
Proposal for the Location of GIF++

E. Gschwendtner AB/ATB/SBA

GIF++ Requirements

- Beam
 - Muon beam
 - 100GeV/c, $\sim 10^4$ μ /spill, 10x10cm²
 - Electron beam
- Source
 - Cs¹³⁷ (662 keV) 10TBq (GIF in West-area: 740MBq)
 - Movable filters
 - attenuation down to $F=10^5$
 - 2nd irradiation facility in area
 - 90° of beam axis + separate collimators

GIF++ Requirements

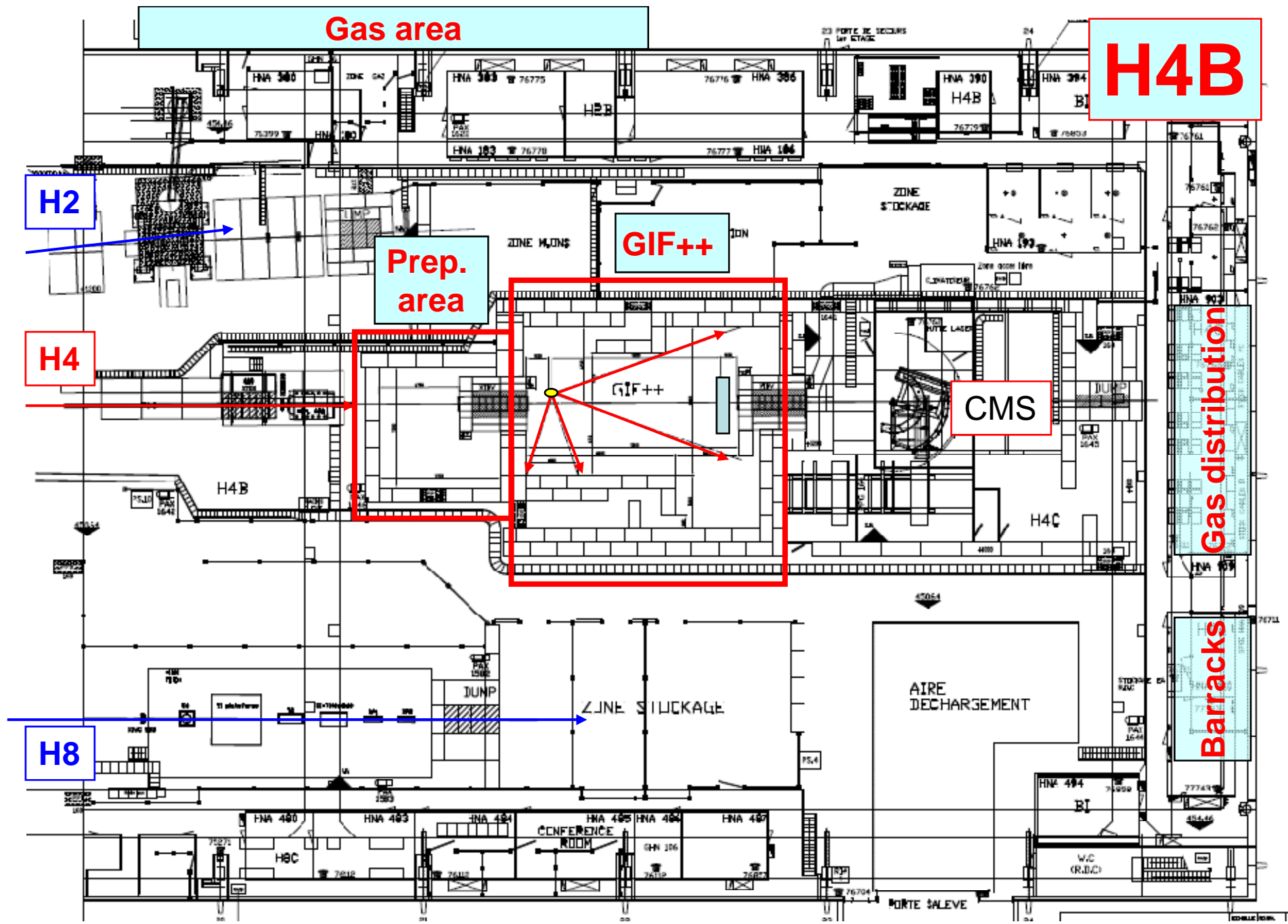
- **Shielding**
 - Cs^{137} : 0.092mSv/hr @1m
→ 10TBq: 1Sv/hr @1m
 - Supervised area: $3\mu\text{Sv/h}$
→ need factor 10^6

 - Concrete shielding ($\rho=2.5\text{ g/cm}^3$):
 - 1m for $F=10^6$
 - 1.2m for $F=10^7$

 - Iron shielding:
 - 40cm (36.2cm) for $F=10^7$
 - Lead shielding:
 - 16.1cm for $F=10^7$
- Use 160cm concrete**

GIF++ Requirements

- Area
 - Radiation area: $10 \times 7.5 \times 3 \text{m}^3$
 - Area with shielding + access: $\sim 16 \times 15 \times 5 \text{m}^3$
 - Detectors: up to $3 \times 1.4 \times 0.5 \text{m}^3$
 - Fast and easy access
 - Access via crane
 - Shielded & movable roof??
 - 2nd irradiation beam at 90 degree to main beam axis
 - Separate collimator and smaller area
 - Preparation area: $> 4 \times 4 \text{m}^2$
 - Used for commissioning with beam
 - Close to radiation area
 - Easy access
 - Beam available
 - Gas infrastructure available
 - Storage area
 - Barracks
 - Gas system (neutral, flammable, special)



Breakdown of Work to Do

AB/ATB/SBA

Coordination:

E. Gschwendtner

- Area:
 - Cleanout
 - Cable modifications
 - Modification CMS H4C area
 - Bring shielding blocks from Meyrin
 - Installation in H4B

 - Safety access system (doors)
 - Beam dumps

 - Infrastructure in the area

 - Roof?
- Barracks
 - Refurbish barracks (electricity...)
 - Installation of additional barracks
 - Network
- Crane modifications
- Beam
 - Vacuum pipes
 - Beam instrumentation
- Gas:
 - Gas zone piping
 - Gas building modifications
 - Gas safety
- Source:
 - Protection system
 - Connection to access system
 - Safety systems in the area (movement sensors...)

 - Radiation protection monitors

Open Questions

- How much muon/electron beam is needed?
 - ‘main users’ upstream and downstream GIF++
 - High muon rate → area downstream GIF must be closed

→ **Users!**

- How much flammable/special gas is needed?

- Do we need a roof?
 - Design of source

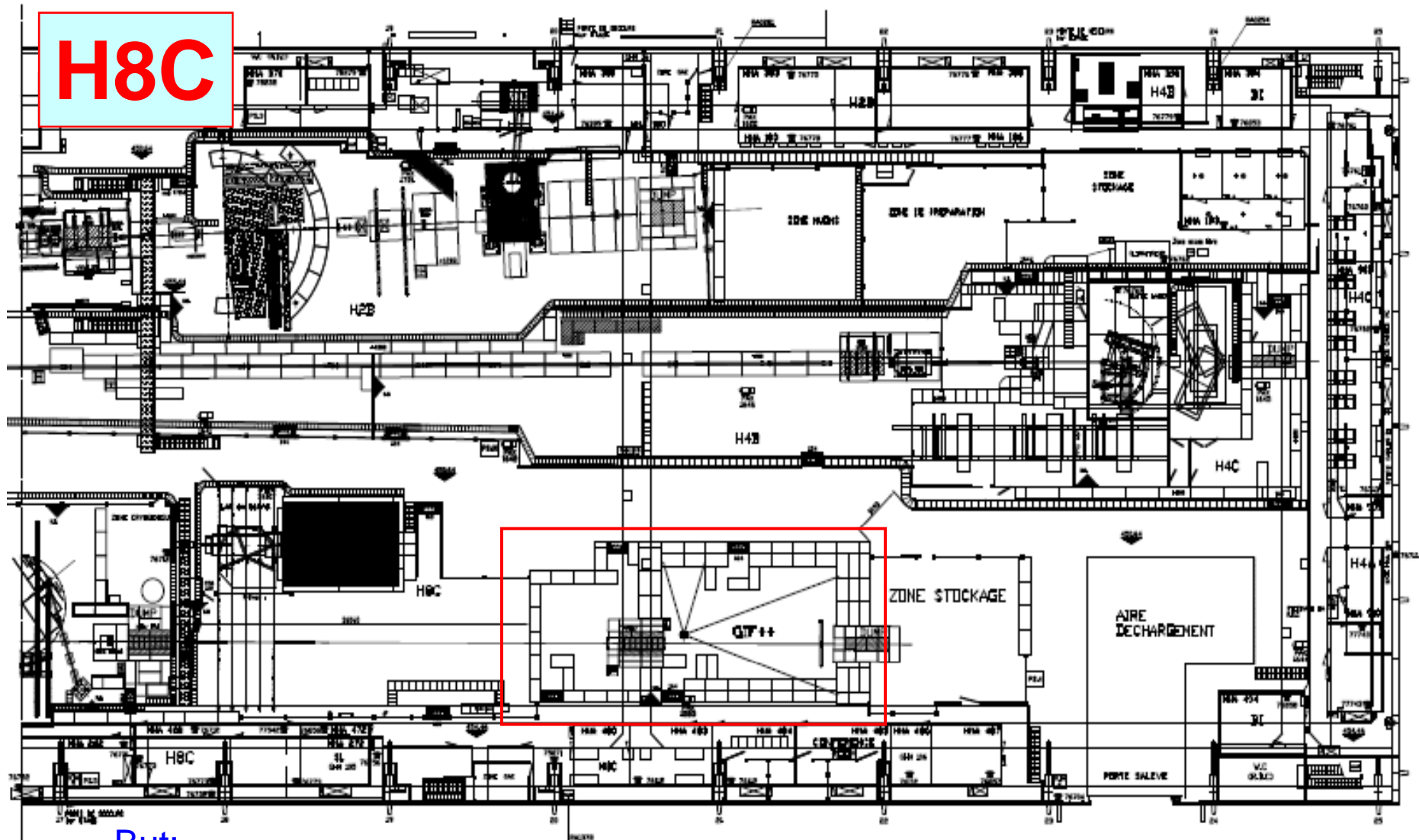
→ **AB/ATB/SBA**

Next steps:

→ Finalize drawings & design

→ source as part of infrastructure of facility → design

Other Possibilities



H8C

- But:
- Close to barracks
 - High intensity muon beam downstream
 - Asymmetric beam

