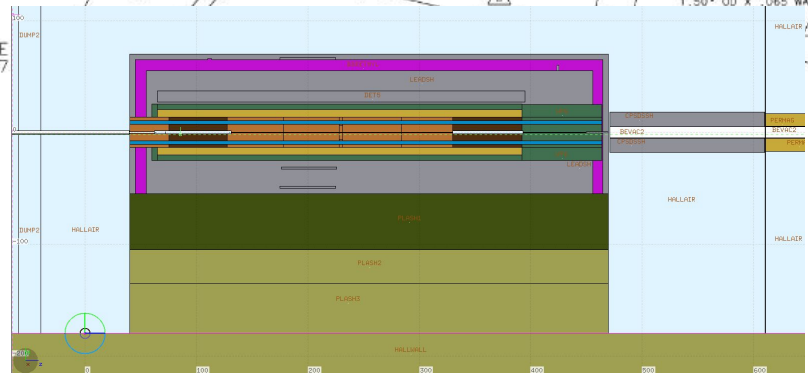
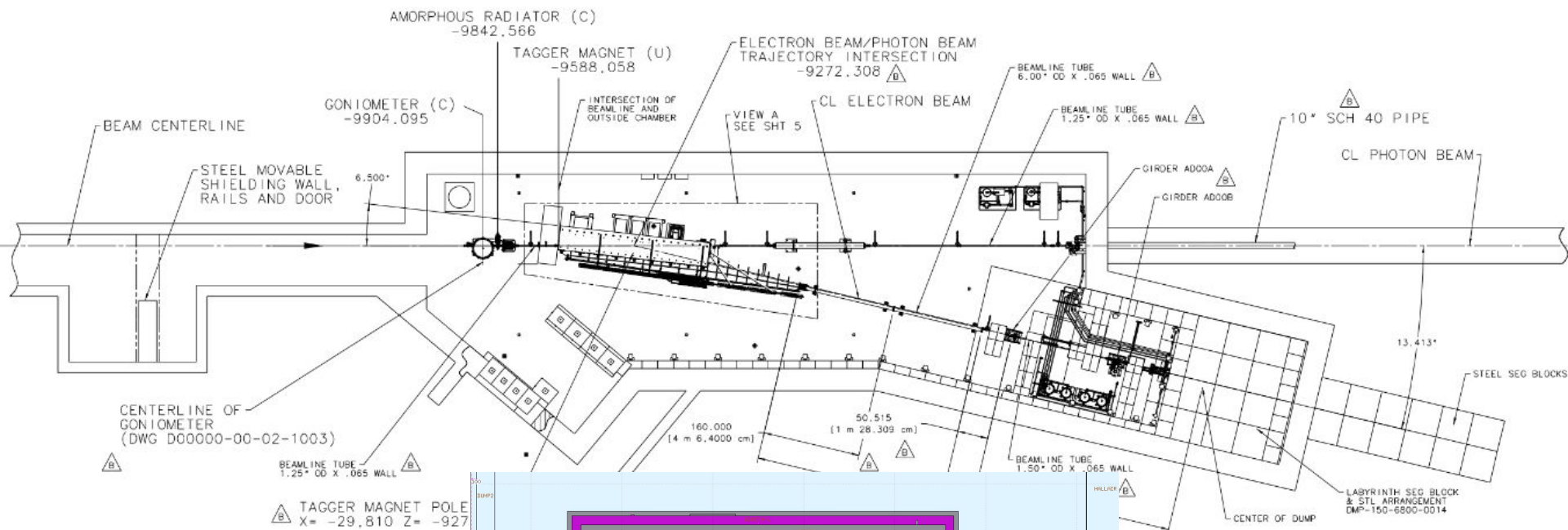
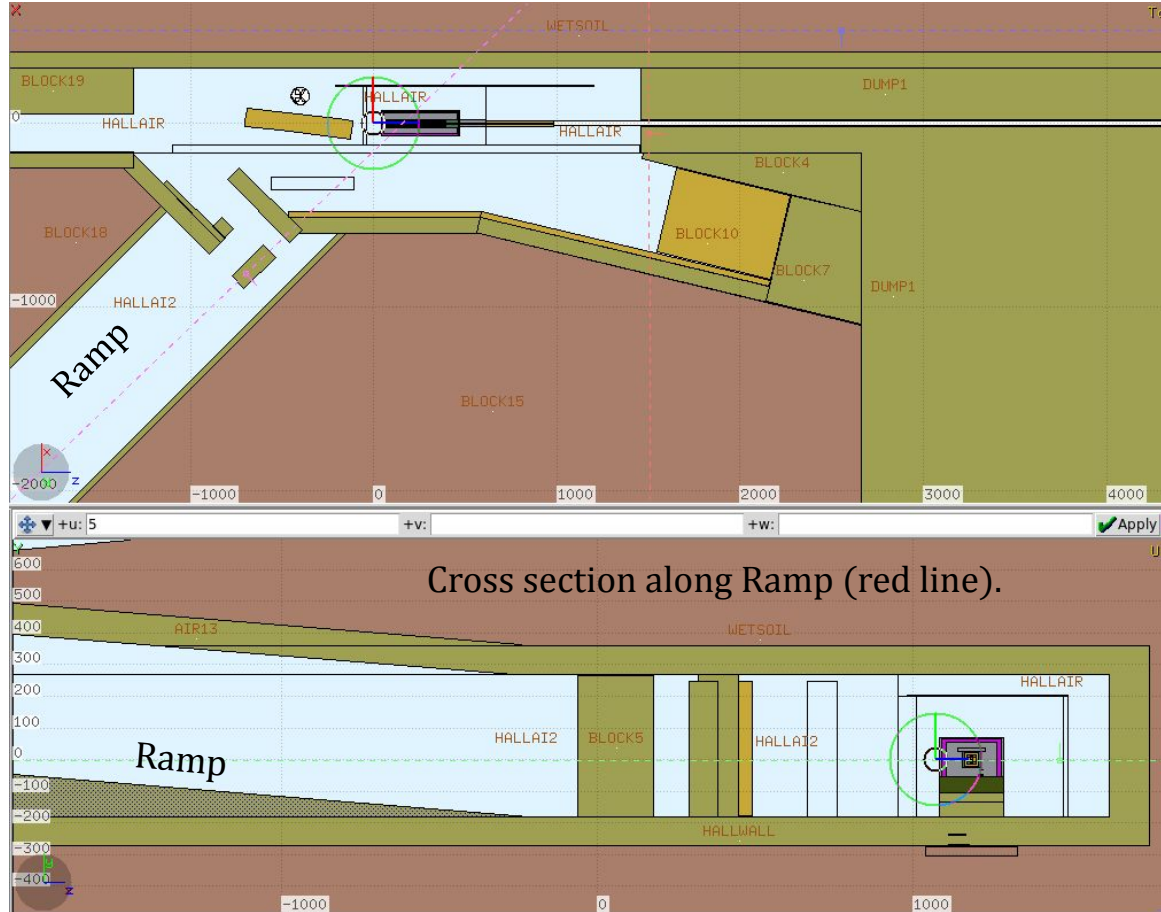


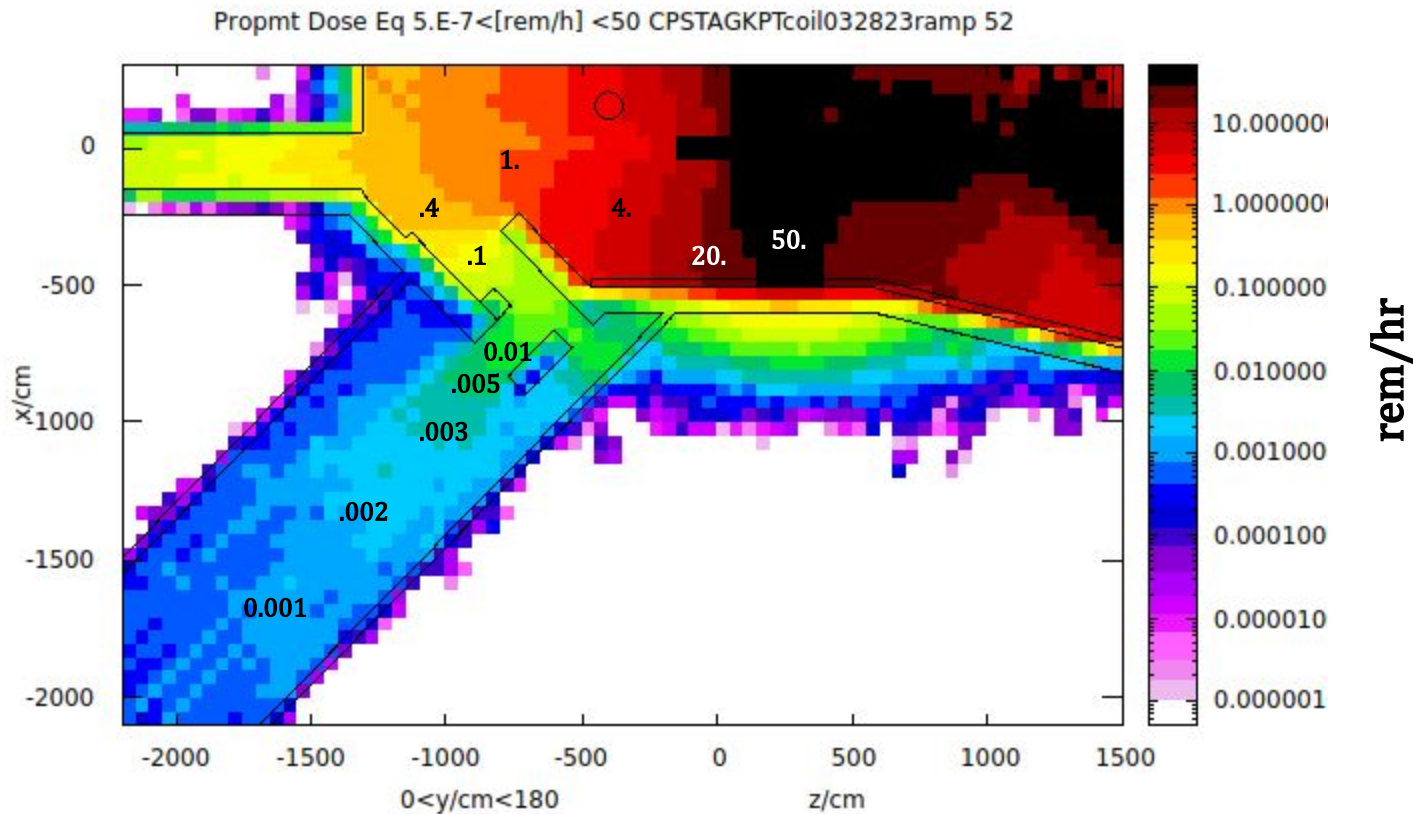
Update on Prompt Dose Equivalent rates
in&out
of Tagger Hall with baseline CPS



Tagger Hall model with baseline CPS. Ramp to the entry gate is included.



Prompt Dose Equivalent in Tagger hall and outside it at the ~20 m long Ramp.



- At the distance of 10-15 m Prompt Dose Equivalent is far below 5 mrem/h - safe!

Experiment Readiness Review Phase-I.

SPS

In order to start the CPS design we have to:

- **Identify** potential **problems** using FLUKA model of CPS in Tagger Hall.
- Suggest **design solutions** for identified problems.
- Present the **Concept** of CPS that **satisfy** the **experimental, technical, and safety requirements** and show that it is practical.
- Analyze the Concept for uncovered problems - why it may not work.



Hall D K-Long Facility E12-19-001.

Experiment Readiness Review Phase I. Jefferson Lab , 2023 Charge (close to original) and Brief Answers.

- Is there any R&D needed to be done prior to start the construction of the KLong Facility? **No.**
- What is the status of the Compact Photon Source (CPS)? Specifically the
- 1. Conceptual design: Presented in Technical Note.
- 2. **Approximations** in the MC simulations and Code used: Simplified Tagger & KPT Halls. FLUKA2021.2.9.
12 GeV beam $3.1E+13$ e/s, (**$5\mu A$**), **FWHM=2.5 mm**,
- 3. Evaluation of the **produced radiation**: **< 5 mrem/hr** on top of Tagger Hall, Ramp entry, Tunnel Mounds.
- 4. Energy deposition , **Absorber** and **Lead temperature**: **$P < 2$ kW/cm³** , Cu Absorber **T < 250°C** , **Pb shield T < 90°C**.
- 5. Prompt **dose** and **activation** around the CPS (Tagger Hall): Dose **< 10 rad/hr** , Act. **< 20 mrem/hr**. Maps available.
- 6. **Magnet and insulation lifetime**: 0.25×0.5 Tm, $I \leq 1.8$ kA, wire 2×2 cm², **T < 150°C**, **LT = 15** years.
- 7. **Cooling system & ground waters contaminations**: Tritium Activity **2.6×10^7 Bq** & **200 Bq/L** after 1 year.
 - What will the photon **beam quality** be: **$\sim 2.E+13$ γ /s**, FWHM=4 cm, neutrons & \pm part **< 2%** .
 - **Cost and schedule estimates** for the construction of the CPS: **\$920,000** without magnet.
 - **Civil constructions** to contain the radiation in the Tagger Hall: **No.**
 - **Decommissioning Plan** for CPS and Activated Components: To be mounted on rails to **move aside** for storage.