



# Intensity Ramp-Up for pp Reference Run 2023

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# Introduction & pp reference run

- **VdM cycle and high beta run will be performed at low beam intensity**
- **pp reference run**
  - Uses different cycle and optics compared to low-beta physics
  - 2.68 TeV, ~2400b with  $1.4e11$  to  $1.6e11$  ppb
  - Contrary to the initial planning, we will not come out of a period of high-intensity proton physics but out of a ~1.5 months beam stop that included HW changes at the IT.L8

# Intensity ramp-up for pp reference run

Requirements after TS*	Requirements after YETS*	Proposal for 2023 high-intensity restart (pp ref run)
3b in SB (cycle revalidation)	3b/12b ( $\geq 2$ fills, >15h in SB, checklist)	3b into SB
75b (1-2h in SB, full lumi levelling)	75b ( $\geq 2$ fills, >15h in SB, checklist)	75b (>2h in SB)
400b (>2h in SB, full lumi levelling)	400b ( $\geq 2$ fills, >15h in SB, checklist)	400b (>5h in SB, checklist before advancing to 900b)
	900b ( $\geq 2$ fills, >15h in SB, checklist)	900b (>5h in SB)
1200b (>5h in SB, full lumi levelling)	1200b ( $\geq 2$ fills, >15h in SB, checklist)	1200b (>5h in SB)
	1800b ( $\geq 2$ fills, >15h in SB, checklist)	1800b (>5h in SB)
Back to 2400b	2400b	~2400b (checklist after 1 <sup>st</sup> fill)
<b>Remark: No formalized checklists</b>	<b>Remarks:</b> - checklist after each step before advancing to next intensity - both fills through full lumi levelling	<b>Remarks: checklists after 400b and after 1st fill with full machine</b>

\*For details, see [LMC #460](#), April 5<sup>th</sup>, 2023