

ERRATA:
Summary of solenoid field and location studies using the six way
probe and load cells

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There were some errors in the previous report of 10 October, and a potential additional systematic uncertainty has been recognized.

In the analysis of the fields measured by the six way probe, the values for the probes at $x = -20$ cm and $y = -20$ cm were inverted, due to a labelling error on the six way device. This means that the middle and especially the bottom graphs in Figs. 5-10 are incorrect. The bottom graphs were supposed to show the differences $B(x = +20) - B(x = -20)$ as Δx and $B(y = +20) - B(y = -20)$ as Δy .

Corrected versions of these figures are included here as Figs. 1-5.

Additionally, we have realized that there may be a significant systematic uncertainty in the absolute values measured by the Hall plates. For example, a rotational misalignment of the axis of a probe by 17 mr (1 degree) would reduce a measurement in the range of 1.2 T (approximate field at 144 A) by about 1.7 G. While this is smaller than the deviations from zero in the lower plot of Fig. 5 below, we were unable to convince ourselves by purposely rotating the Hall plates that the measurements were adequately precise to use the deviations as a tool to confirm magnet coil alignment in x and y .

There is still activity this week with the magnet, in anticipation of installation of the detectors next week. This includes analysis of the six way probe data and load cell readings, especially using comparisons to new field modelling results.

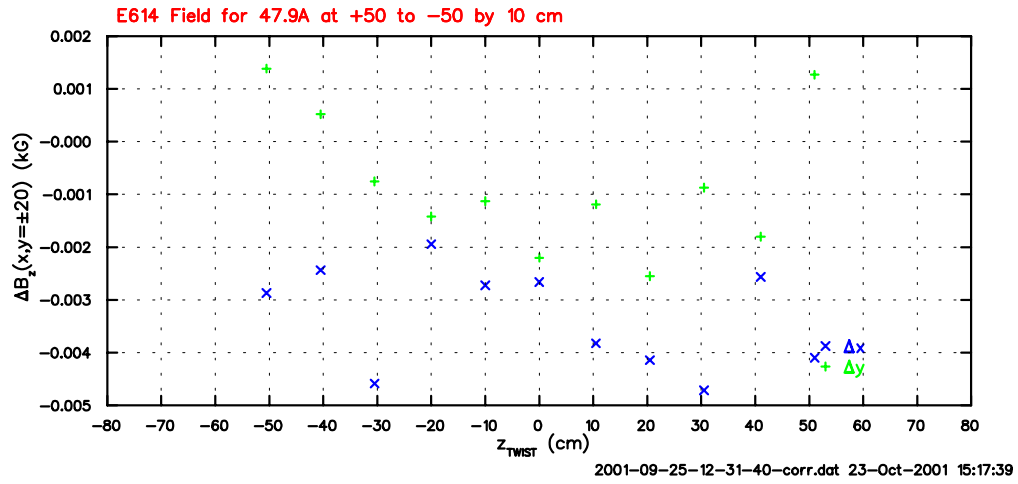
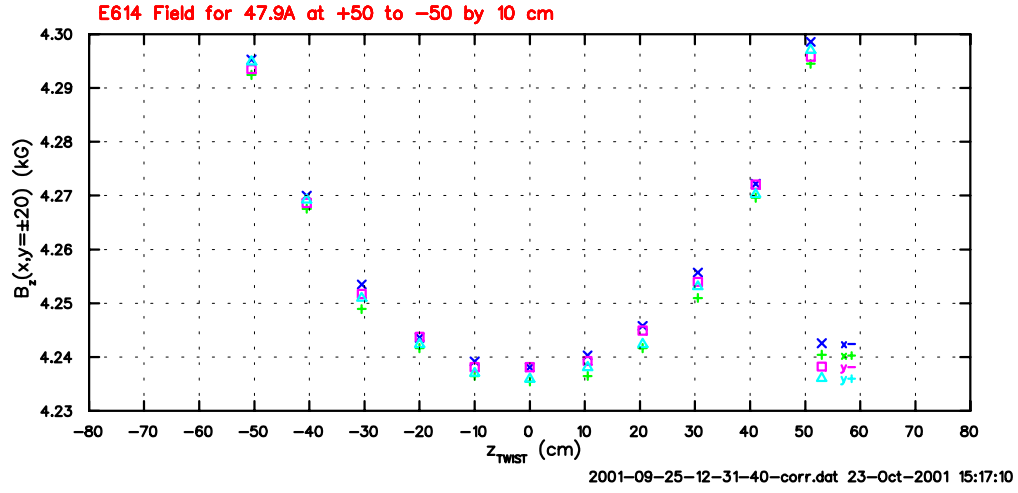
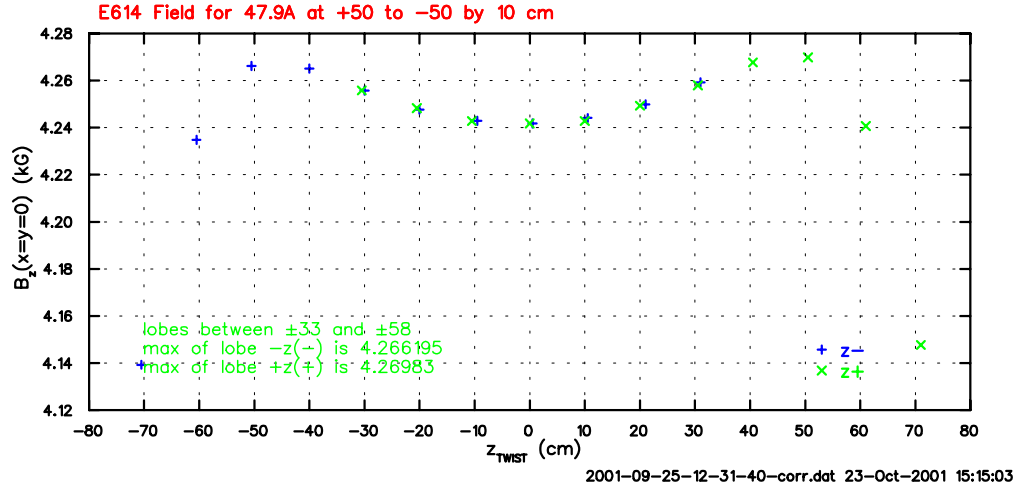


Figure 1: Original solenoid location, 48 A (corrected x and y).

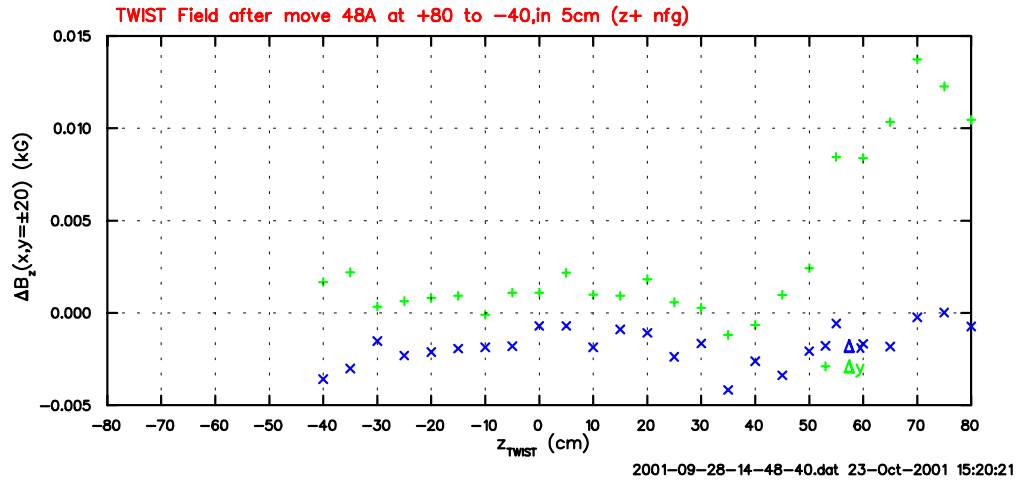
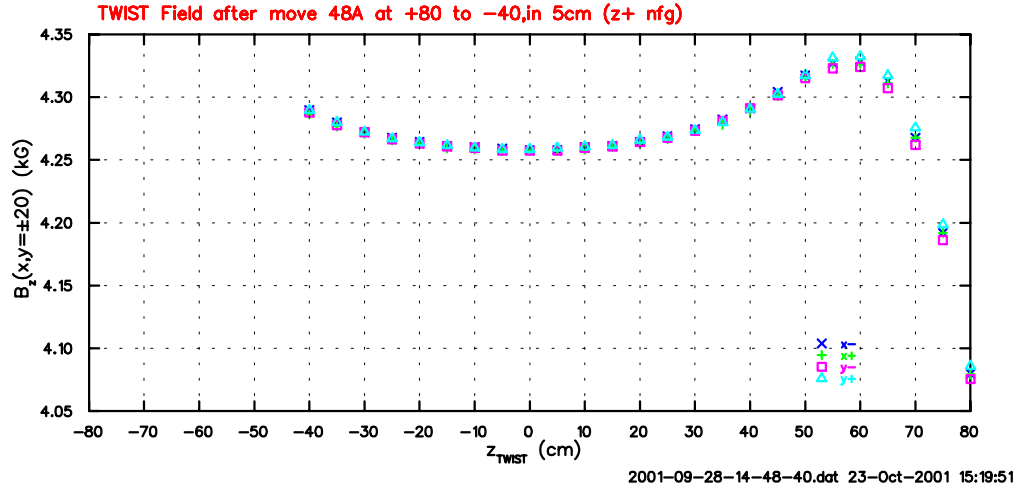
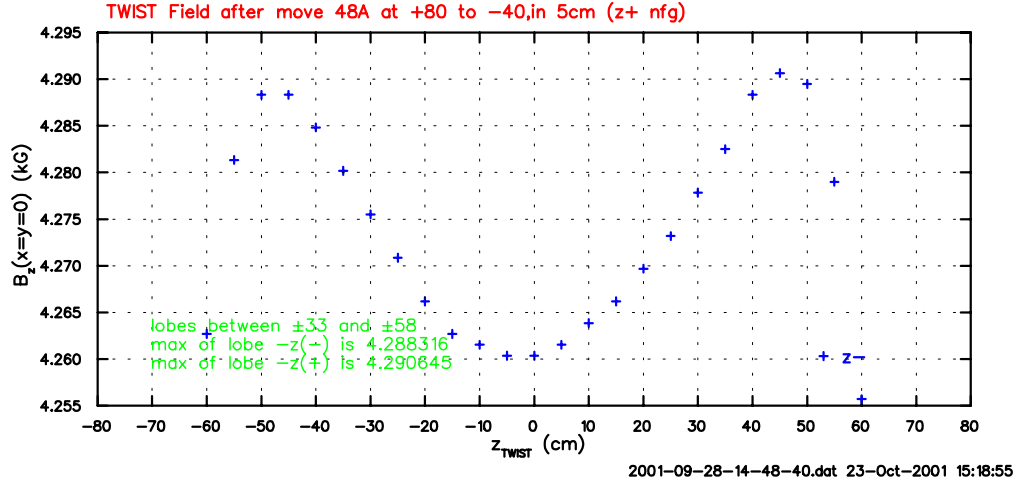


Figure 2: As previous figure, but solenoid moved in $-z$ direction by 1.75 mm (corrected x and y).

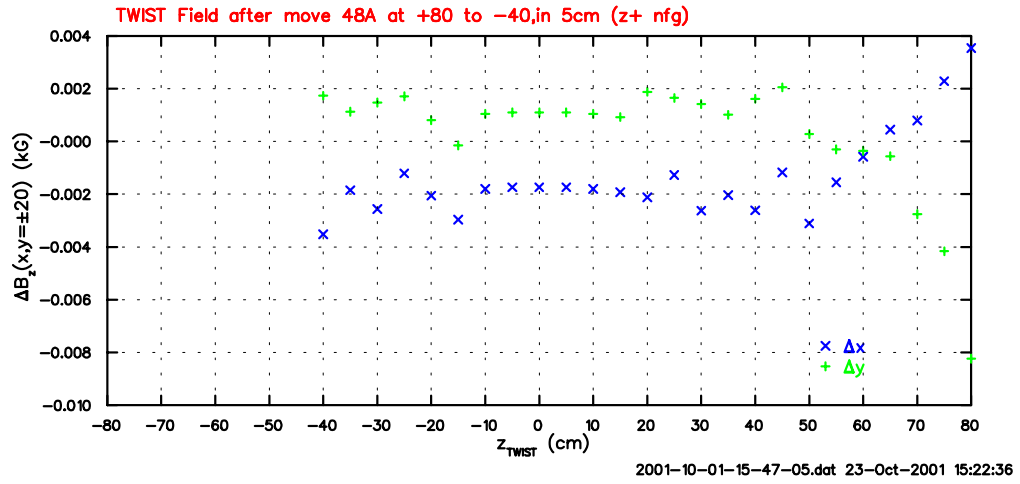
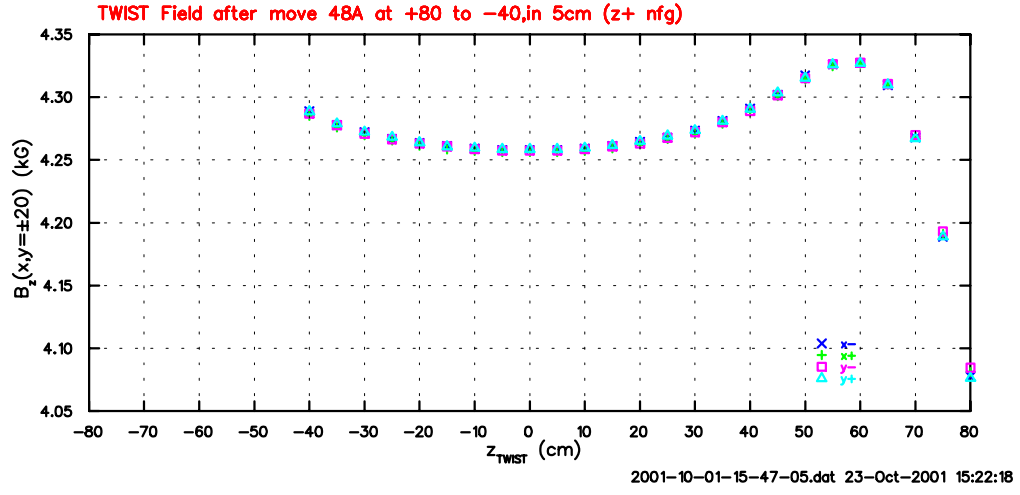
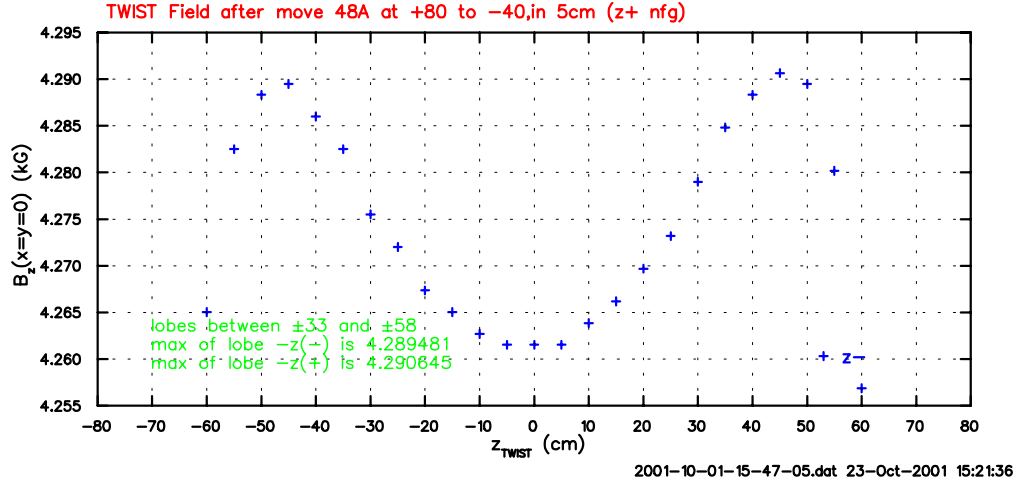


Figure 3: As previous figure, but probe trolley moved toward $-y$ by 6 mm (corrected x and y).

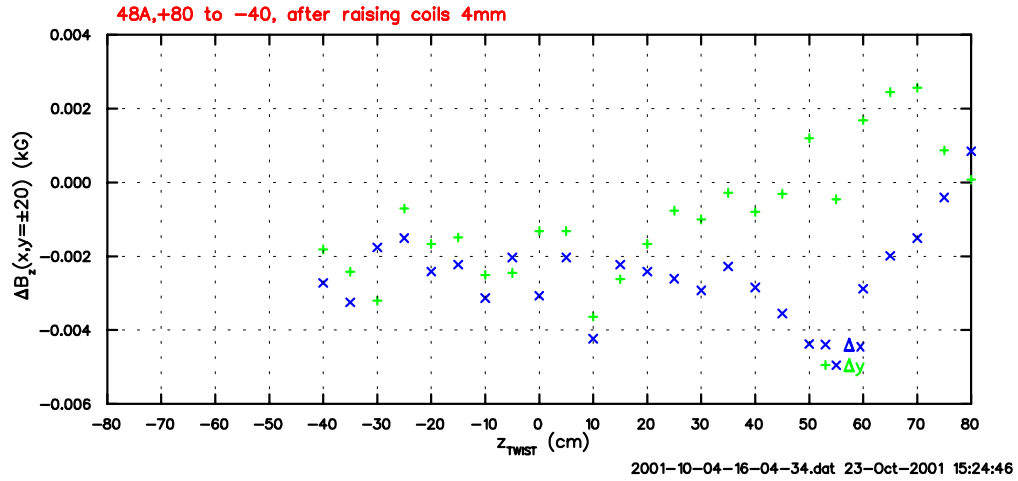
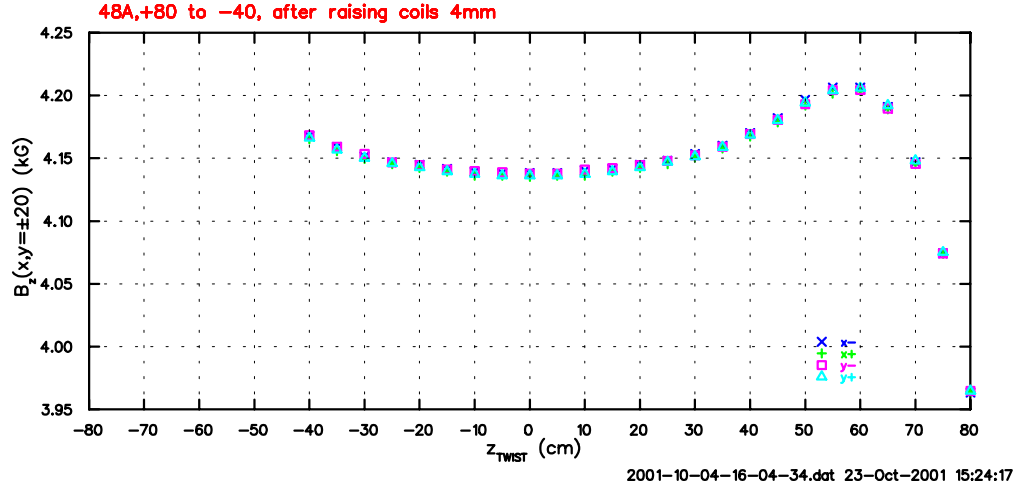
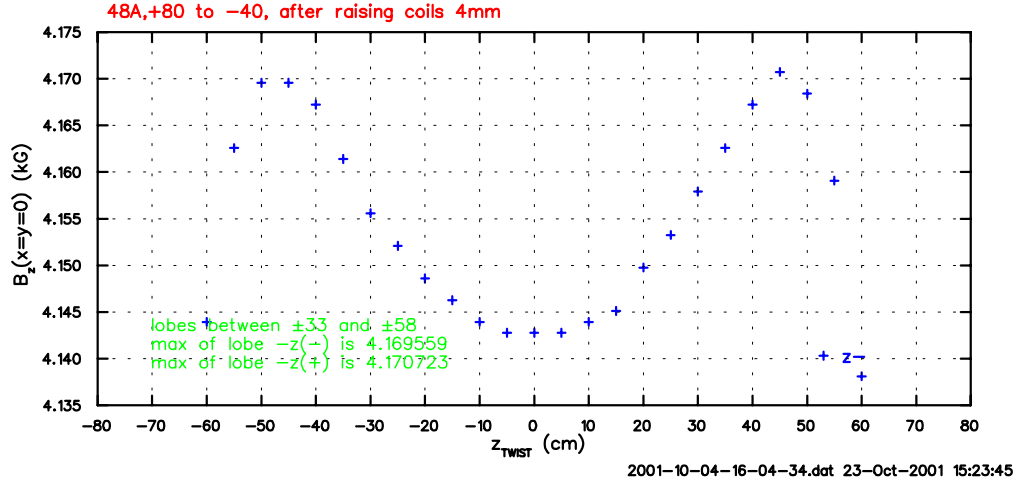


Figure 4: As previous figure, but solenoid moved in $+y$ direction by 4 mm, and trolley realigned with yoke axis (corrected x and y).

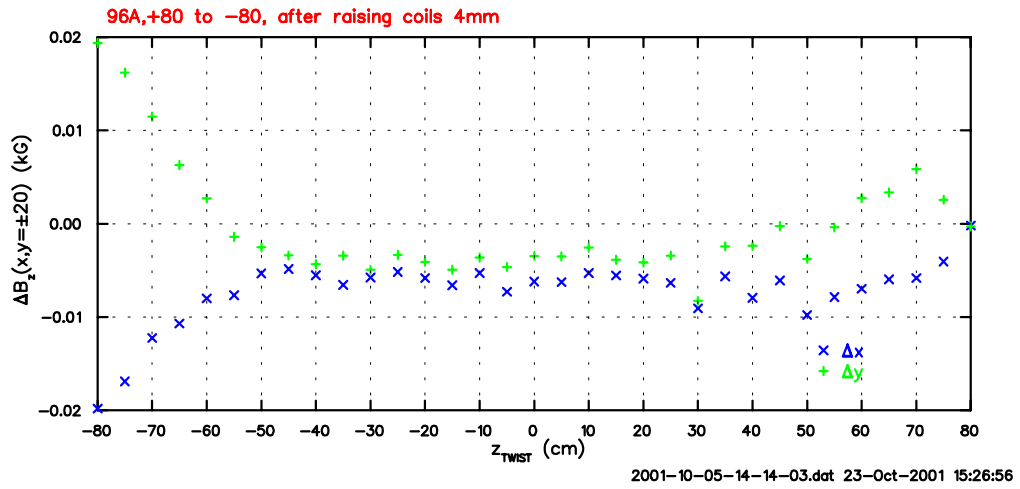
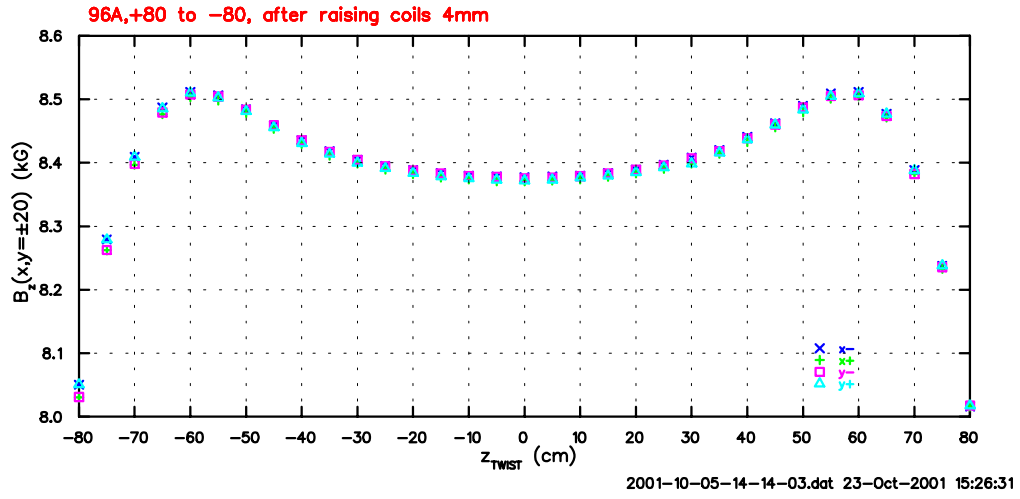
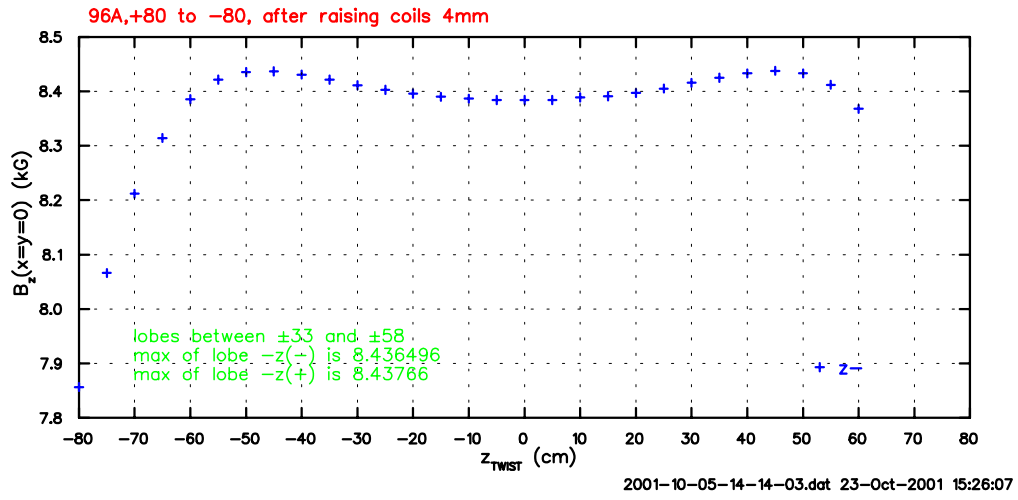


Figure 5: As previous figure, but at 96 A (corrected x and y).

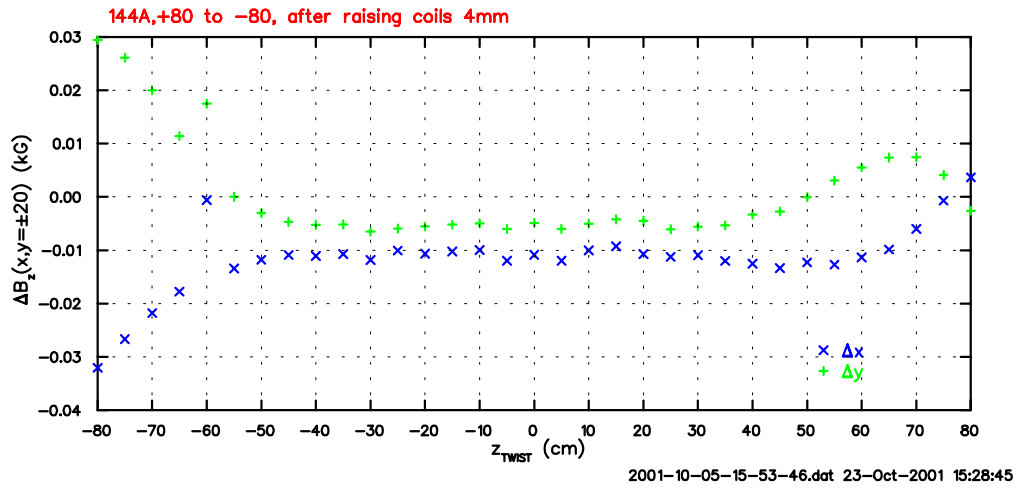
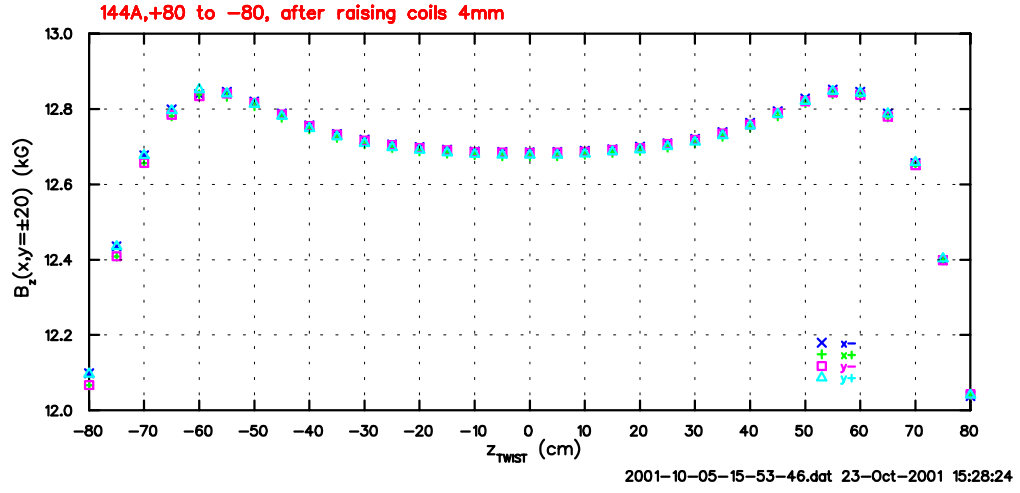
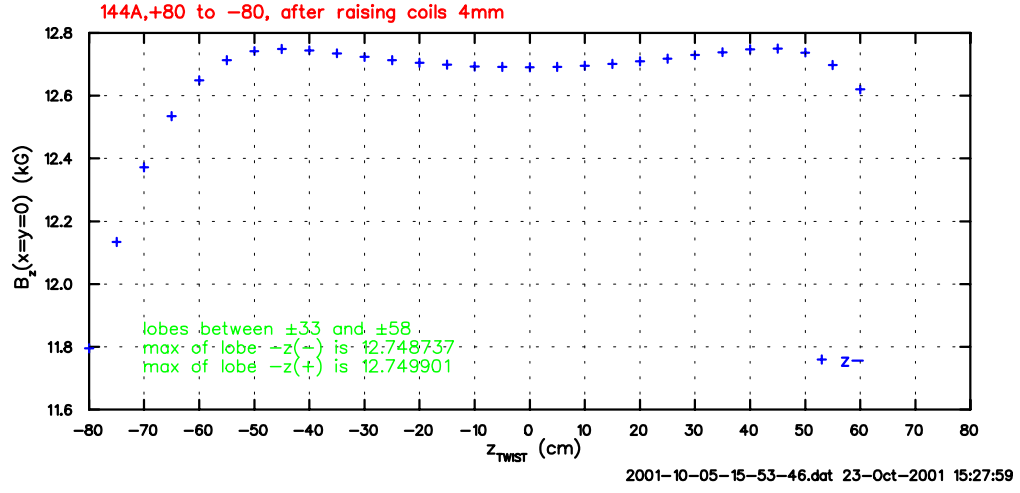


Figure 6: As previous figure, but at 144 A (corrected x and y).