H1 Status

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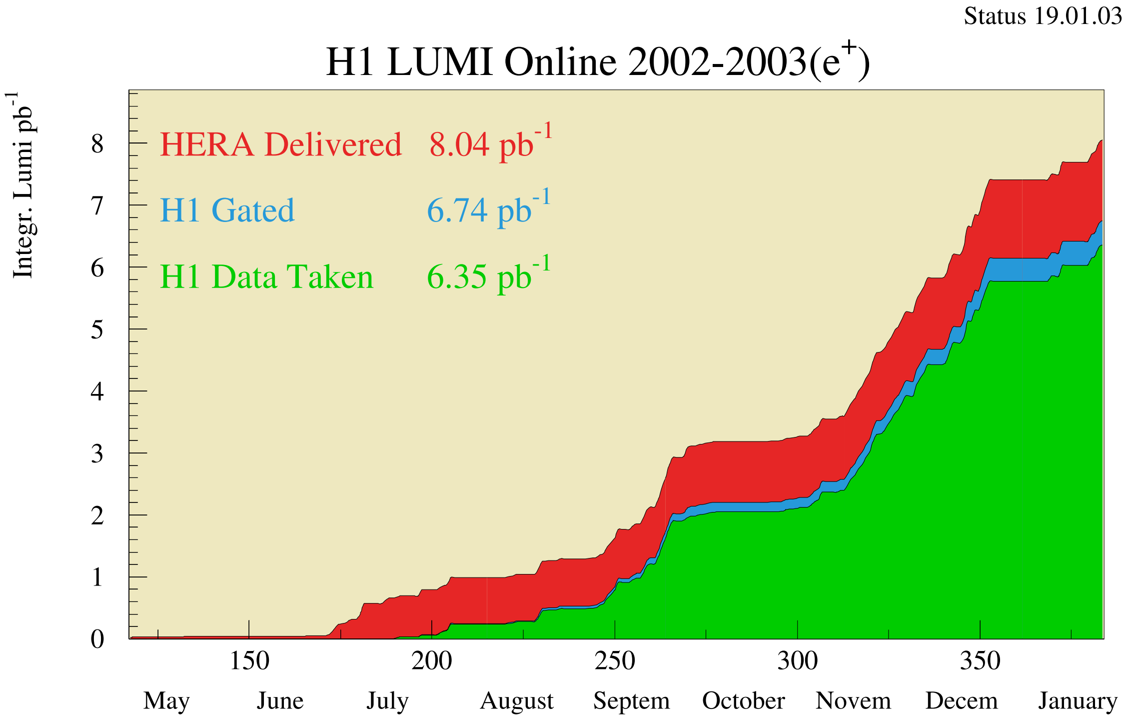
HERA Coordination meeting, 21.1.2003

- Luminosity running
- Background situation
- Running before the shutdown
- Shutdown tasks

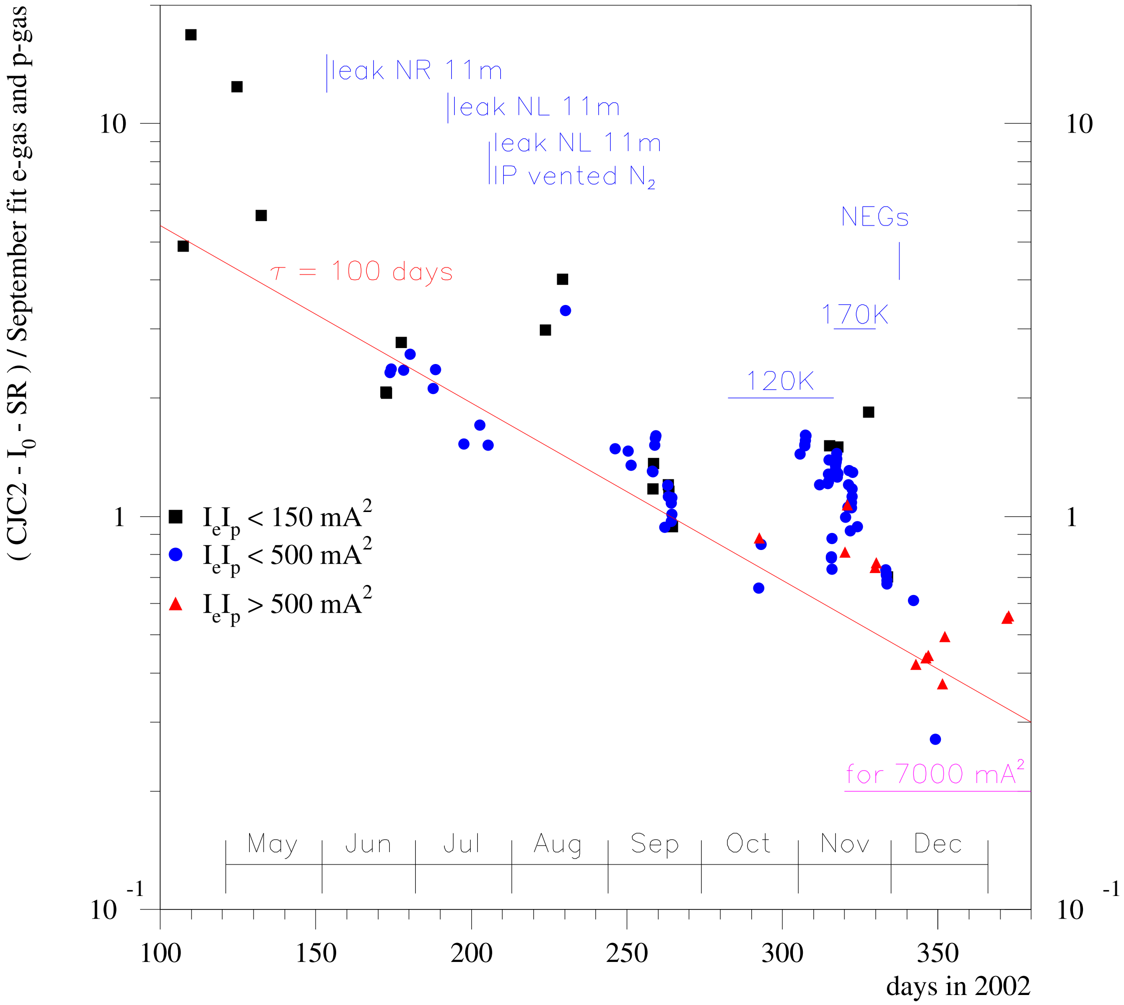
Integrated luminosity



- HERA delivered about 8.0 pb^{-1}.
- H1 on tape: 6.3 pb^{-1}.
- With CJC HV on: 2.0 pb^{-1}. Limited by high background level and by 'spikes'.

Chamber current history

CJC2: pedestal and SynRad subtracted.
normalized to Sep 2002 fit:

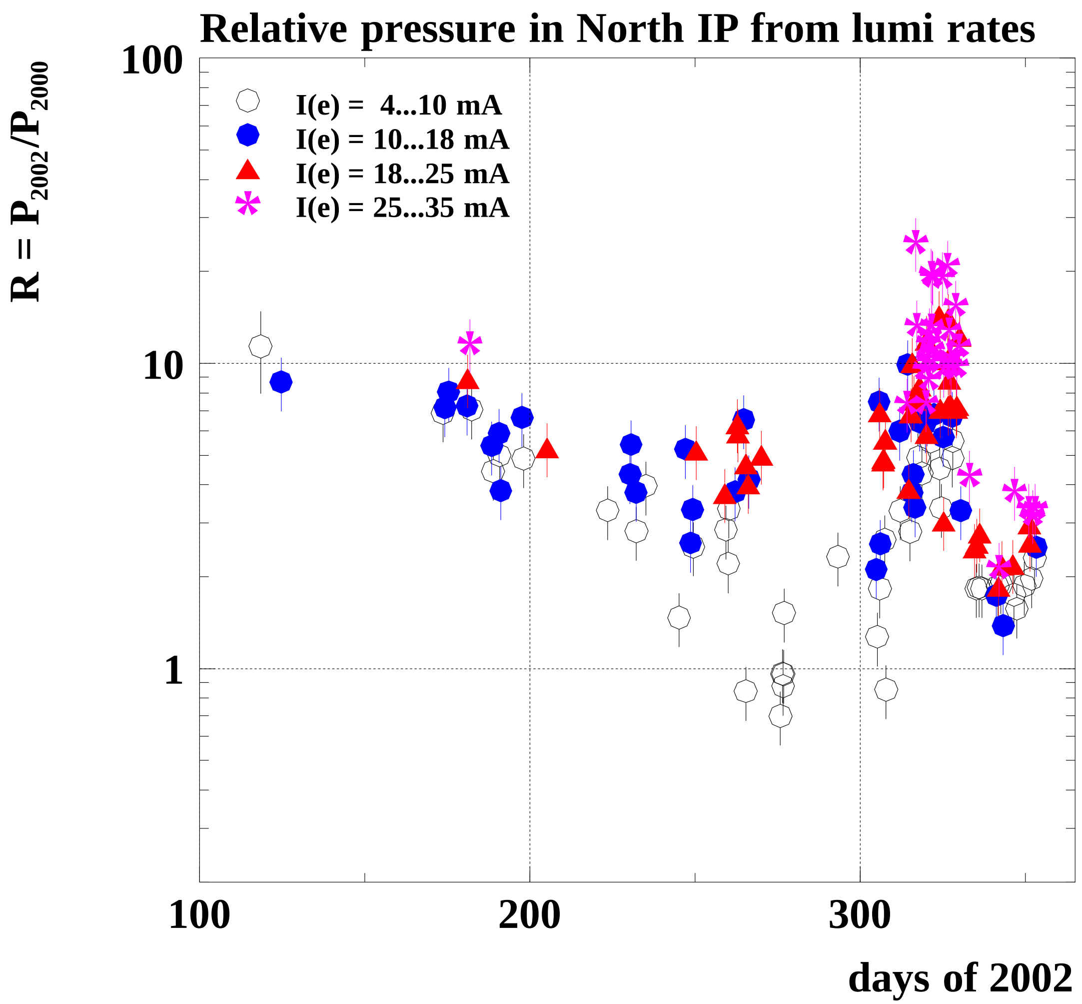


- Long-term improvement by factor ≈ 20 with $\tau \approx 100$ days.
- Trend interrupted by venting in July and by operating at higher GO,GG beam pipe temperatures in Oct/Nov.
- Flange leak on Sun 12.1.2003: beam pipe ± 26 m vented.
  Flange tightened and sealed again.
  Only reduced HV since then.

Lumi runs, full HV, after BG tuning.

Pressure history

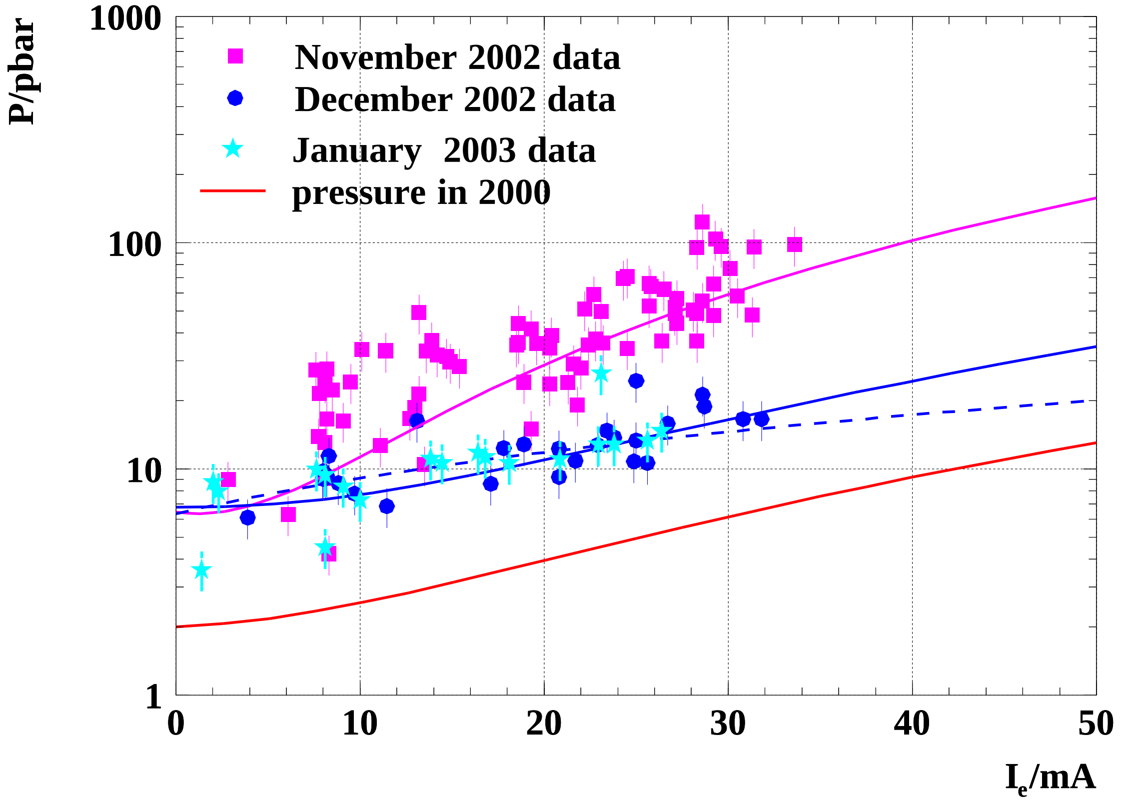
Average pressure within ± 2 m around the IP relative to 2000:



- Long-term improvement by factor ≈ 8 with $\tau = 130$ days.
- Dec 2002: factor 2 above 2000 level for 25 mA at 27.5 GeV.
- Higher pressure with increased GO,GG beam pipe temperatures in Oct/Nov: cryo pump effect at 55 K.
- Aug 2002 (around day 225): no pressure increase from flange leaks at ± 11 m.
  IP protected by GO/GG kryo surfaces?

IP pressure vs I$_e$

Derived from lumi pilot bunch rate:



- High pressure, qudratic in Nov with GO/GG at 110–170 K.
- 55 K operation in Dec 2002. Quadratic vs linear indistinguishable up to 32 mA.
- Jan 2003 on same curve as Dec, even after flange leak at 11 m!

$\Rightarrow$ Background after flange leak on 13.1.2003 comes from beyond 1.5 m.

- 2000 was factor 2 better than Dec 2002.

Goals before the shutdown

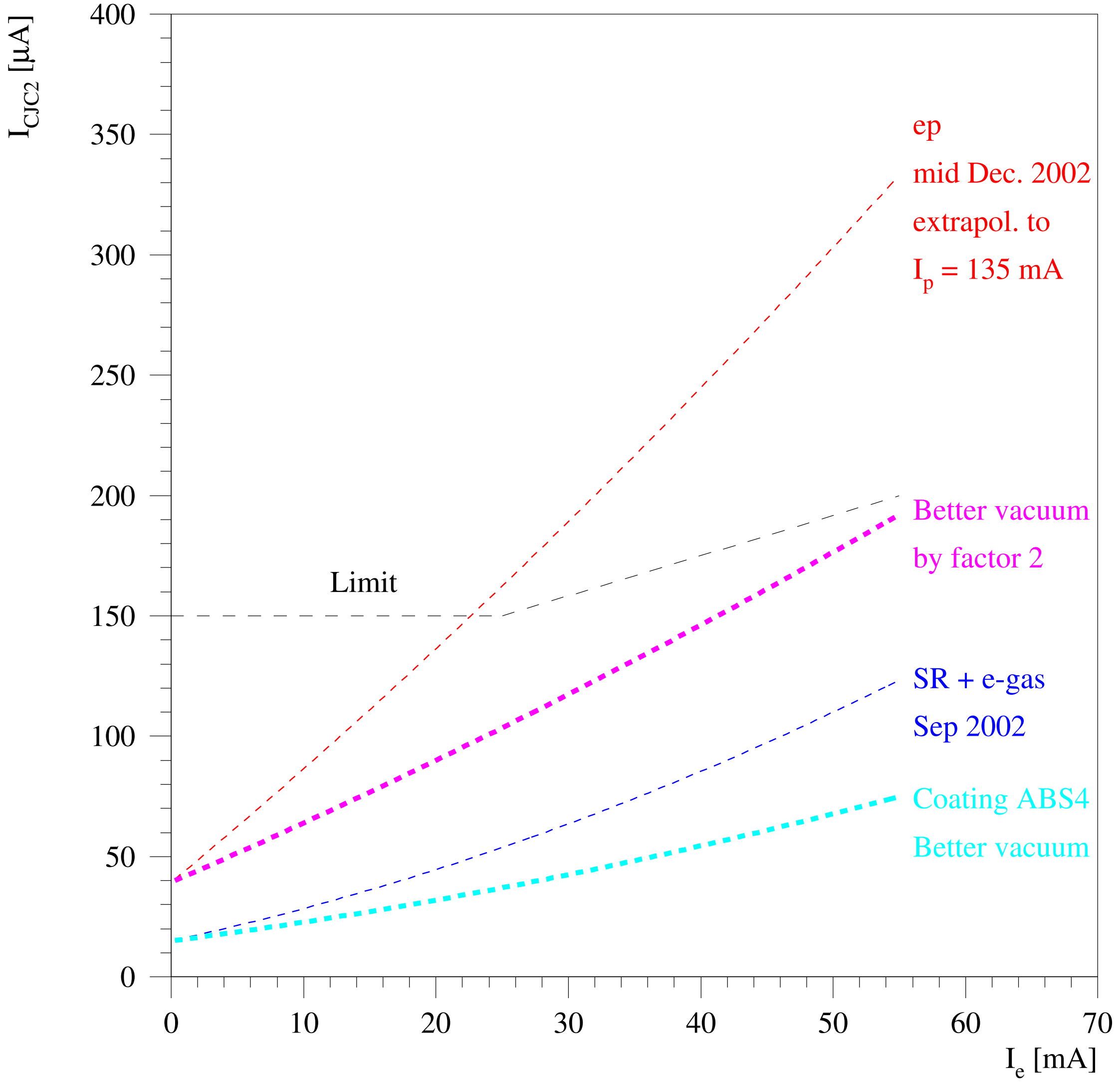
- Recover from the flange leak at NR 11 m:
  - Warm up GO/GG to 170 K, ramp down solenoid, regenerate NEGs and TSps, cool down, ramp up: 1 shift, regularly.
  - 12 GeV bakeout as recommended by Review Committee: start with 2 days.
  - Essential before any high $\mathcal{L}$ studies.

- Regular lumi operation.
  More data taking with the new backward scintillators.
  Parasitic: TSP heating experiments NL and NR.

- Activate Spin Rotators N and S
  Observe polarization with solenoids?

- Increase I_e beyond 40 mA at 27.5 GeV.
  Do it last in case of damage.

Extrapolation to $I_p = 135\,\mathrm{mA}$



- Conditions from mid Dec 2002 extrapolated to $I_p = 135\,\mathrm{mA}$.
- Improve vacuum by factor 2 everywhere
  Reduce SynRad by 1.7 (coating ABS4).
- e^+-only contribution Sep 2002.
- e^+-only contribution after improvements.
- Safety factor and stable operation desired.

Shutdown tasks

- Modify collimator C5B at -1.5 m:
  - Reduce thickness from 20 to 5 mm W.
  - Add staircase taper to reduce HOMs.
  - Water cooling.
  - Design in progress, to be reviewed.

- Install Integrated Getter Pump at -1.5 m.
  Design in progress, to be reviewed.
- Install rest gas analyzers at NR 3.6 m and 6 m. Ready
- VFPS bypass cold test at DESY started Mon 20.1.2003.
- The preparation for the CIP repair is on track for the March shutdown.
- Exchange of radiation-damaged Backward Silicon electronics: preparations underway.
- H1 wants to start a 17 week shutdown on 3.3.2003.