Shift report
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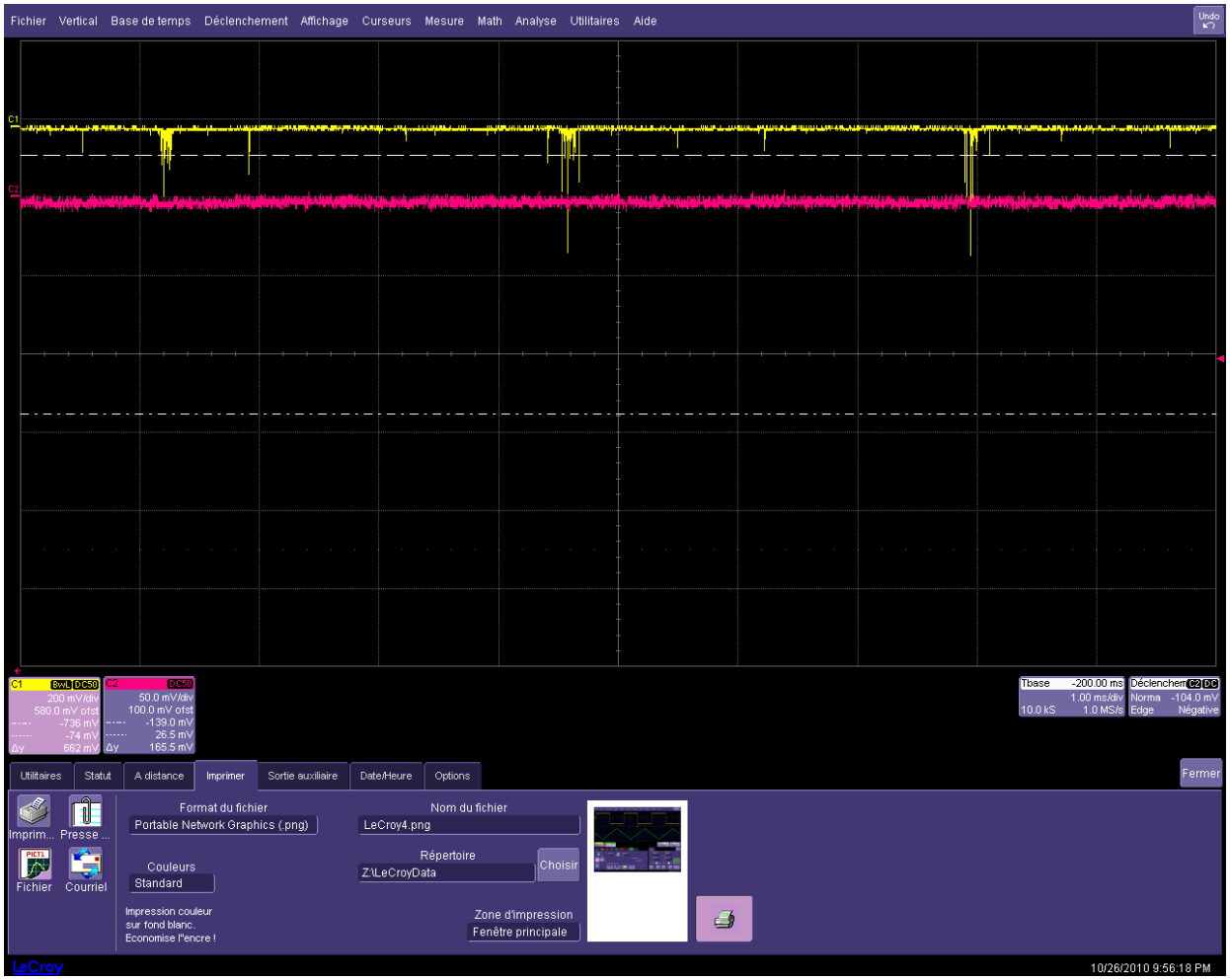
Equipment status

- We locked the laser cavity and the Fabry-Perot cavity during an access at the beginning of our shift.
- However to search for Compton photons we unlocked the Fabry-Perot cavity so that the laser would scan the phase space naturally.
- Around 22h the laser cavity had drifted by ~150Hz.
- Power in the FP cavity: 1.7kW.
- ATF Status: Single bunch single train, 1.56Hz, 4.4 10^9 e-
- Injection timing has been modified earlier today.
- The cavity vertical position is controlled remotely by sending EPICS commands to the movers.
- Calorimeter: CsI biaised at -2.4kV

First signal

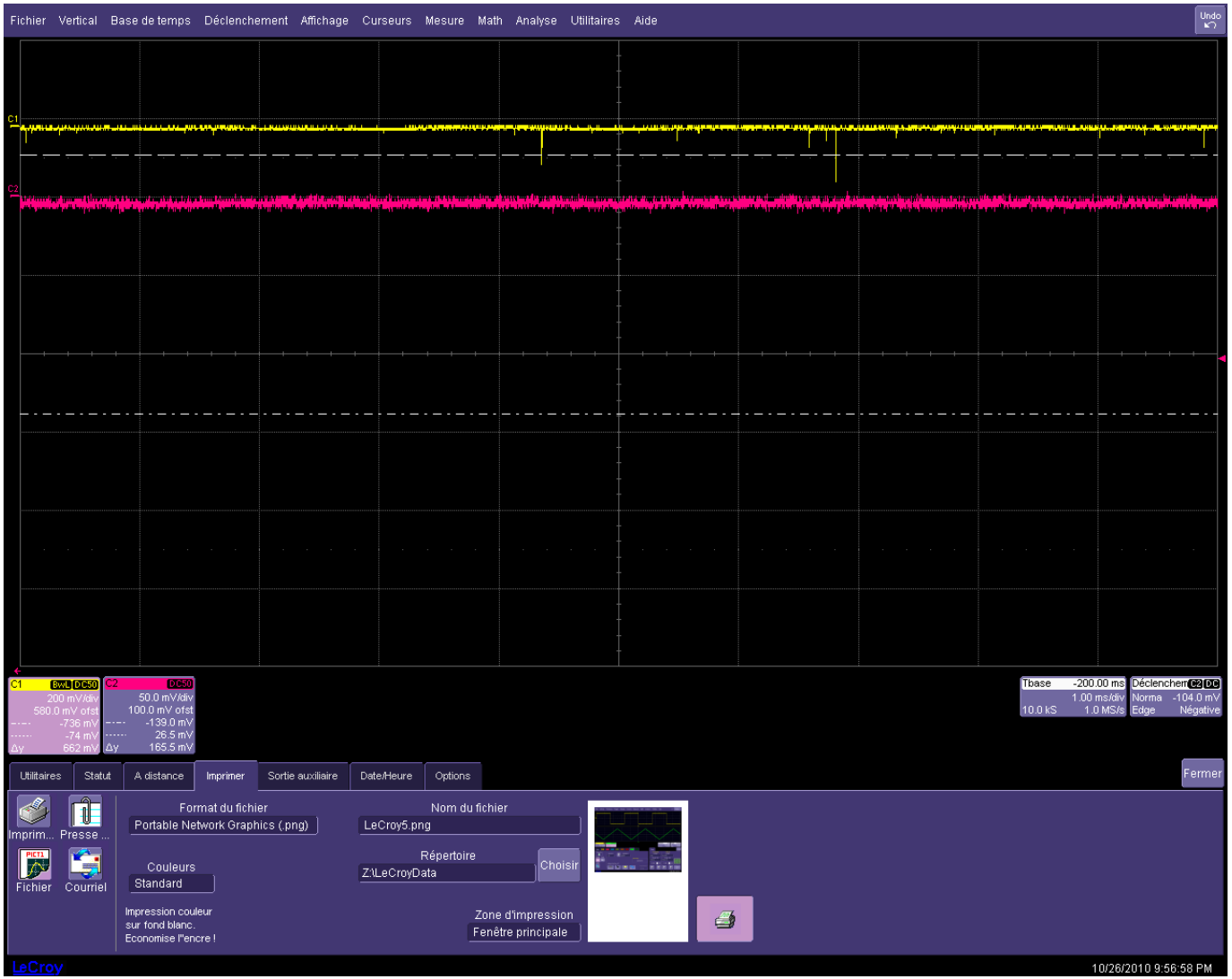


Vertically
Cavity position = 282um
Beam position = 270um

Scope trace:
Yellow=calorimeter
Red= Injection trigger

Note the peaks on the yellow trace.

Moving the cavity



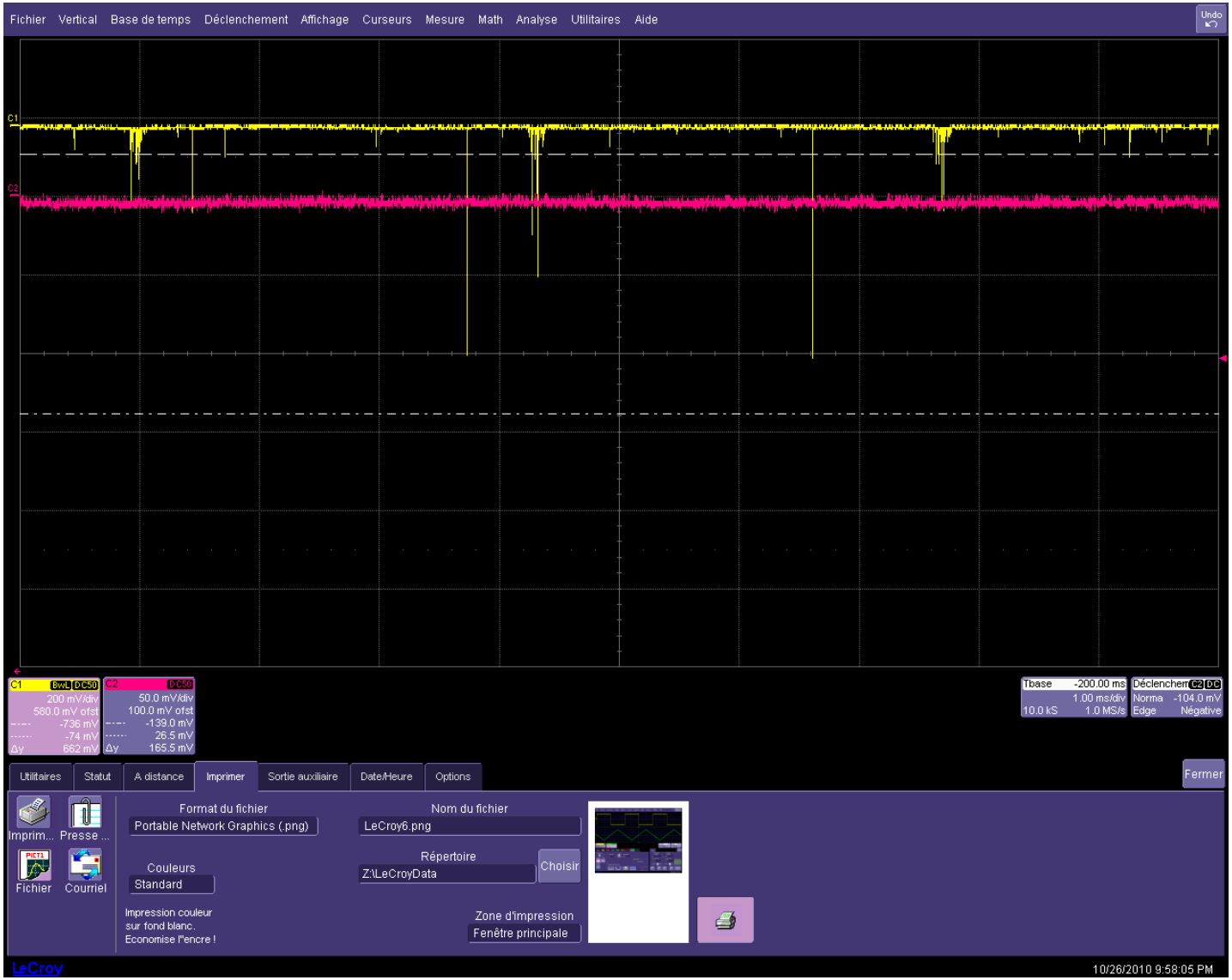
Cavity moved vertically by 80um.

Vertically
Cavity position = 206um
Beam position = 270um

Scope trace:
Yellow=calorimeter
Red= Injection trigger

Note that the big peaks on the yellow trace have disappeared.

Back to the original position



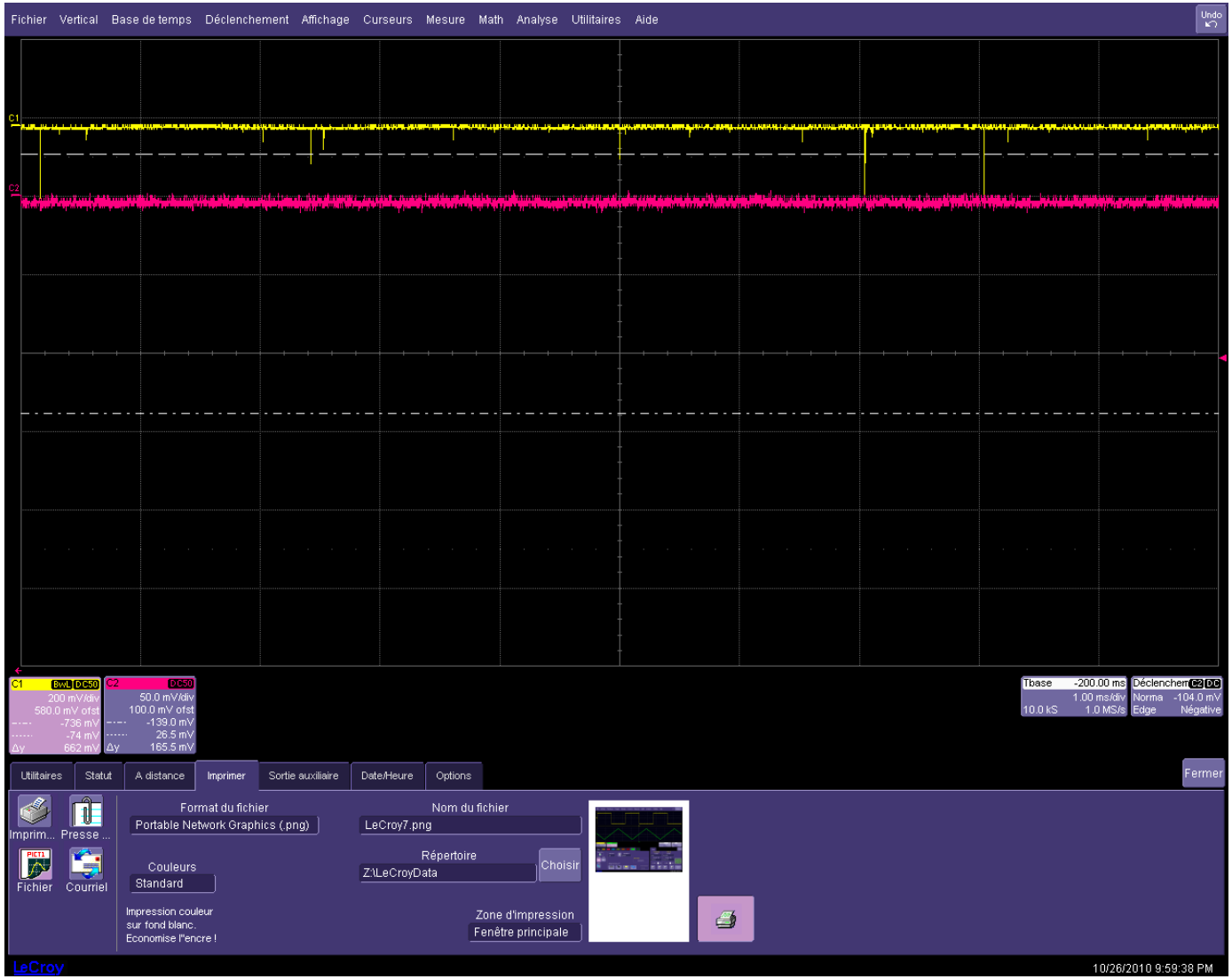
Cavity moved back by 80um.

Vertically
Cavity position = 282um
Beam position = 270um

Scope trace:
Yellow=calorimeter
Red= Injection trigger

Note that the big (wide) peaks on the yellow trace are also back.

Unlock the laser cavity



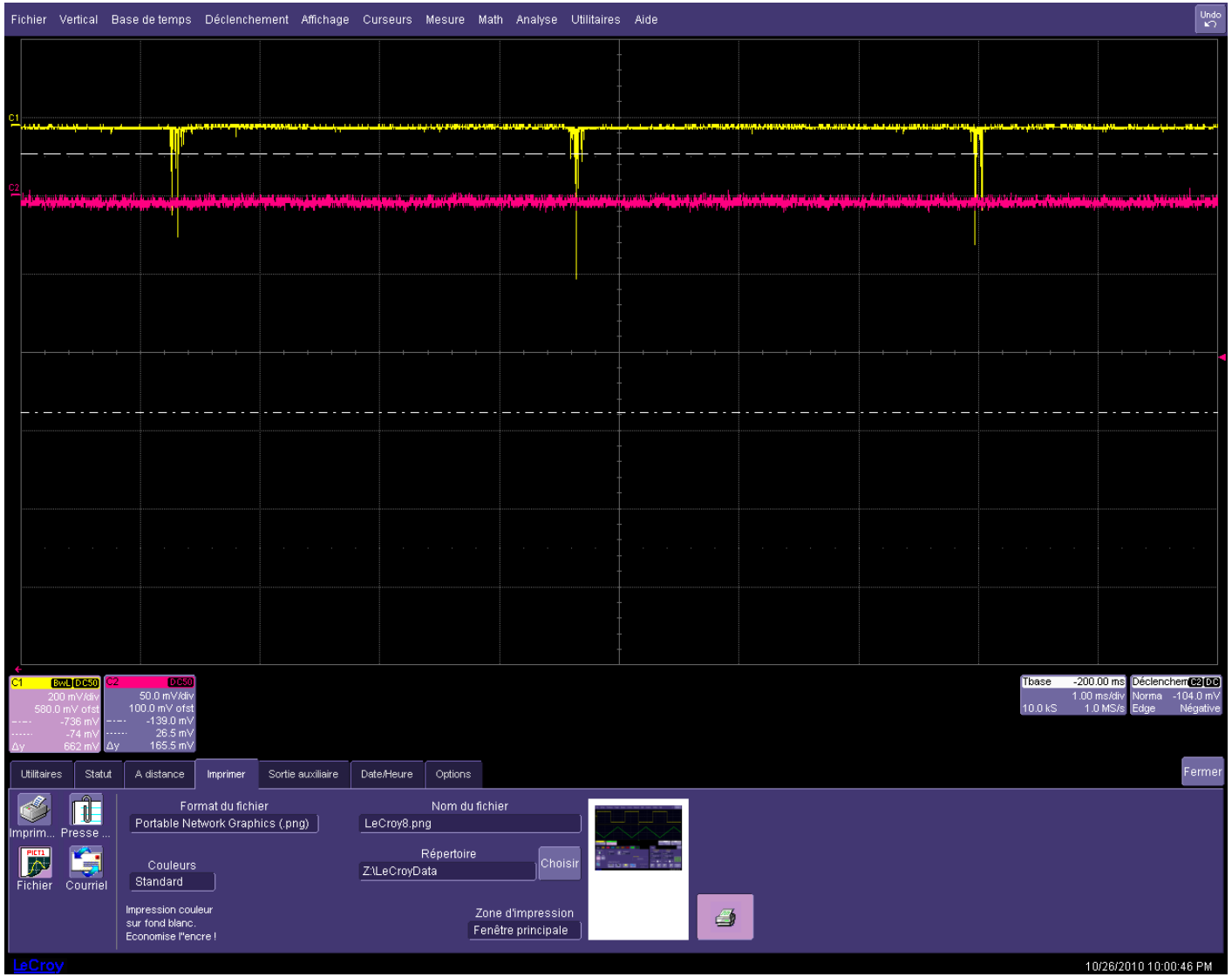
Laser cavity unlocked.

Vertically
Cavity position = 282um
Beam position = 270um

Scope trace:
Yellow=calorimeter
Red= Injection trigger

Note that the big peaks on the yellow trace are gone.

Re-lock the laser cavity



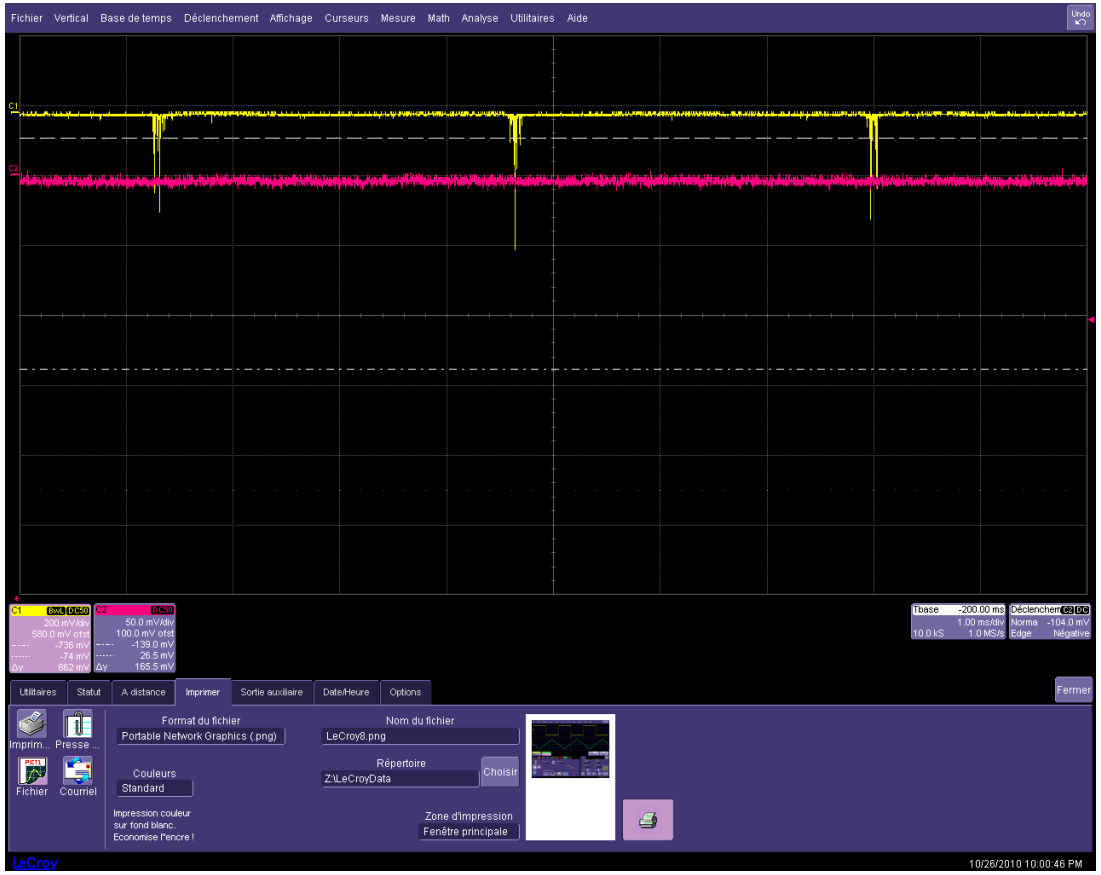
Laser cavity locked again.

Vertically
Cavity position = 282um
Beam position = 270um

Scope trace:
Yellow=calorimeter
Red= Injection trigger

Note that the big peaks on the yellow trace back again.

Signal frequency (1)



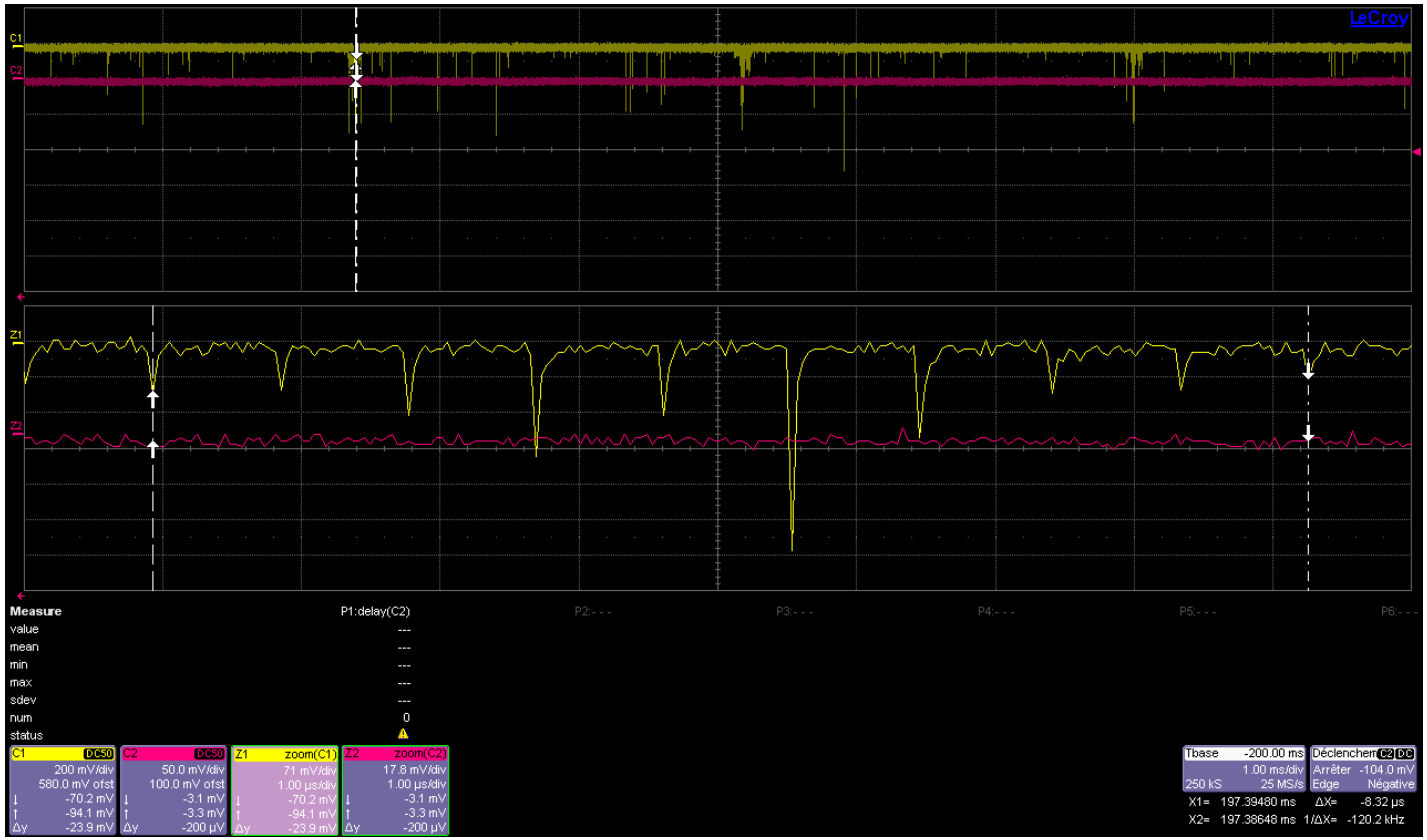
Laser cavity frequency:
178 497 222 Hz

ATF Frequency:
2x 178 497 373 Hz

Heterodyne:
163Hz

Signal observed:
~2x150Hz (corresponding to the even and odd turns).

Signal frequency (2)



A zoom on one wide peak shows that it is made of several smaller peaks spaced by less than 1us. (measure: 8.32us/9=924ns)

A bunch that collides comes back in the same position after 2 revolutions, that is 924ns.

FP cavity lock

- Attempts to re-lock the FP cavity have failed as the cavity frequency is now beyond what can be corrected remotely.
- We will access the manual equipment near the cavity later this week.

Summary

- We have seen a signal on the calorimeter.
- This signal appears only in a narrow range of vertical cavity positions.
- This signal appears only when the laser cavity is locked.
- We conclude that this signal corresponds to the energetic photons produced when the laser in our cavity interacts with the electrons in the ATF.