



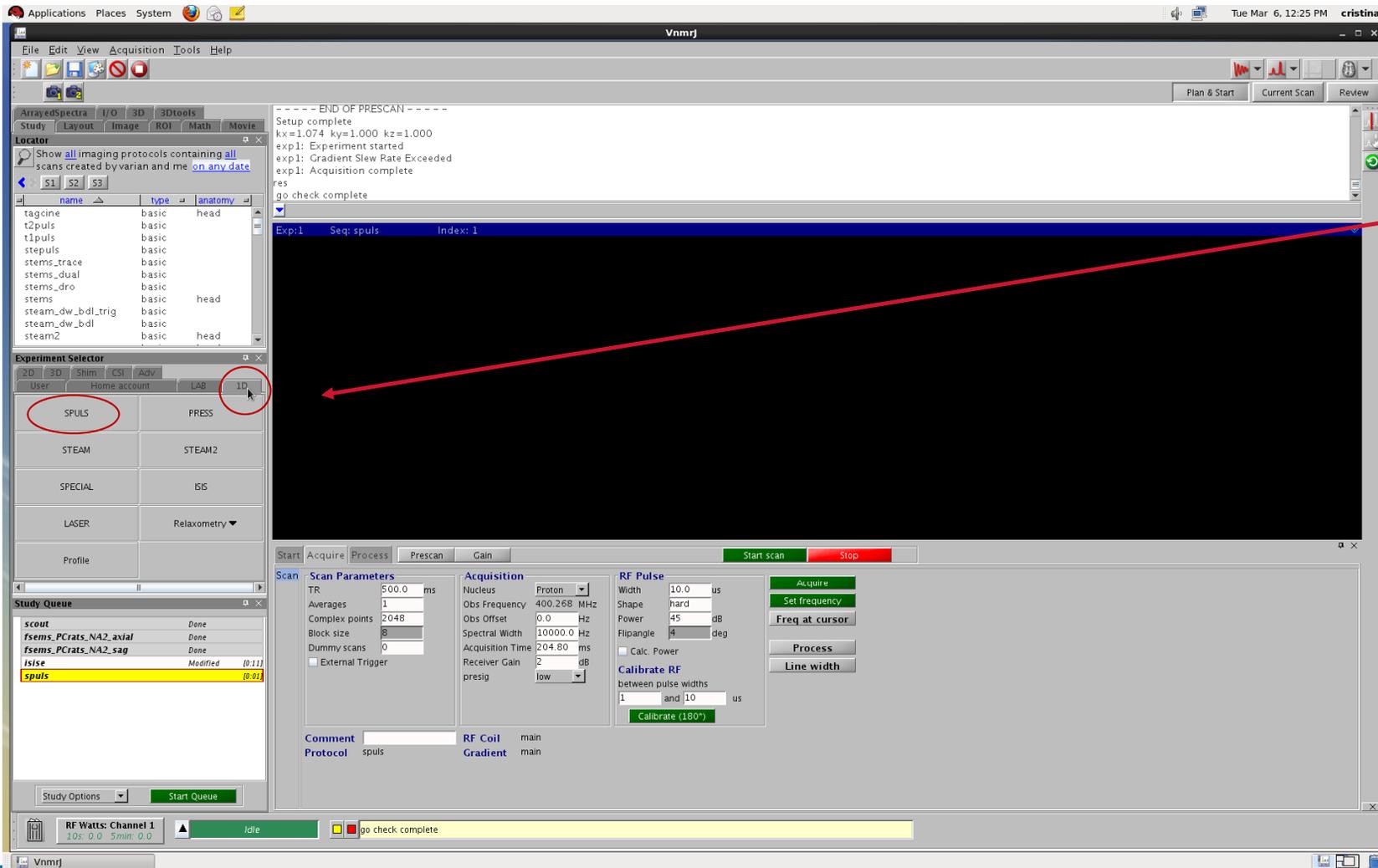
## TEST SHIMS ON 9.4T – VARIAN (VNMRJ 3.2)

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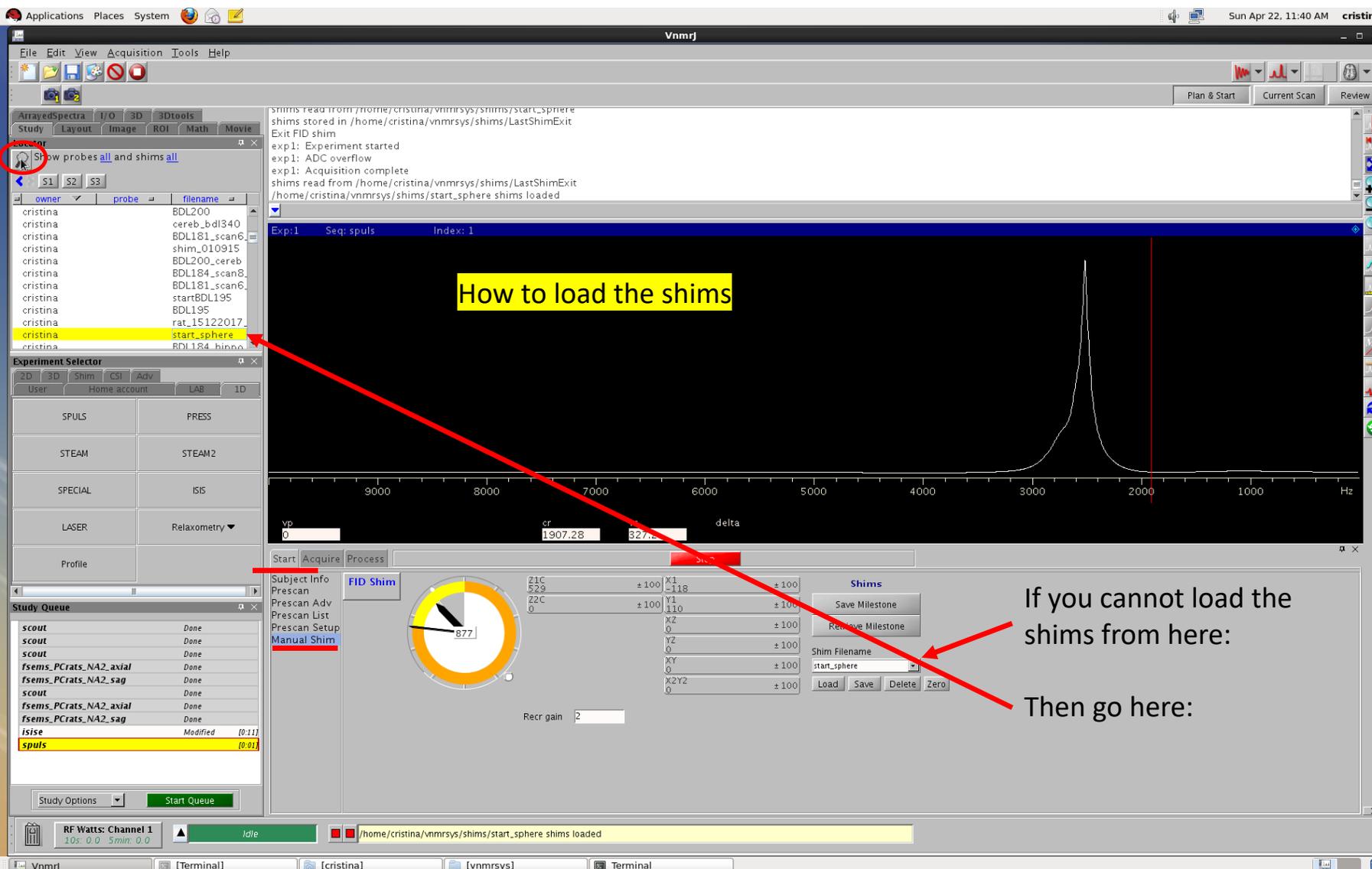


C I B M . C H



Load the **spuls** sequence (from the 1D panel)

Load the “start sphere” shims or any other shims that you use when you start or just put all shims at zero



**How to load the shims**

If you cannot load the shims from here:

Then go here:

**Shims**

Z1C	± 100	X1	± 100
Z2C	± 100	Y1	± 100
		XZ	± 100
		YZ	± 100
		XY	± 100
		X2Y2	± 100

Shim Filename: start\_sphere

Buttons: Load, Save, Delete, Zero

In Acq/Scan put:

- RF duration=0.1ms
- hard pulse
- power of 45 dB (attention we used a surface coil)
- TR=1sec
- 1 average



The screenshot shows the Vnmj MRI software interface. The 'Scan Parameters' panel is highlighted with a red circle, showing the following settings:

Parameter	Value
TR	500.0 ms
Averages	1
Complex points	2048
Block size	8
Dummy scans	0
External Trigger	<input type="checkbox"/>

The 'RF Pulse' panel is also highlighted with a red circle, showing the following settings:

Parameter	Value
Width	100.0 us
Shape	hard
Power	45 dB
Flip angle	4 deg
Calc. Power	<input type="checkbox"/>

The 'Acquisition' panel shows the following settings:

Parameter	Value
Nucleus	Proton
Obs Frequency	400.268 MHz
Obs Offset	0.0 Hz
Spectral Width	10000.0 Hz
Acquisition Time	204.80 ms
Receiver Gain	2 dB
presig	low

The 'Study Queue' panel shows the following studies:

Study Name	Status
scout	Done
fsems_PCrats_NA2_axial	Done
fsems_PCrats_NA2_sag	Done
istse	Modified [0:11]
spuls	Modified [0:01]

The 'Study Options' panel shows the following settings:

Parameter	Value
RF Watts Channel 1	100: 0.0 5min: 0.0
RF Coil	main
Gradient	main

In Acq/Plan put:

- RF duration=0.1ms
- hard pulse
- power of 45 dB
- TR=1sec
- Take the "Obs Offset" (aprox 5000Hz) from the panel Start/Presecan/Freq: H1 offset and put it on the "Obs offset"
- use 1 average
- press the Acquire button
- you should obtain the water signal on resonance
- now change the "Obs offset" in such a way that you water signal is off resonance (i.e. from 5kHz to 3kHz)
- press again the Acquire button
- in the command line write "df" (display FID)
- OR
- BY default the Obs Offset in spuls =0, then just keeping it like this you already have a H2O= signal out of resonance as shown in the figure

The screenshot shows the Vnmj MRI software interface. The main window displays a 1D spectrum plot with a prominent peak at approximately 3.3 kHz. The x-axis is labeled 'Hz' and ranges from 9000 to 0. The y-axis is labeled 'VP' and ranges from 0 to 1. The plot shows a sharp peak at approximately 3.3 kHz, with a red vertical line indicating the current frequency. The interface includes several panels:

- Locator:** A table listing various imaging protocols and their parameters.
- Experiment Selector:** A grid of buttons for different experiment types like SPULS, STEAM, SPECIAL, LASER, and Profile.
- Scan Parameters:** A panel with fields for TR (500.0 ms), Averages (1), Complex points (2048), Block size (8), and Dummy scans (0). A red arrow points to the Averages field.
- Acquisition:** A panel with fields for Nucleus (Proton), Obs Frequency (400.268 MHz), Obs Offset (0.0 Hz), Spectral Width (10000.0 Hz), Acquisition Time (204.80 ms), Receiver Gain (2 dB), and presig (low).
- RF Pulse:** A panel with fields for Width (100.0 us), Shape (hard), Power (45 dB), and Flipangle (4 deg).
- Buttons:** A set of buttons including 'Acquire' (circled in red), 'Set frequency', 'Freq at cursor', 'Process', and 'Line width'.
- Status Bar:** Shows 'RF Watts: Channel 1 10s 0.0 5min 0.0' and 'exp1: Acquisition complete'.

- in the command line write "df"



The screenshot shows the Vnmrj software interface. At the top, the title bar reads "Vnmrj" and the system tray shows "Tue Mar 6, 12:27 PM" and "cristina". The main window is divided into several panels:

- Locator:** A list of protocols with columns for name, type, and anatomy. A red arrow points to the "df" protocol in the list.
- Experiment Selector:** A table with columns for User, Home account, LAB, and 1D. It lists protocols like SPULS, STEAM, SPECIAL, LASER, and Profile.
- Waveform Plot:** A plot showing a signal over time (0.01 to 0.19 sec). The plot is labeled "Exp:1 Seq: spuls Index: 1".
- Configuration Panels:** Panels for Subject Info, Run (Frequency, Power, Shim, Gain, List), Hardware (RF coil, Gradient coil), Power (90 Degree pulse optimized between 13.80 and 39.82 dB), Slice Selection (Orientation, Slice offset, FOV, Thickness), Frequency (H1 offset, Fat Offset), Shim (Shim Method, X, Y, Z, Projections, tau delay), and User List (Use this list, 1. freq, 2. power).
- Study Queue:** A list of studies with columns for name and status. "spuls" is highlighted in yellow.
- Status Bar:** Shows "RF Watts: Channel 1 10s: 0.0 5min: 0.0", "Idle", and "exp1: Acquisition complete".

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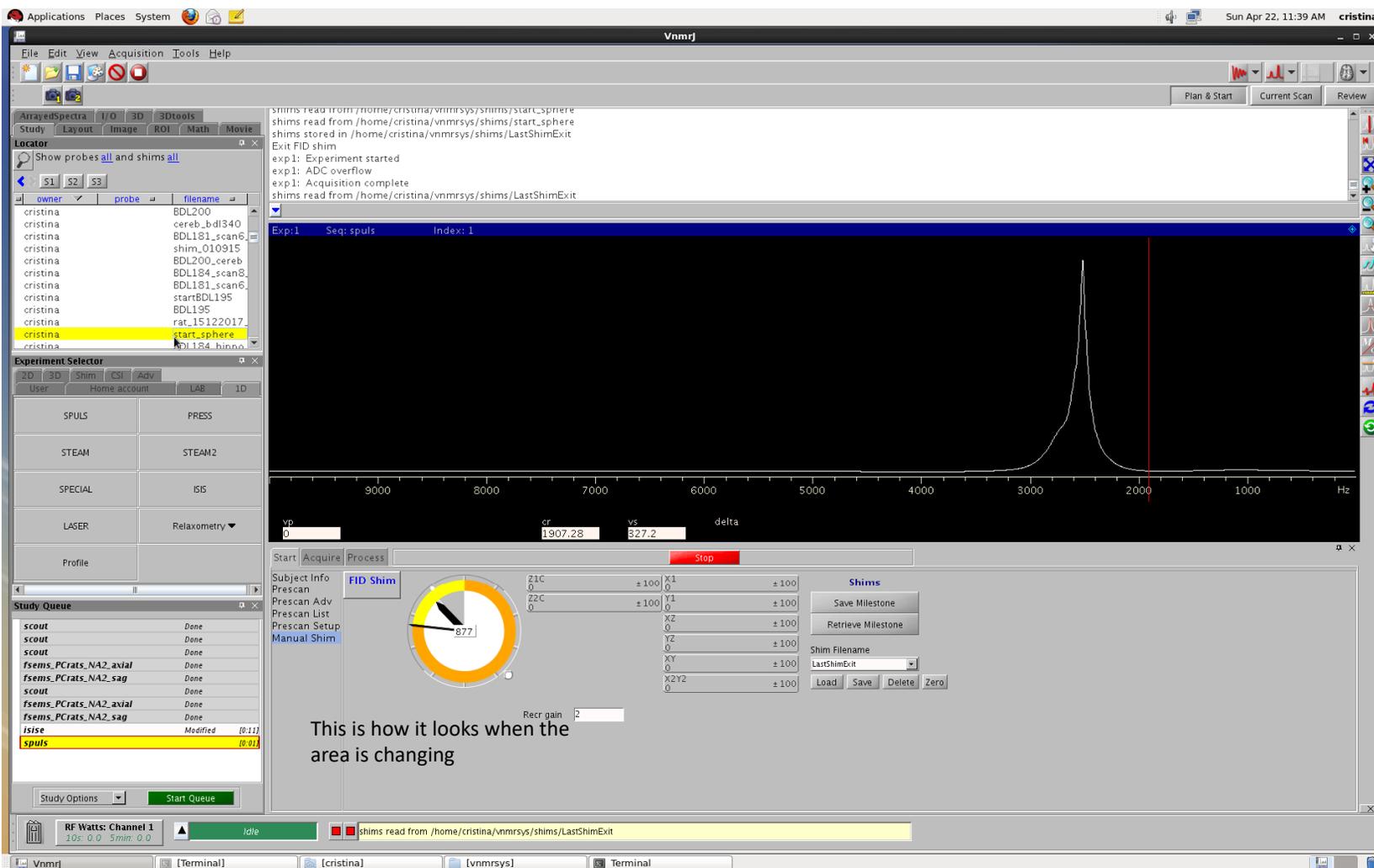


Now go in the panel Start/Manual Shim/Fid Shim

- press the Rescale button to get a FID area of ~500
- change the values for the shims (first order and z2c, xz, yz, xy, x2y2 – second order) one by one and check if the area of the shim is changing
- if the area is changing then the shim is working
- press the STOP button from FID shim

The screenshot displays the Bruker TopSpin software interface. The main window shows a 1D spectrum with a peak at approximately 0.13 seconds. The 'FID Shim area' window shows a value of 1000.0. The 'Manual Shim' window shows a 'FID area' of 4,114.8 and a 'Rescale FID area' button. The 'Shims' window shows a table of shim parameters:

Shim	Value	Unit
Z1C	2844	±100
X1	831	±100
Z2C	-21027	±100
Y1	104	±100
X2	279	±100
Y2	-1992	±100
X3	3833	±100
X2Y2	-2841	±100



The screenshot shows the Vnmrj software interface. At the top, the menu bar includes File, Edit, View, Acquisition, Tools, and Help. The main window displays a 1D NMR spectrum with a prominent peak at approximately 2.1 ppm. The x-axis is labeled 'Hz' and ranges from 9000 to 0. Below the spectrum, there are fields for 'vr' (1907.28) and 'vs' (327.2), and a 'delta' field. A 'Stop' button is visible. On the left, the 'Locator' panel shows a list of shims and their filenames, with 'start\_sphere' selected. Below that is the 'Experiment Selector' panel. At the bottom left, the 'Study Queue' panel shows a list of experiments, with 'spuls' selected. The 'FID Shim' panel in the center-right contains a circular gauge showing a value of 877 and a 'Recr gain' field set to 2. To the right of the gauge are 'Shims' adjustment controls for Z1C, Z2C, X1, Y1, XZ, YZ, XY, and X2Y2, each with a ±100 range. Below these are 'Save Milestone' and 'Retrieve Milestone' buttons. At the bottom, the 'Shim Filename' field is set to 'LastShimExit', with 'Load', 'Save', 'Delete', and 'Zero' buttons. The status bar at the bottom shows 'RF Watts: Channel 1 102.00 5min: 0.0' and a log of shims read from the file path /home/cristina/vnmrsys/shims/LastShimExit.

This is how it looks when the area is changing



If the FID area is not changing then you need to restart the shims  
Or you have another issue



Brayan  
Guillaume  
Mickael

# THANK YOU FOR YOUR ATTENTION

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