RP Status

Cooling circuit for future PSB dump

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Introduction

- The **numbers** in this presentation are **preliminary** only.
- **Determination of**
  - H-3 source term of the future dump
  - H-3 source term of the existing water circuit with future operation parameters
H-3 source term of the future dump

- **H-3 yield per primary proton**
  - Generic FLUKA simulation
  - 1e-2 H-3 nuclei / primary proton

- **Number of protons per year on dump**
  - Current use factor: 2.14e17 protons in 2011 (BTM.BCT in timber)
  - Scale with intensity scaling factor of 12.5

- 46 MBq/a
H-3 source term of the existing water circuit with future operation parameters

- Current water circuit volume \(\sim 80 \text{ m}^3\)
- H-3 concentration constant
  - 390 Bq/l
  - 31 MBq H-3
- Water loss
  - 345 l/week
  - 18 m\(^3\)/a
  - 7 MBq/a
- Saturation of H-3 concentration
  - Current H-3 source term should also be 7 MBq/a
- Evolution of losses with higher intensities and energy
  - Assumption of 12.5 at the moment
  - 88 MBq/a
Be-7 future source term

- Be-7 yield per primary proton for the future dump
  - Generic FLUKA simulation
  - $1.43 \times 10^{-3}$ Be-7 nuclei / primary proton
- Be-7 is removed via Ion Exchange Resins and gets trapped there
  - Radiological impact has to be accessed
  - Evolution of losses with higher intensities and energy
Parameters to be confirmed

- H-3/Be-7 production rates in the future dump
  - Detailed geometry of the new dump
- Use factor for the future dump (protons per year)
- Evolution of losses with higher intensities and energy