

Goals:

1. Measure P_{LH} in CDND (avoid ohmic H-mode, NSTX shape)
2. Measure P_{LH} in LDND - higher?
3. Create 1-2 src CDND ($I_p \sim 800$ kA, long H-mode) for comparison

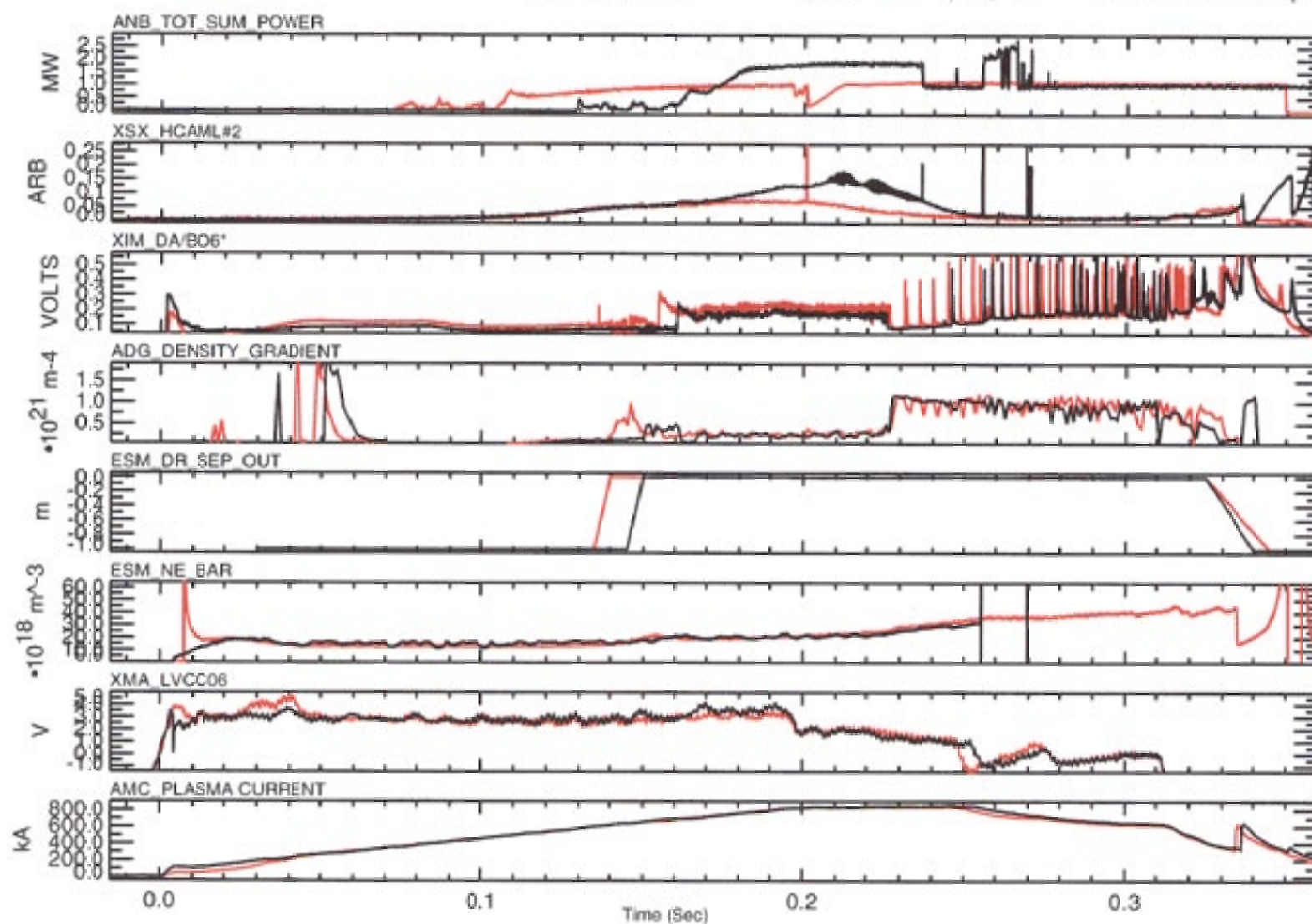
Results and observations:

1. $P_{LH} \sim 260$ kW in CDND ($I_p \sim 500$ kA, $B_t \sim 0.45$ T, $n_{bar} \sim 1.4e19$ m⁻³)
2. $P_{LH} \sim 1400?$ kW in LDND ($I_p \sim 500$ kA, $B_t \sim 0.45$ T, $n_{bar} \sim 3e19$ m⁻³)
(Note: LDND did not go into H-mode at same n_{bar} or time as CDND)
(issue: why the delay in LH transition, when it seems to occur at higher n_{bar} ?)
3. CDND appeared dithery on D-alpha traces; difficult to be conclusive
4. LDND had obvious transition; as $P_{aux} \rightarrow P_{LH}$, transition delayed and shorter
(very similar to NSTX LSN observations)
5. High current CDND had short L-H when it was diverted, then long L, and ELMy H-mode. H-mode phase looked much like NSTX CDND H-modes.

Shot: — 8860 — 8868

CDND

SOUKA, 0.45 T (NSTX comparison)



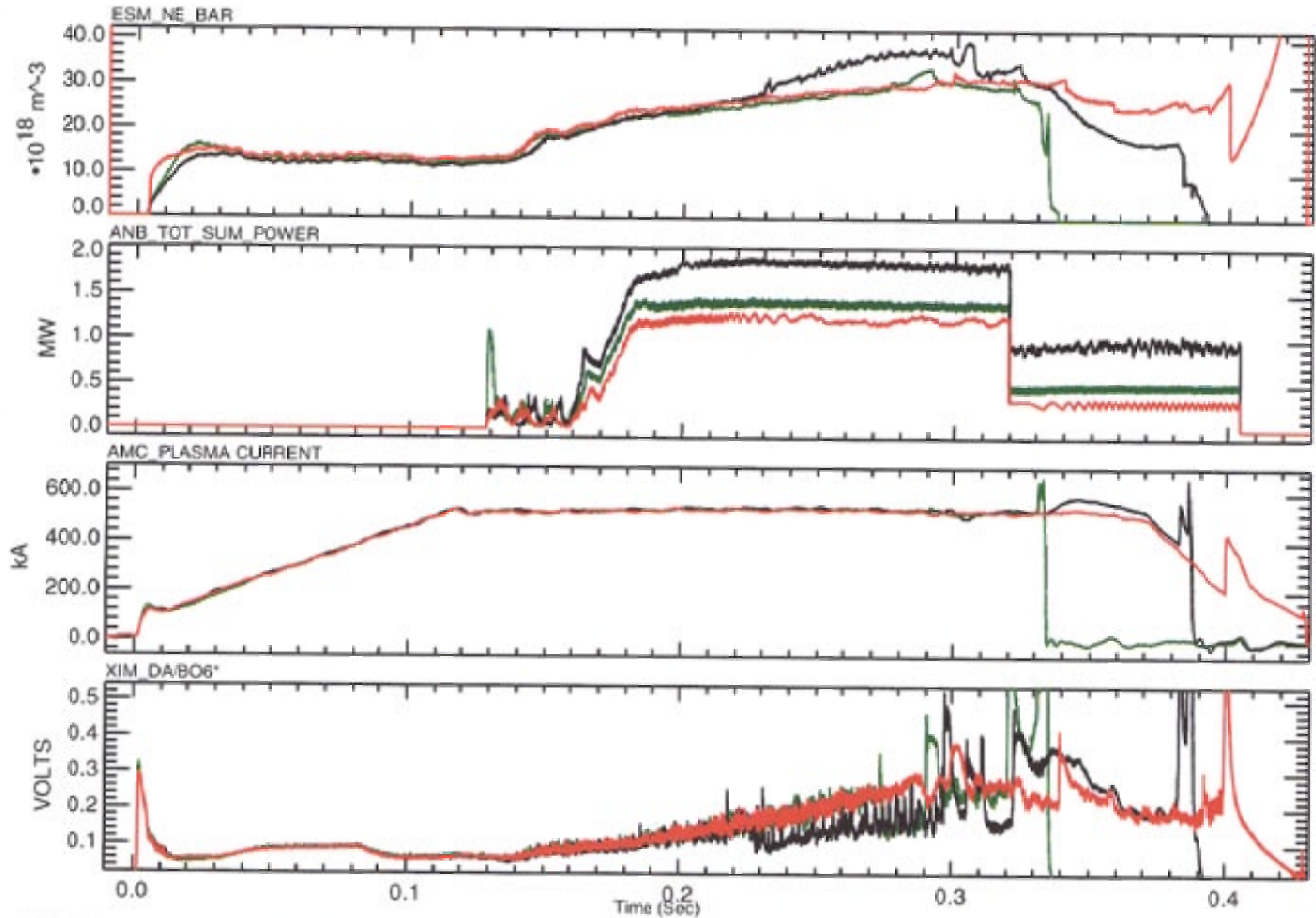
RMAINGI Thu May 15 12:42:37 2003

Xpad6 (Version 1H)

Shot: — 8856 — 8857 — 8859

LDND

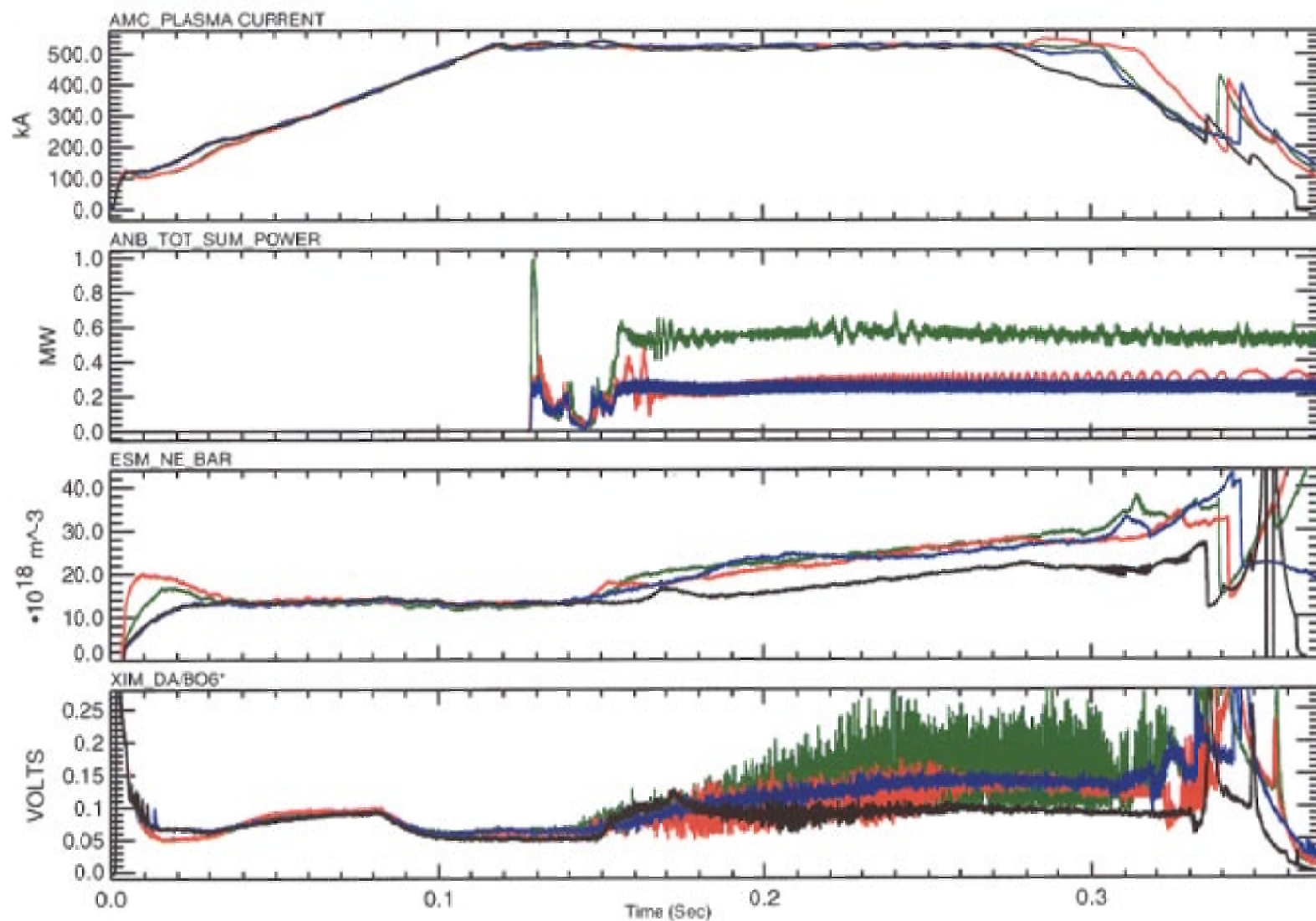
$P_{aux}^{LH} \sim 1.2-1.4(?) \text{ MW}$



RMAINGI Thu May 15 17:07:20 2003

Xpad6 (Version 1H)

Shot: — 8842 — 8848 — 8851 — 8852 CDND : $P_{aux}^{LH} \sim 260 \text{ kW} - 300 \text{ kW}$



RMAINGI Thu May 15 17:44:03 2003

Xpad6 (Version 1H)

Summary of MAST/NSTX L/H Transition Comparison XP (2)

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Lessons and Outstanding questions:

1. Is LDND a real P_{LH} measurement, or does the delay imply something else changed
Action item: check E_r and E_r' at both times $\rightarrow$ does LH happen at common value
2. Make sure both divert time and I_p flattop time are before NBI start time
3. Didn't get to finish plan - missed i/b and o/b P_{LH} comparison in CDND. This is important because Fulop/Helander's theory might be extendable to prediction of E_r' (presently only E_r ?) and hence a power threshold level (or at least a ratio between i/b and o/b gas source).