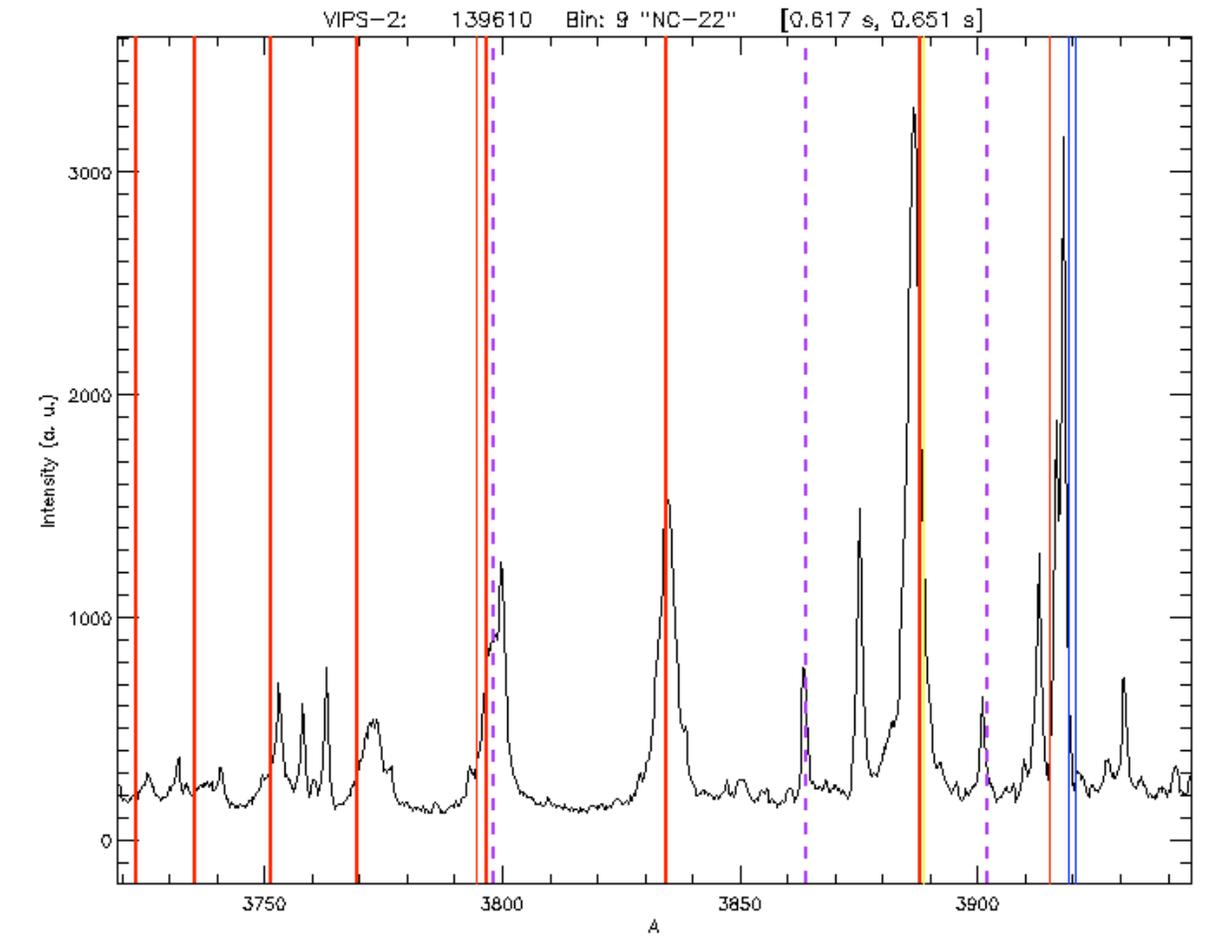
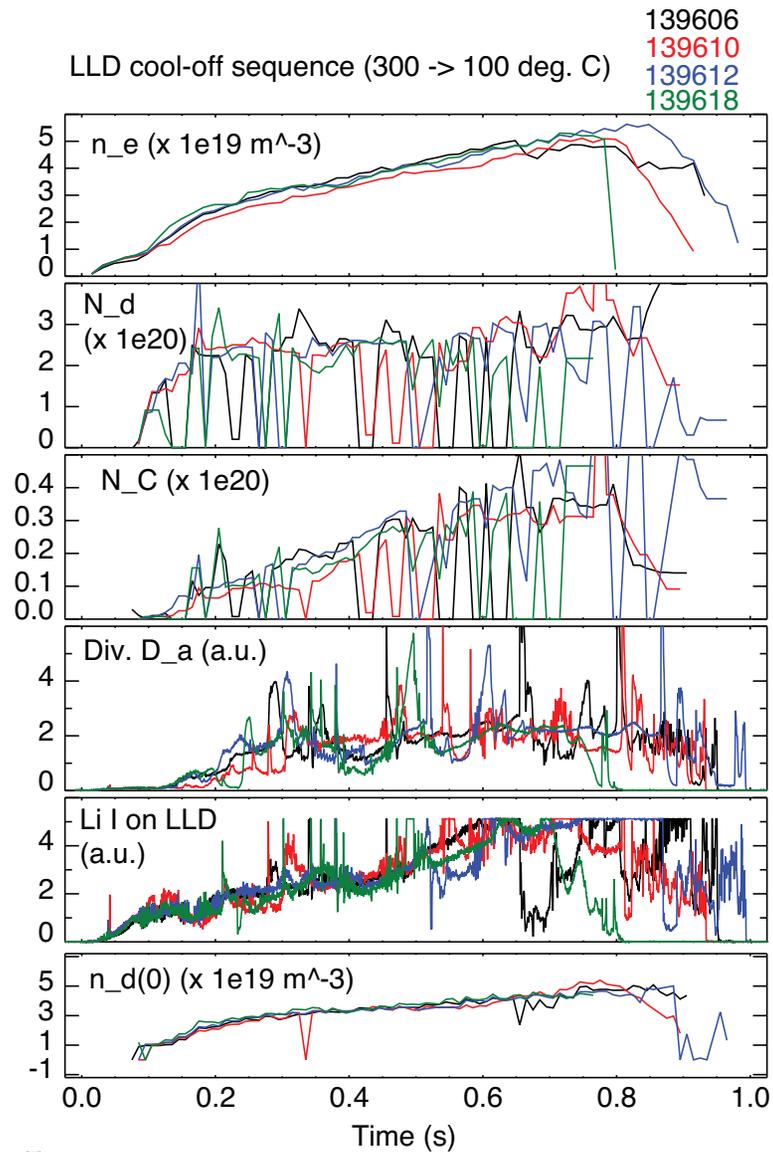


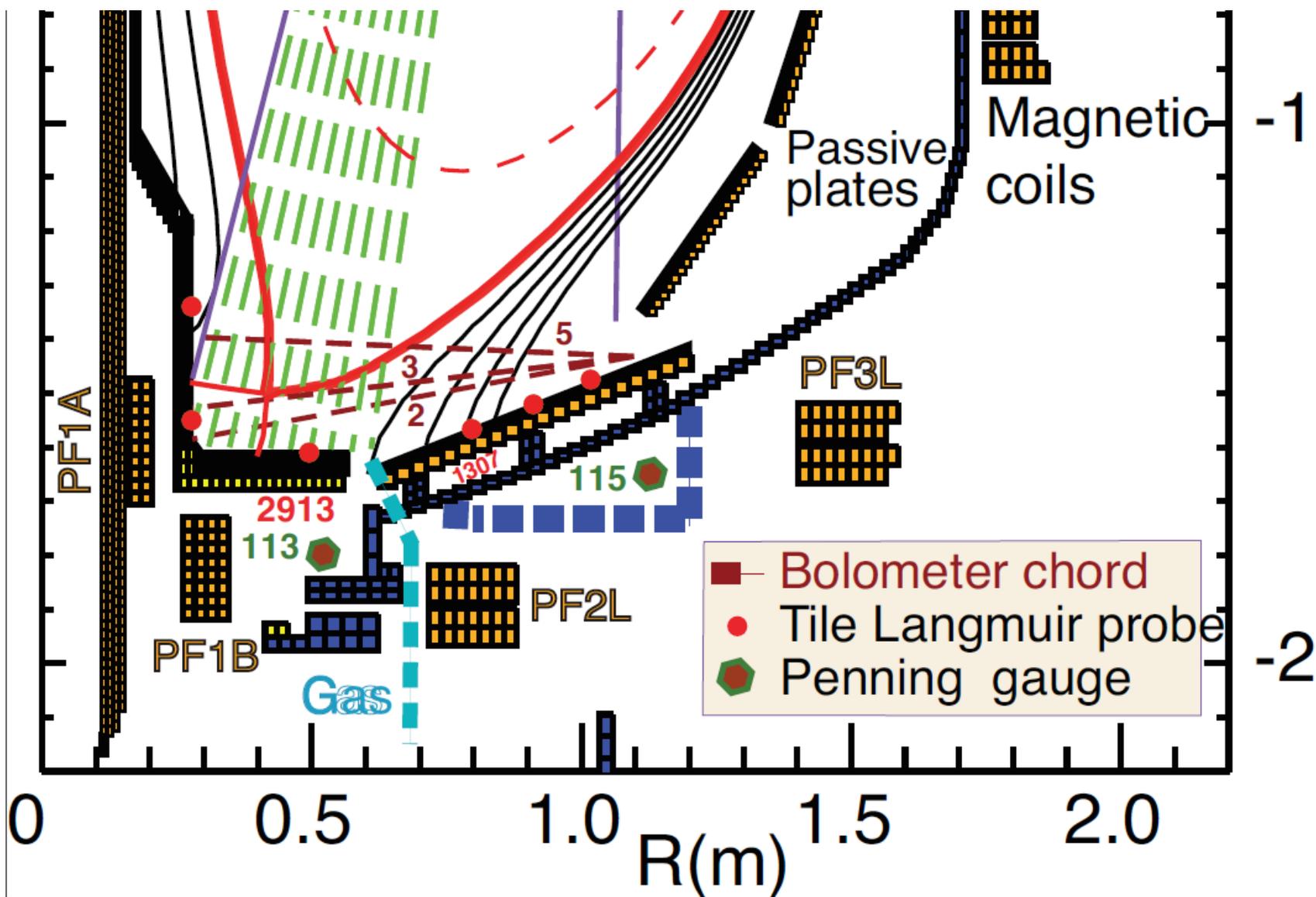
# Preliminary conclusions from XP 1059, XP 1001 (LLD characterization and pumping studies)

- LLD appeared to work as intended
  - Spectroscopy indicated
    - Significant lithium neutral flux from LLD - Mega-evaporation deposited lithium on LLD and it stayed there ?
    - reduced LiD and oxygen emission (flux) from LLD (cf lithium-coated graphite tiles nearby) – evidence of freshness ?
    - No routine influx of moly or iron from LLD, only occasional transient influx following ELMs or large MHD events interacting with LLD
- LLD did not appear to make a significant difference to particle balance
  - Deuteron core densities and inventories similar regardless of LLD temperature
  - Core carbon inventories similar to regular LITER discharges
- Divertor data
  - Average impression from  $D\alpha$  – not particularly low-recycling
  - Inner divertor detached with high  $n_e < 2-4 \times 10^{20} \text{ m}^{-3}$  and high recombination rate
  - Difficult to compare carbon sources due to high degree of discharge variation and irreproducibility

# Data to substantiate presented preliminary conclusions

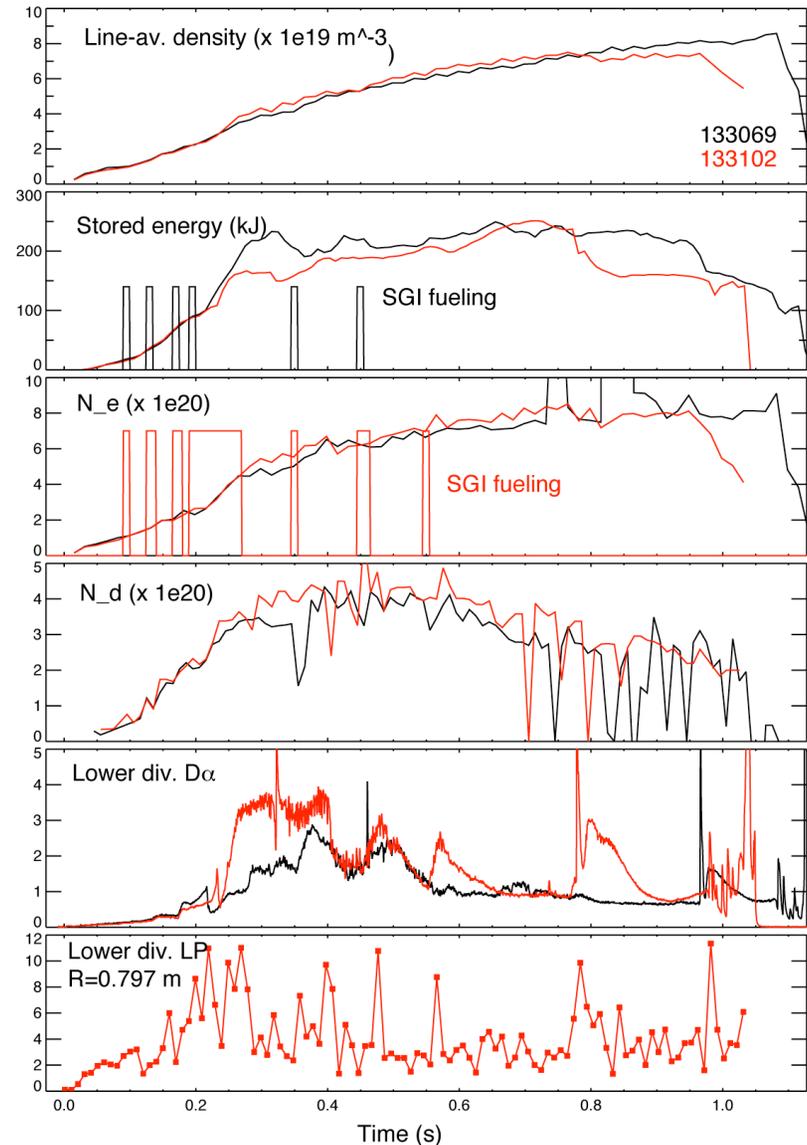


# backup



# SGI singular gas pulses will be used to measure “pump-out” (edge “ $\tau_p^*$ ”)

- Measure dynamic SOL density response to singular flat-top SGI pulses (“pumpout”) at various LLD temperatures, plasma densities
  - Use FReTIP channel 7 ( $R_{tang} \sim 150$  cm) at midplane ( $n_e$ )
  - Use divertor Langmuir probes ( $\Gamma_i, n_e$ )
  - Use neutral pressure gauges ( $\Gamma_n, n_0$ )
- Example - Two shots compared
  - 14 mg/min Li evaporation, 10 min clock cycle
  - HFS at 700 Torr + SGI
  - **Higher SGI** and **lower SGI** fueling rate
- Accordingly, **higher  $N_e, N_d$**  and **lower  $N_e, N_d$**  obtained
  - Carbon inventory the same (not shown)
- Divertor  $D_\alpha$  and Langmuir Probe  $I_{sat}$  correlated with SGI pulses, showed density pump-out



# Discharges without lithium conditioning never showed pump-out with SGI singular gas pulses

