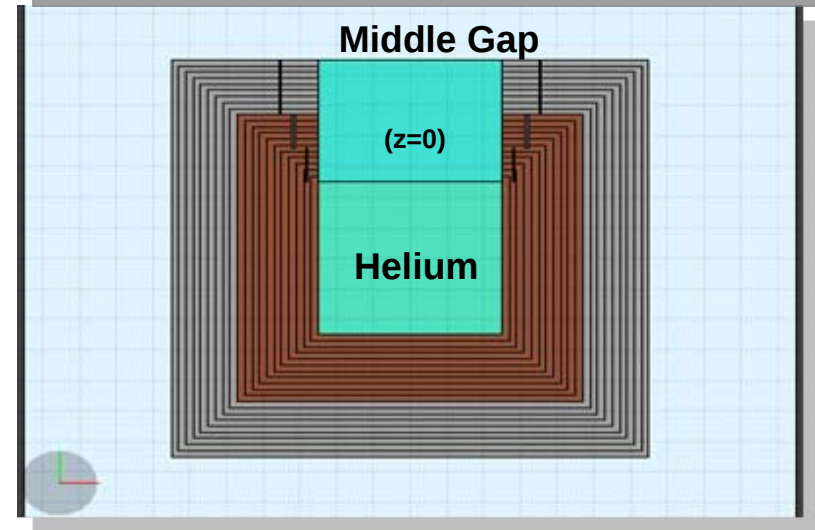
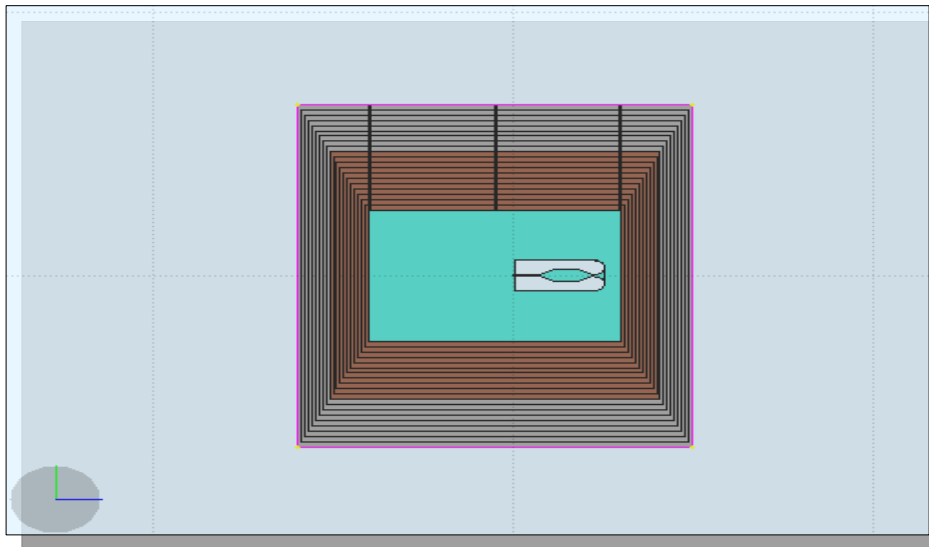
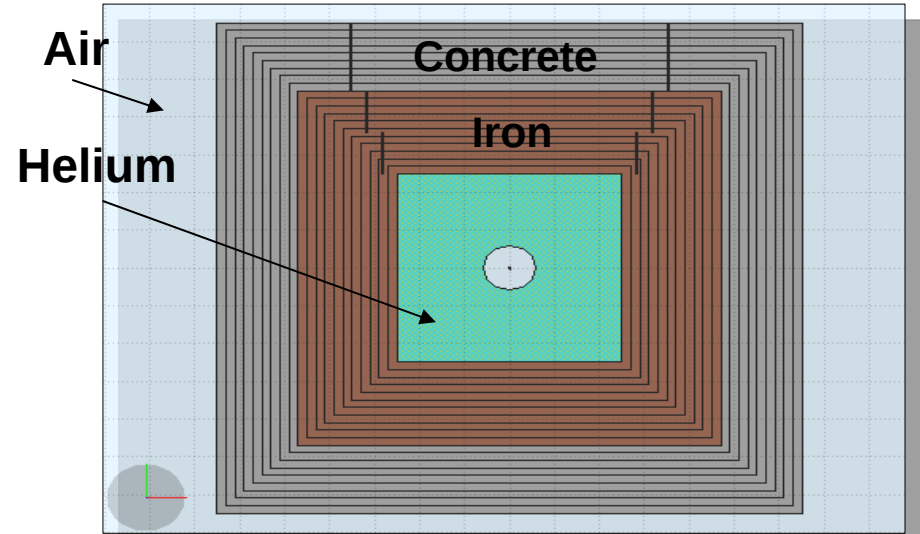


Target Station Simulation : Prompt Radiation



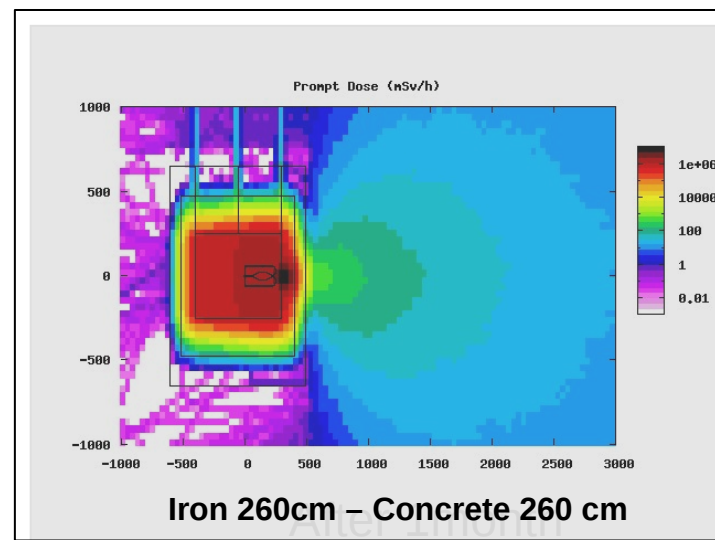
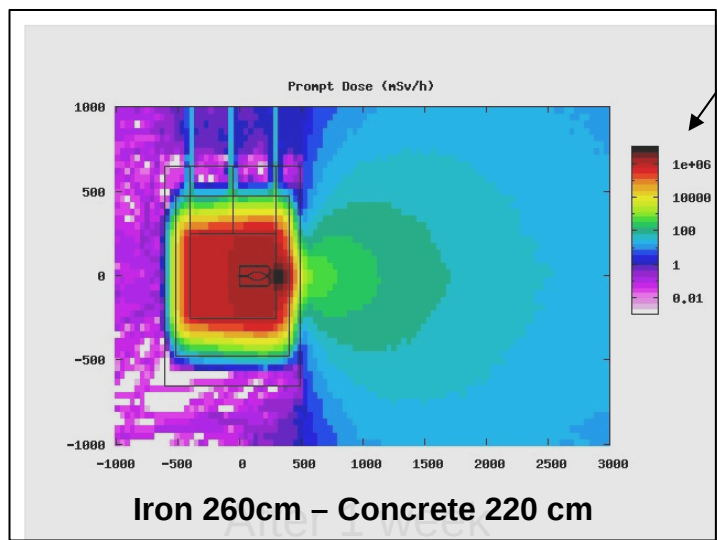
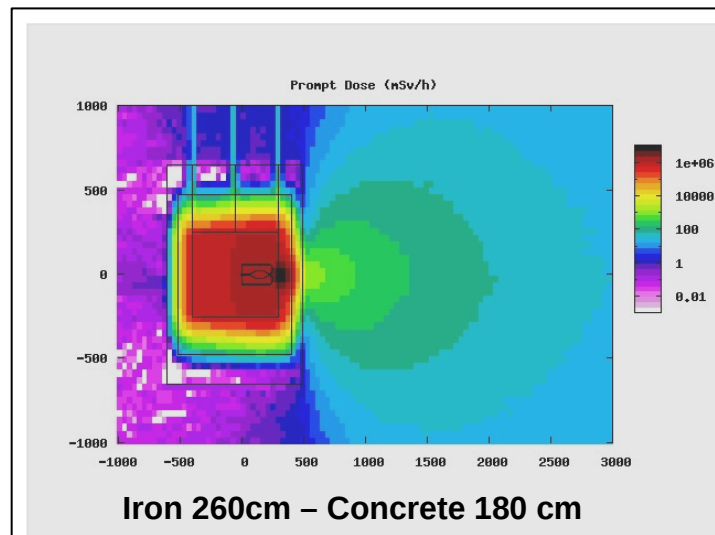
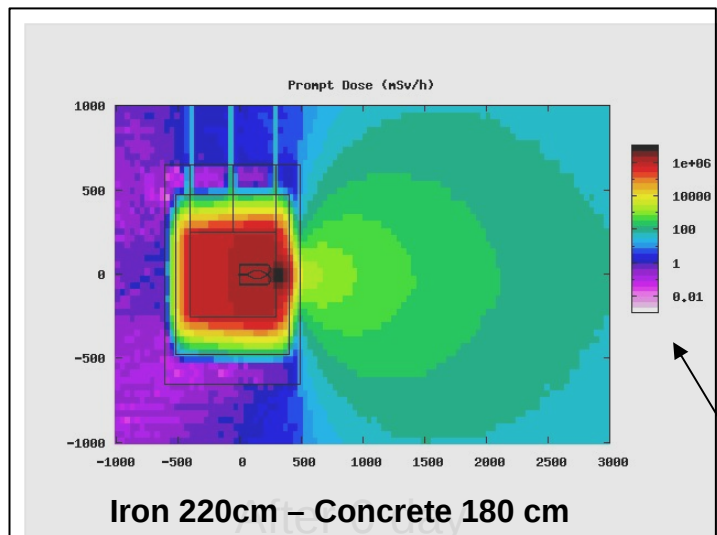
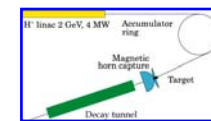
Simulation geometry :

- Feed thoughts 30 cm crossing the iron and concrete shielding
- Beam power 4MW
- 200 days Irradiation times
- One Horn Approx Study
- Four-Horns to follow with 10^8 p.o.t.
- Grid computation 10^7 Events.





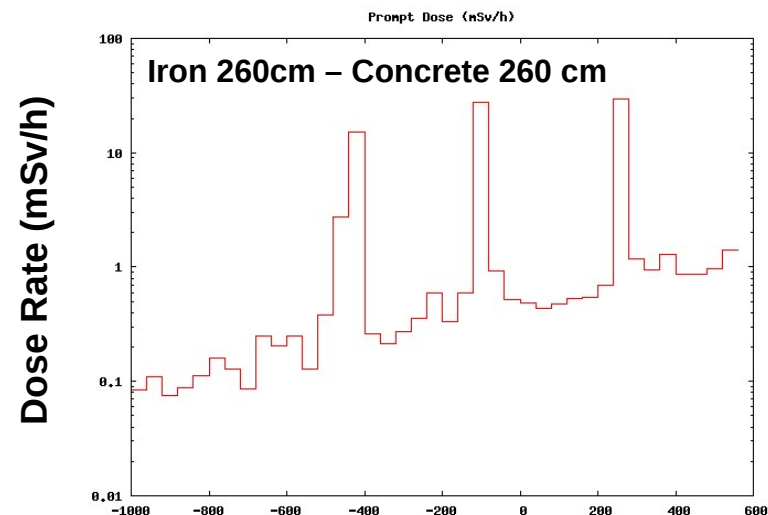
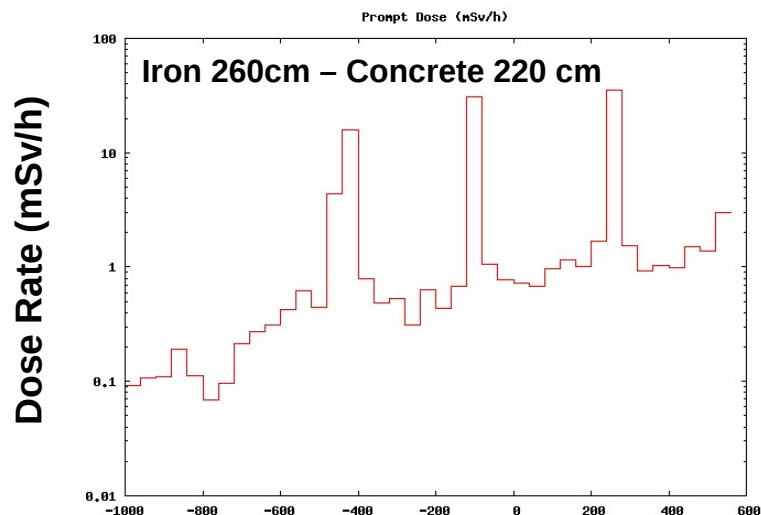
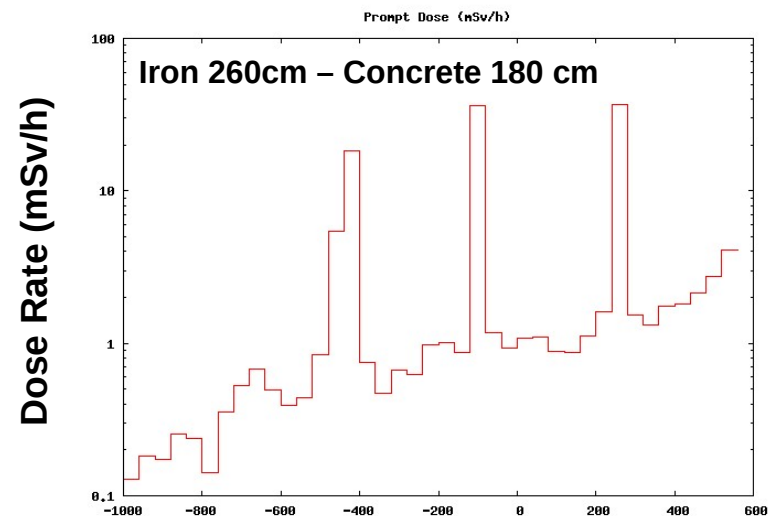
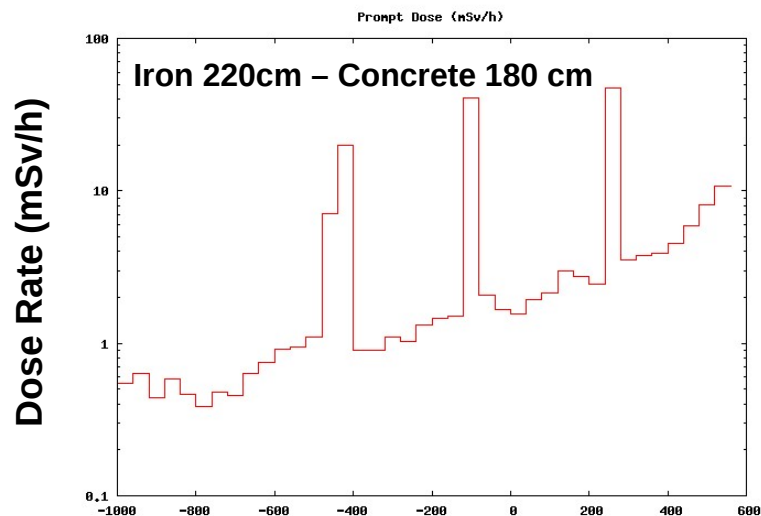
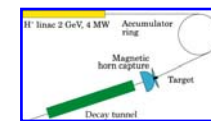
Target Station Simulation : Prompt Dose



mSv/h

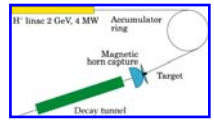


Target Station Simulation : Prompt Dose (Top)





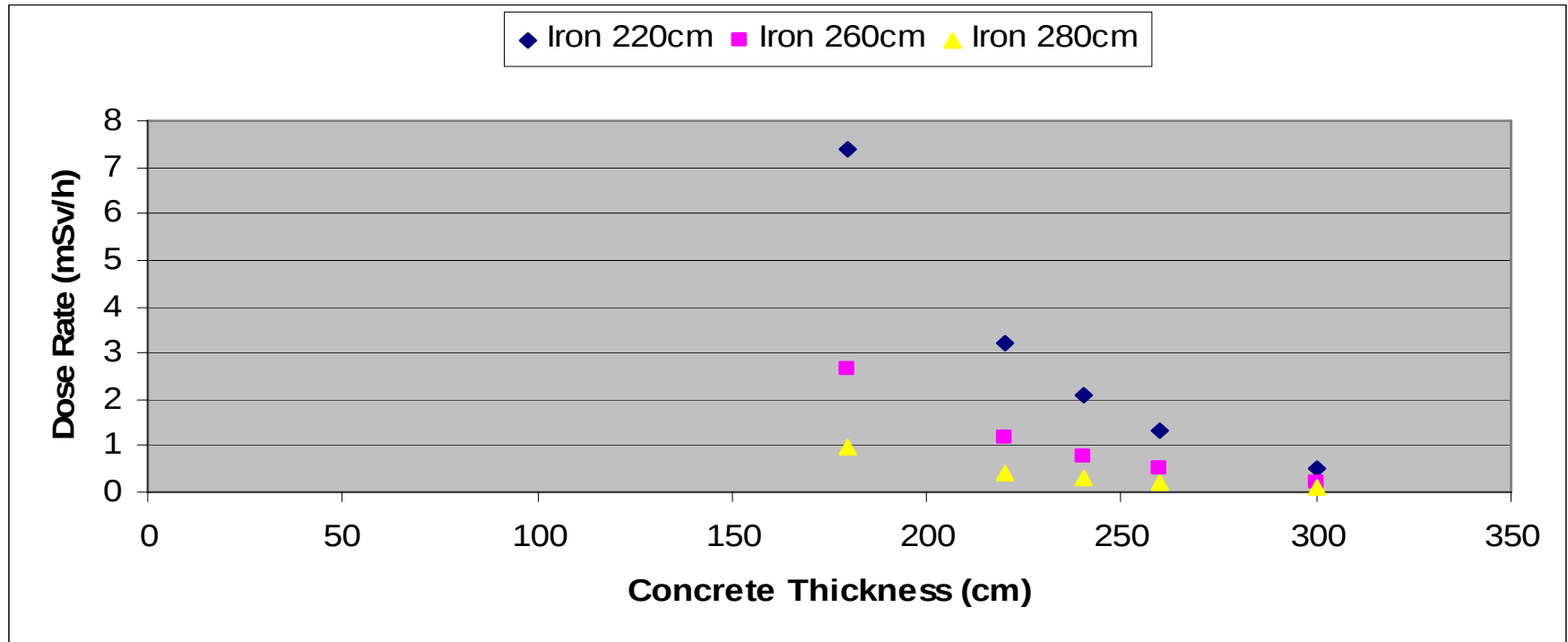
Target Station Simulation : Prompt Dose (Bottom)



Cross Check Dose Rate after Shielding :

$$H = \frac{H(\theta)}{R^2} \cdot \exp(-t / \lambda)$$

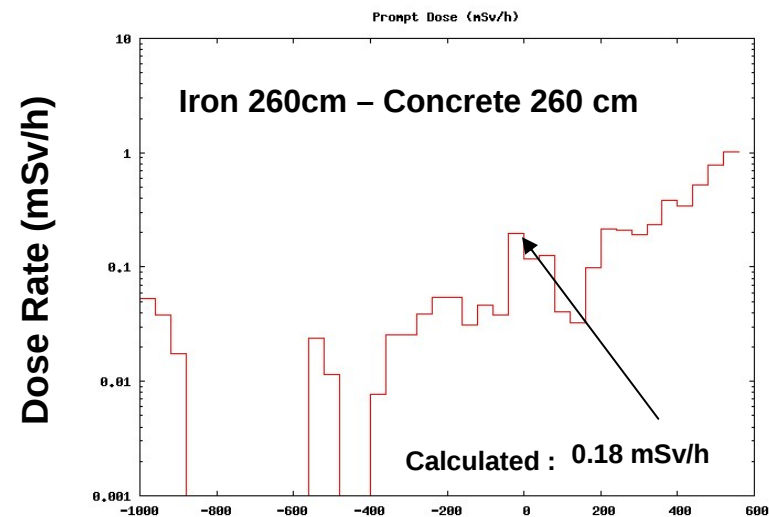
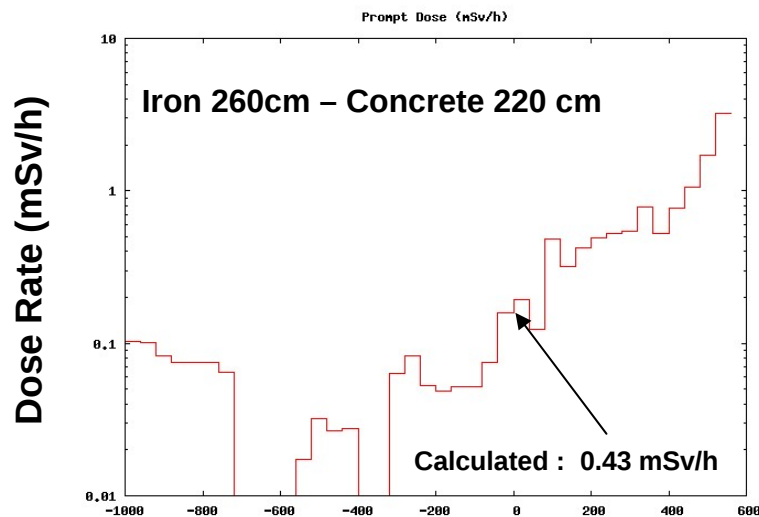
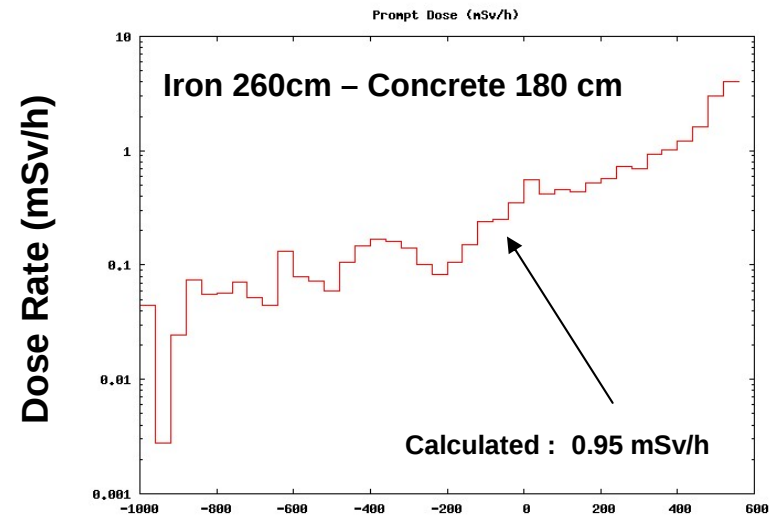
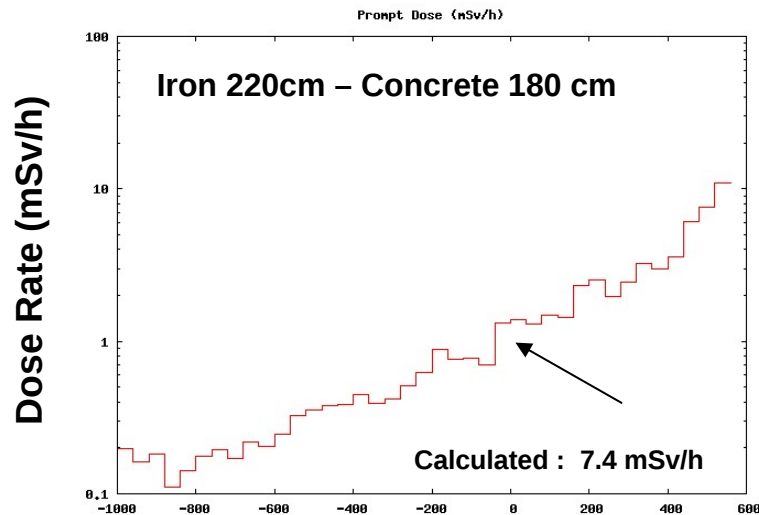
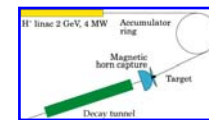
λ : Equivalent attenuation length in iron and concrete
 t : Total Shielding thickness



10 μ Sv with 220cm Iron + 370 cm Concrete for $\theta=90$

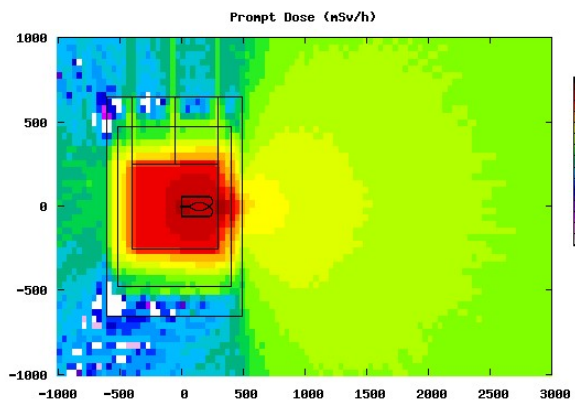
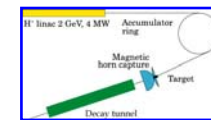


Target Station Simulation : Prompt Dose (Bottom)



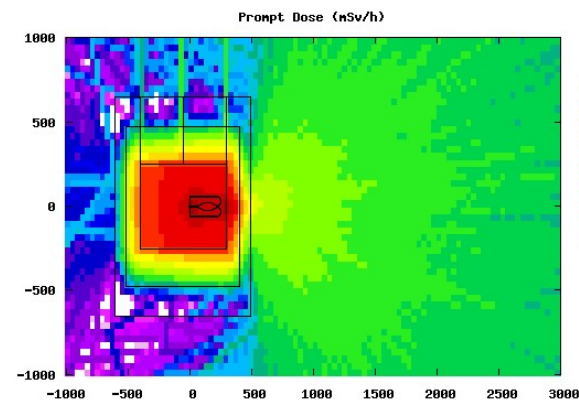


Target Station Simulation : Residual Dose Rate 220cm – 180cm

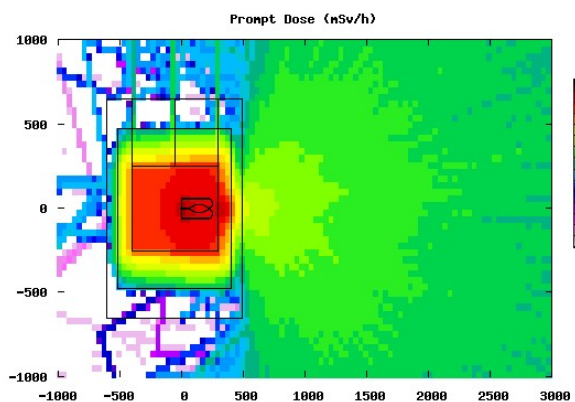


After 1 d

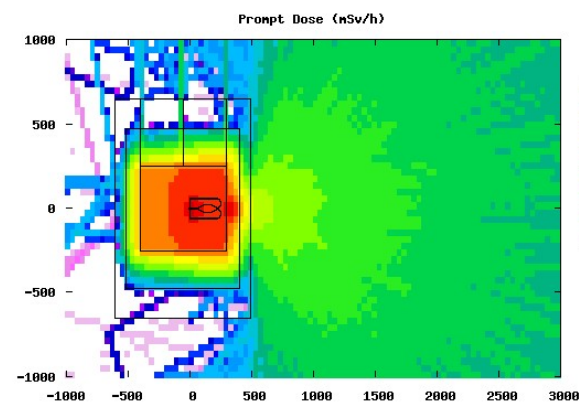
mSv/h



After 1 w



After 1 m



After 6 m



Target Station Simulation : Residual Dose Rate 220cm – 180cm (Top)

