

# New Baseline Procedure

## Before You Start

Baselines should be taken opportunistically. Any time during which it is known that the beam will be off long enough to take a baseline, take one. But do not interrupt data taking to take a baseline. When polarizing a new material, it is necessary to obtain a baseline to ensure accuracy of the NMR measurement. Also take a measurement at the end of each run.

## Shifting the Larmor Frequency

There are two ways to shift the Larmor frequency in the cup. You can either change the current in the magnet to shift the field, or move the cup's position out of the high field region. Move the target out of the uniform region of the magnetic field. This will require moving the target up or down (observe motion limits) by more than an inch. Watch the nmr signal as you move. When you no longer see a polarization signal--just a q-curve, the Larmor frequency of the protons have shifted outside the range of the RF sweep. Record in the paper log-book your location for future TO's.

## Acquiring the Baseline

- Now take a highly averaged data point without the proton spike in the NMR signal

1. Press the "Pause" button to stop the NMR data collection.
2. Press the "Baseline" button. A new dialogue box will pop up.
3. Press the "Create New Baseline" button. The dialogue box will disappear.
4. Change the number of sweeps to 2000, and make sure you press enter afterwards.
5. If you press "One Point" you will begin taking NMR data. This will take several minutes, and you will not be able to stop it and re-enter nmr settings. Double check the NMR settings.
6. Press "One Point". Wait for the countdown to finish.

## Selecting the Baseline as the Current Baseline

- Now that you've collected the baseline curve, you need to tell the NMR program that you would like to subtract it from the new signals rather than using the old baseline.

1. Press the "Baseline" button.
2. The same dialogue box will pop up, but on the list of baselines, the one you just took should be listed. It will be labeled with a date and time. Highlight your new baseline, and press the button selecting that as the baseline you want to use.
3. Change the number of sweeps back to it's previous value.
4. Document in the log book the

```
date
time
number of sweeps
Magnet Current
the target cell (top/bottom)
the gain
RFFreq
RFMod
```

## Restoring the Target Position

- You are ready to restore the target position and resume polarizing and collecting target data.

Move the target back to the original position. Log changes and inform shift leader you are ready to continue with the run plan.

- Baseline procedure is complete