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
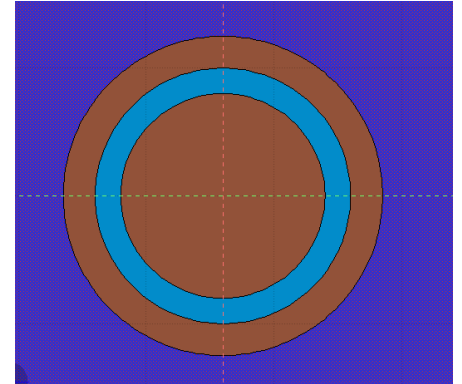
H-3 source term of the existing water circuit with future operation parameters

▸ Current water circuit volume ~80 m³
▸ H-3 concentration constant
  ▸ 390 Bq/l
  ▸ 31 MBq H-3
▸ Water loss
  ▸ 345 l/week
  ▸ 18 m³/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
  - 1.43e-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