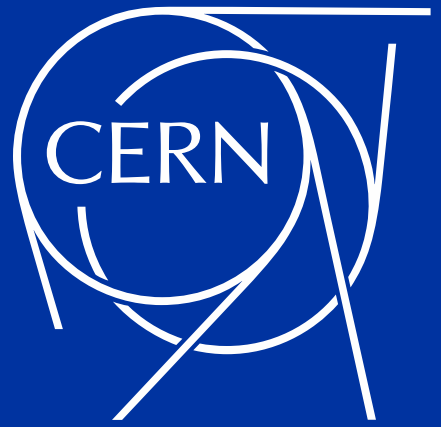


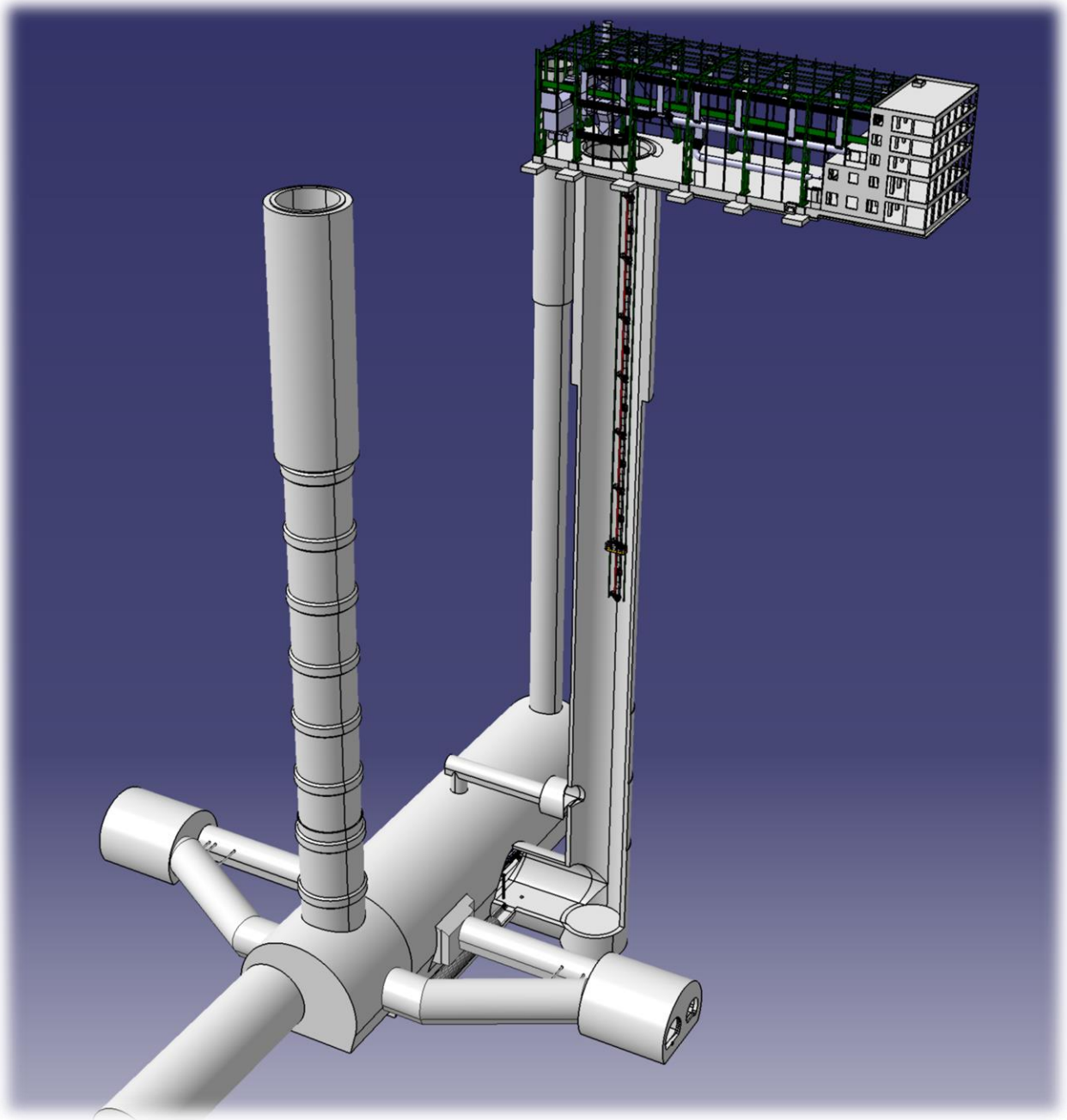
AION 100
Siting options and required civil engineering (CE)

Kincső Balázs, John Osborne SCE-DOD-FS

26/10/2021

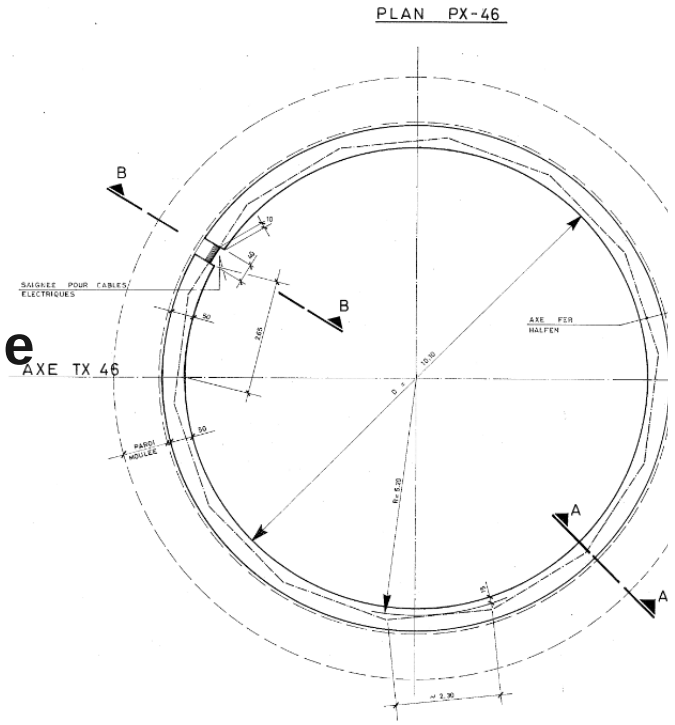
Introduction

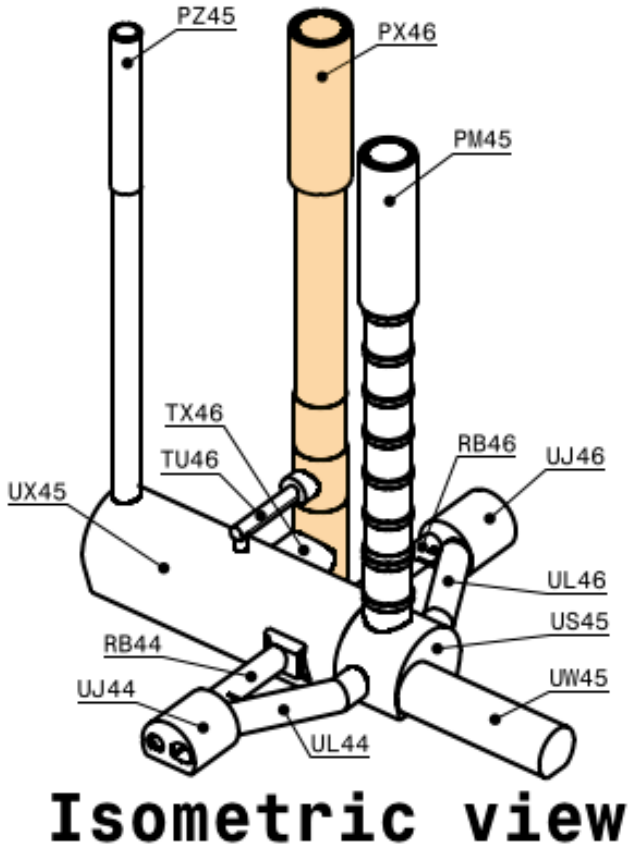
- Aims and objectives
- Shielding options
- Next steps



Aims and Objectives of the CE study

- **Explore the possibility hosting AION-100 at CERN in one of the existing LHC access shaft**
- **Current option: PX46 shaft**
  - Internal diameter :10m
  - Internal height: 143 m
- **Determine the maximum length of the experiment that could fit in the shaft**



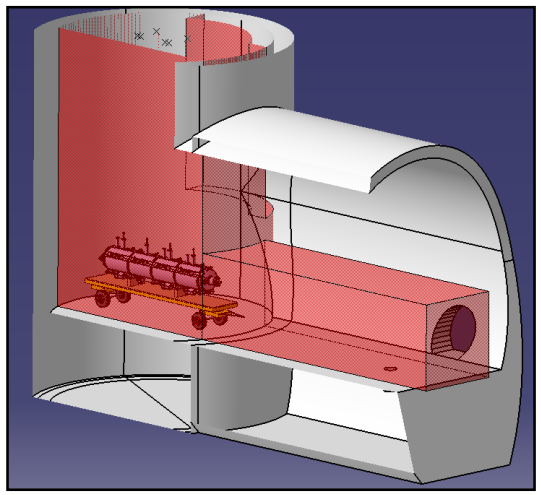


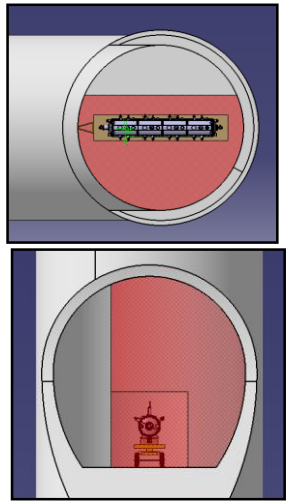
Shielding Options

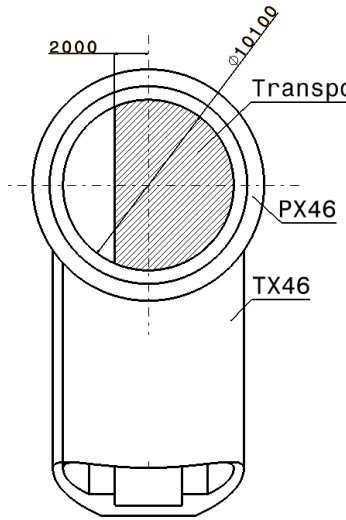
- **Preliminary radioprotection study done in February**
- **Conclusions:**
  - Shaft classified as Supervised Radiation Area
  - Experiment should have a maximum depth of 80m from the surface
  - Access platform should not go beyond the maximum depth of 90 m, should not reach the bottom of the shaft
- **Further study required on shielding solutions to increase the possible length of the experiment**

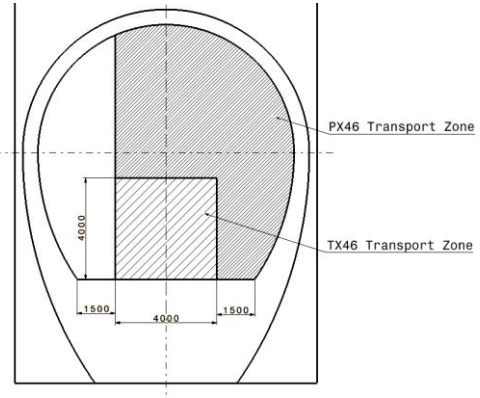
Shielding options

- **Handling constraints:**
  - Shaft used to raise/lower LHC and HL elements, PX46, TX46 need to stay open at any time





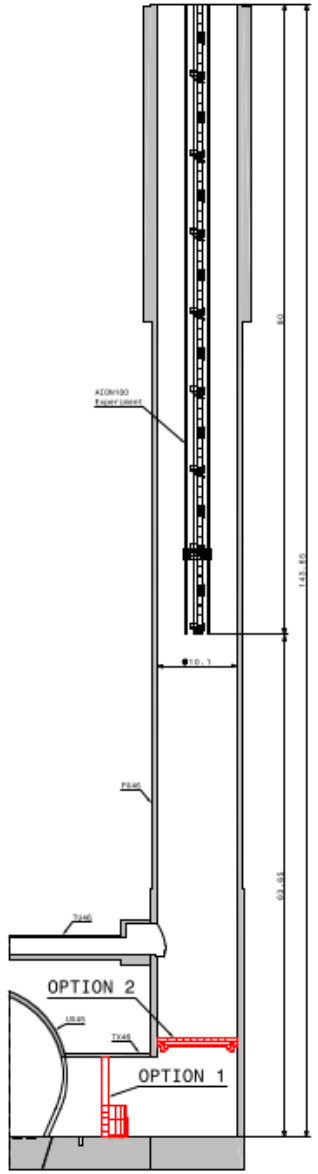




Courtesy of EN-HE-PO

Transport zone required to be kept in the TX46, PX46

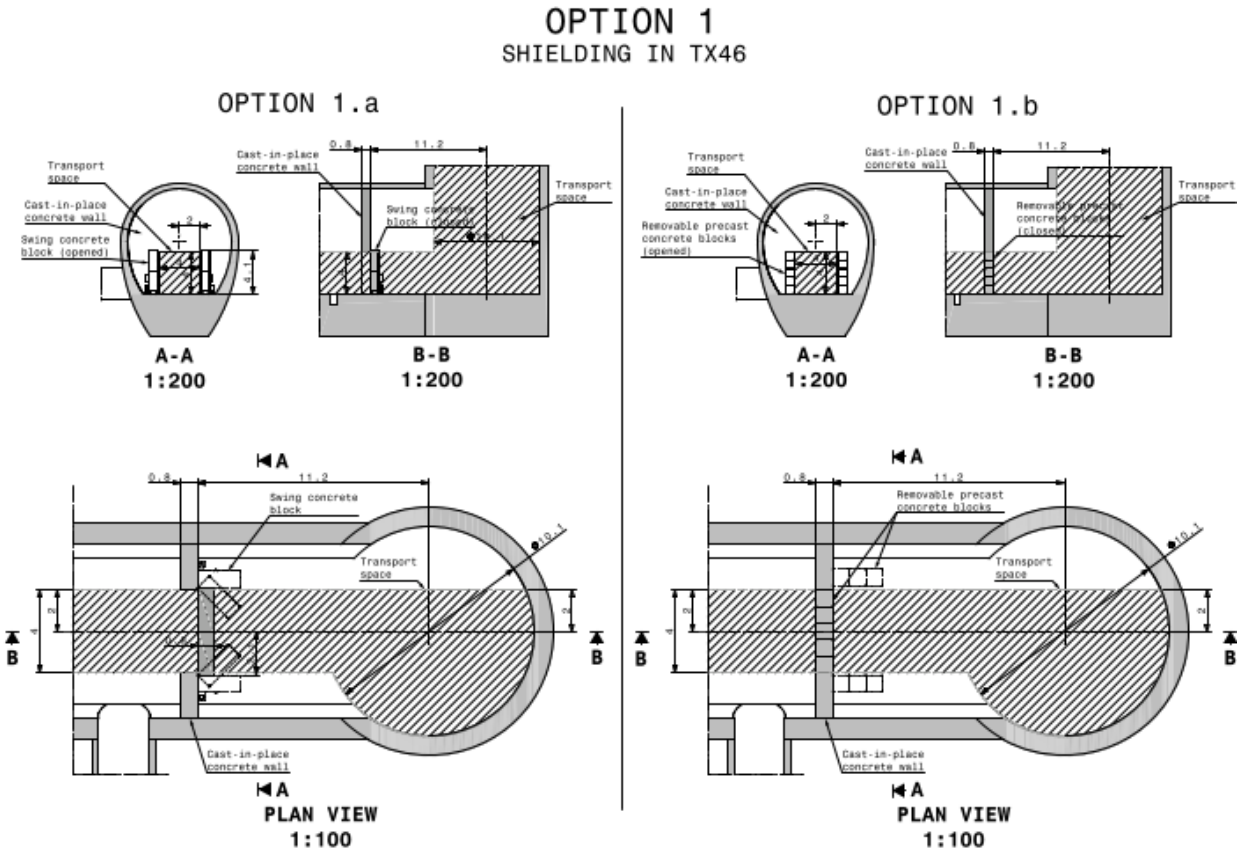
- **Two solutions proposed by CE**
- **Solutions with removable shielding blocks to avoid blocking the area reserved for transportation**



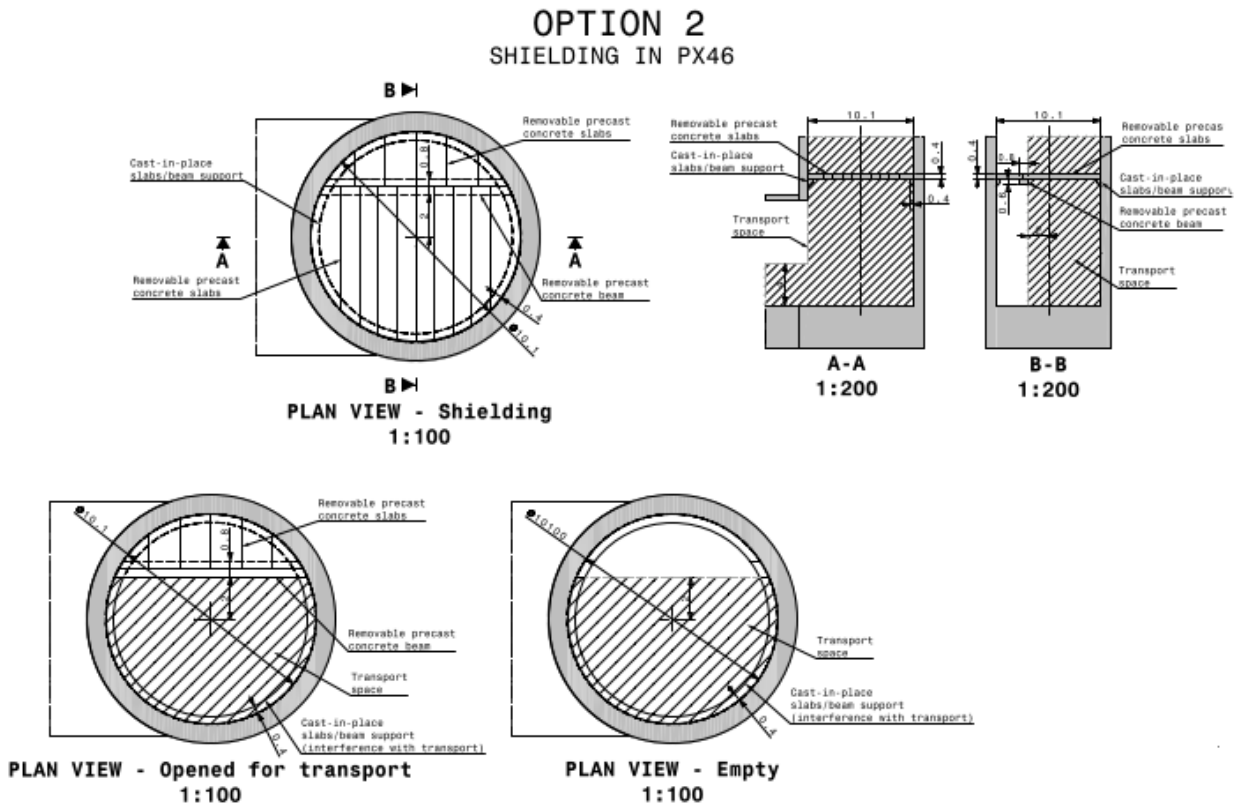
Proposed location for shielding

Shielding options

- **Option 1- Shielding in TX46**

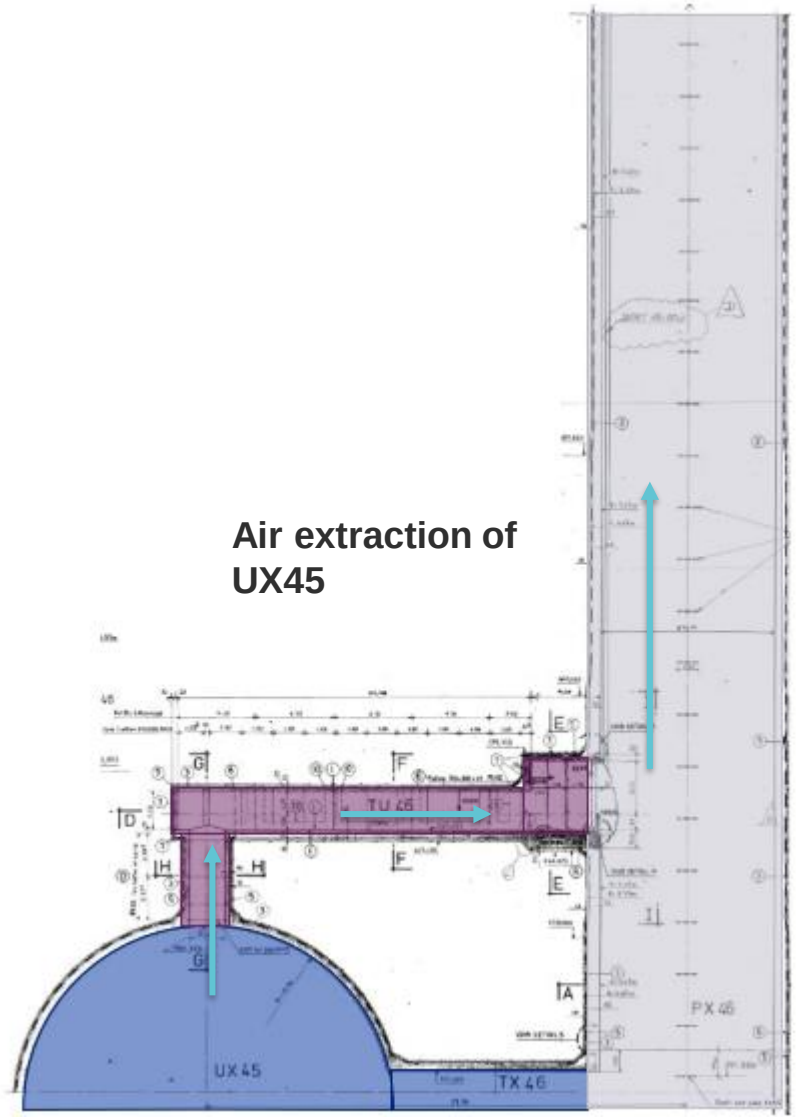


- **Option 2- Shielding in PX46**



Shielding – CV aspects

- **Proposed solutions seem feasible**
- **No duct through the shielding is required as per the current ventilation scheme (talk by O. Crespo-Lopez)**
- **No existing duct in the shaft, one might be needed when accessing AION100 during LHC operation**



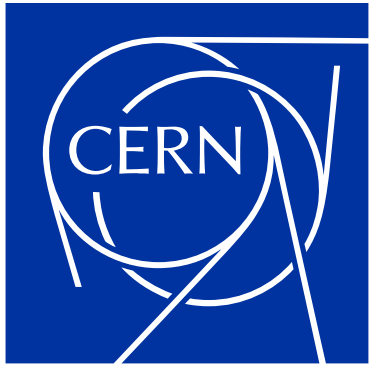
Courtesy of R. Langlois (EN-CV-LHC)

Radioprotection Study Update

- **New study completed including the proposed shielding arrangements in August (see talk by A. Infantino)**
- **Conclusions:**
  - Option 1 : possibility to use (almost) the full depth of the shaft
  - Option 2 : possibility to use up to 120 m
  - RP monitoring required for accessing the PX46 during operation

Next steps

- **Further discussions with HSE, CV and RP**
- **Decide on a preferred option**



Thank You!

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