$\bar{p}$ note # 471

J. Marriner
Sept 24, 1987

PBAR SCRAPER CALIBRATION

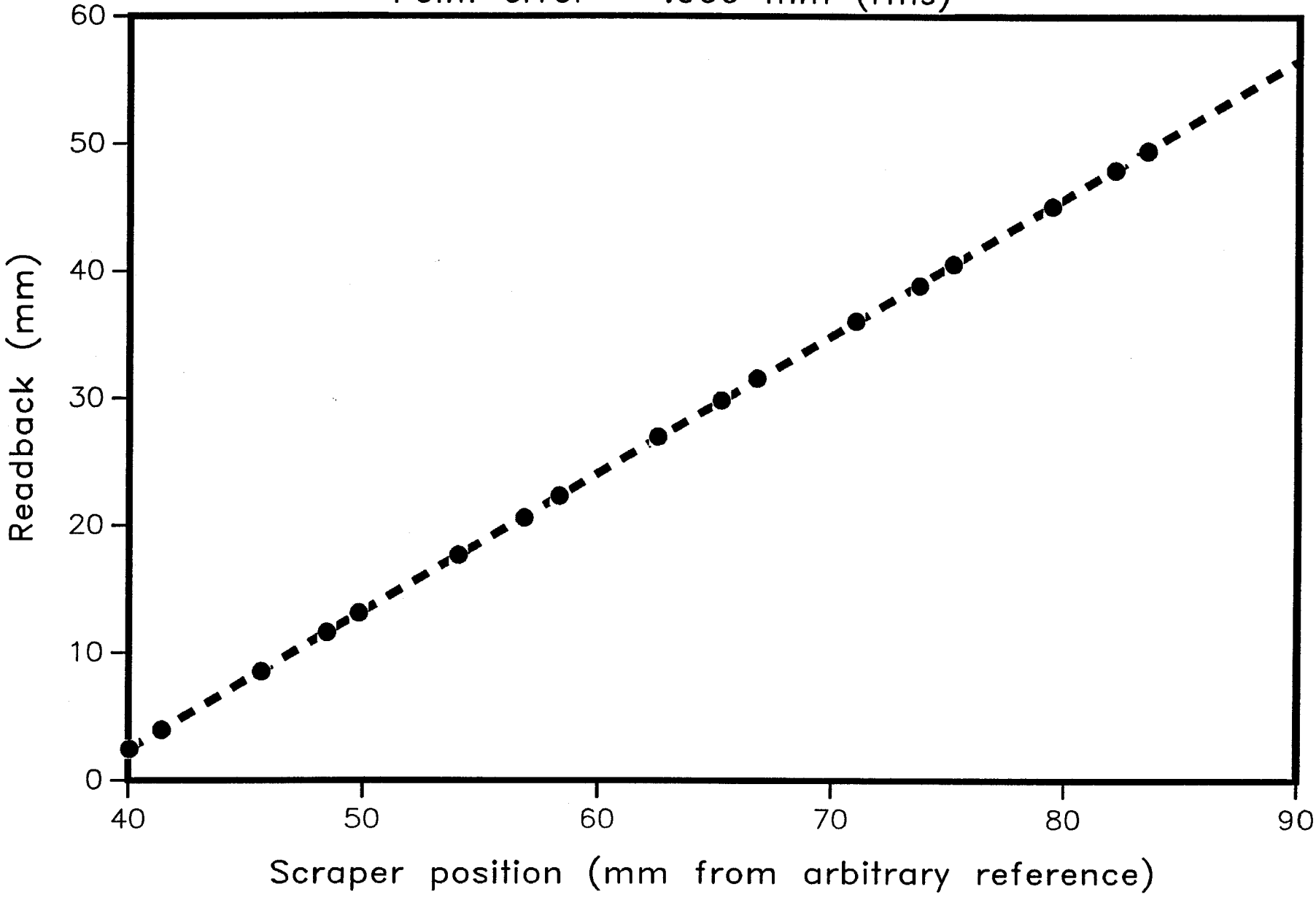
Mike Kucera has made detailed measurements of most of the scrapers in the anti-proton source. The procedure was to measure to a reference point on the outside of the scraper and to observe the readback on a console. This measurement was made for a variety of positions over the full travel of the scraper.

The following plots represent the results of the analysis of the data. A straight line was fit to all the data except (in some cases) the points at the end of the travel. This points can be error if they are near the end or past the maximum range of the readback. This effect is particularly noticeable on D:RJ306 and D:TJ308. In one case (D:BJ708) a point which was badly inconsistent with a straight line fit was not used in determining the line parameters.

It is concluded that scraper calibrations are in error by amounts ranging from 0 to 30%. The linearity is always better than 1 mm point to point.

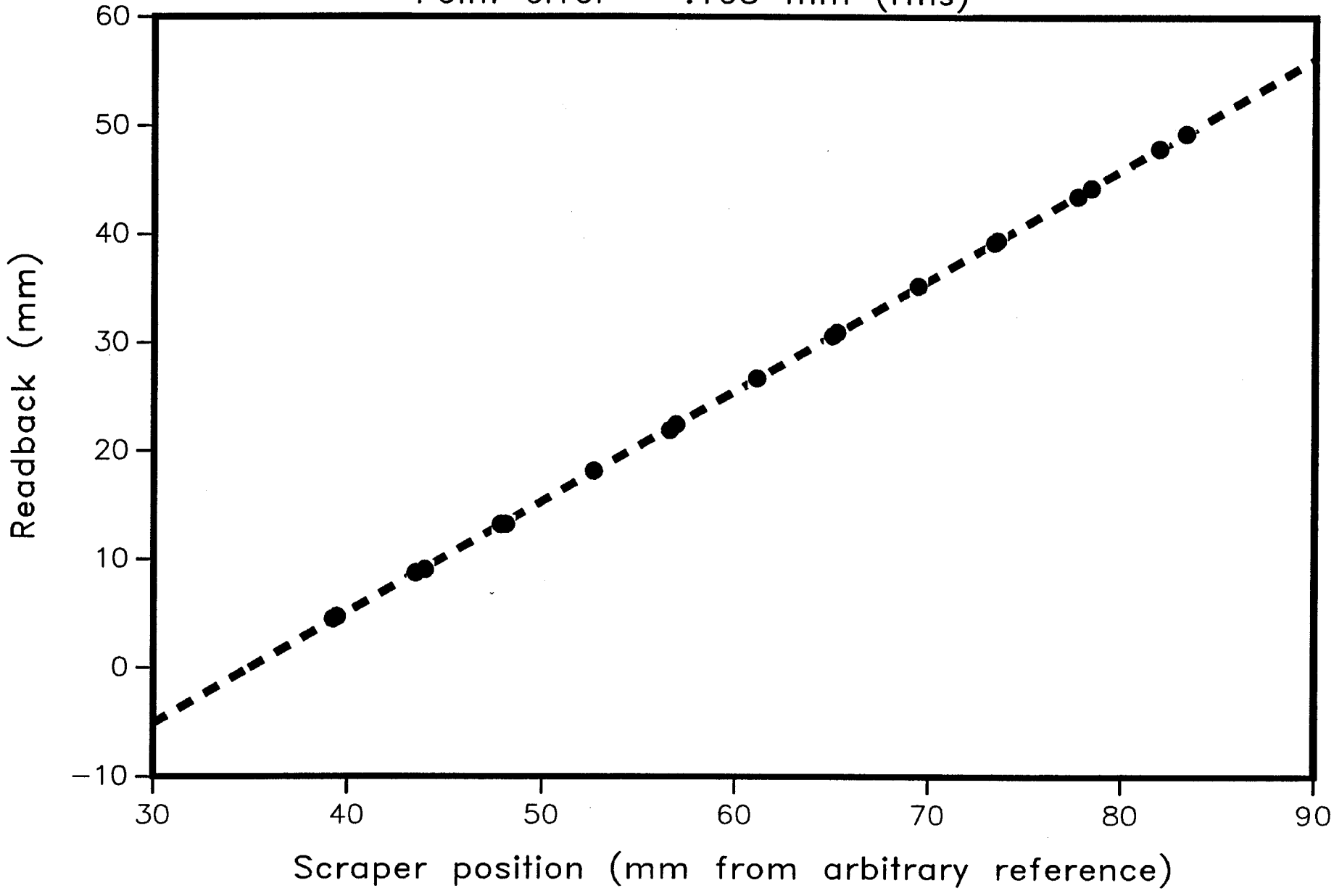
A:RJ500 Scraper Calibration

Line fit is 1.082 mm/mm (readback/actual)
Point error = .066 mm (rms)



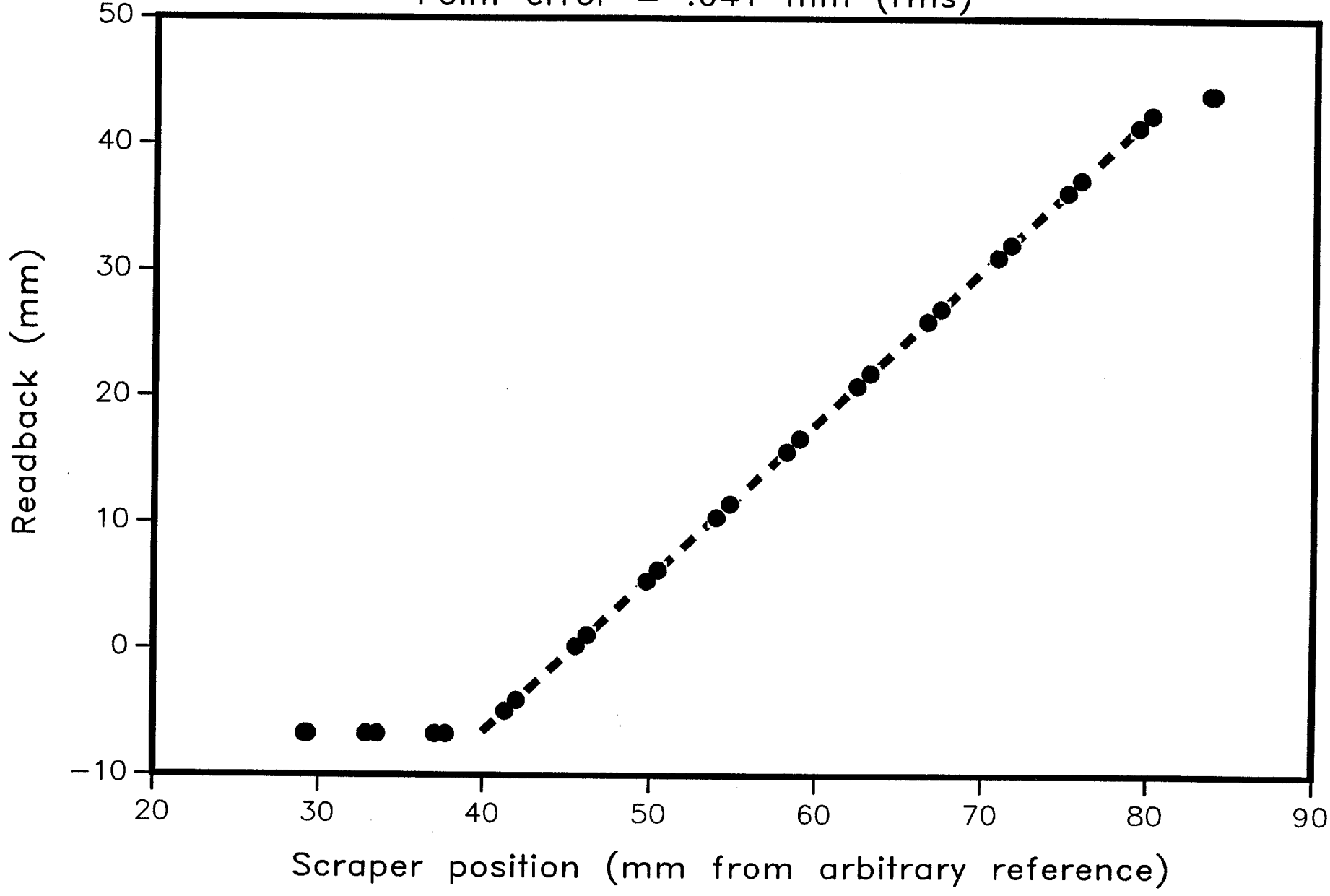
A:TJ307 Scraper Calibration

Line fit is 1.021 mm/mm (readback/actual)
Point error = .105 mm (rms)



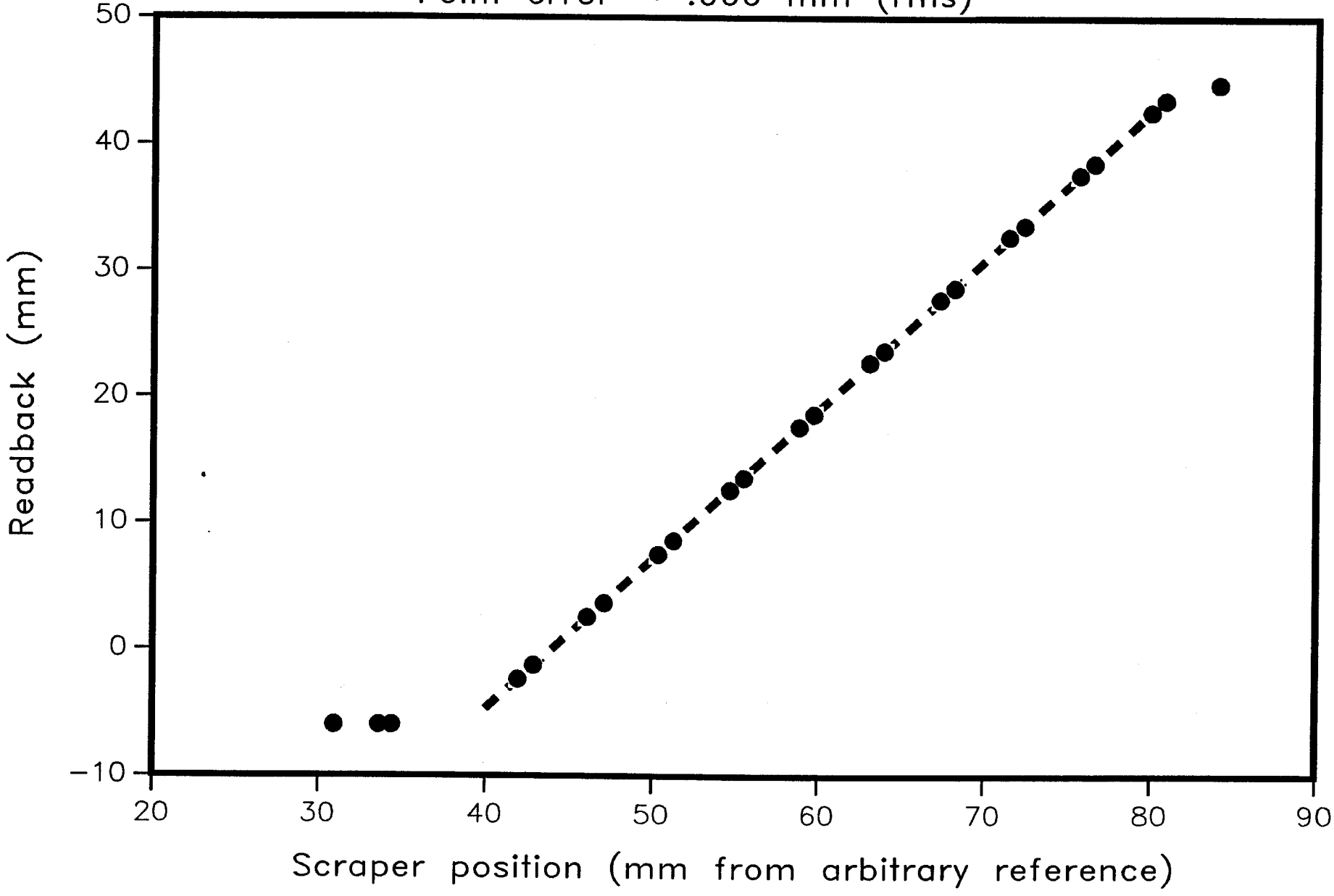
D:RJ306 Scraper Calibration

Line fit is 1.221 mm/mm (readback/actual)
Point error = .041 mm (rms)



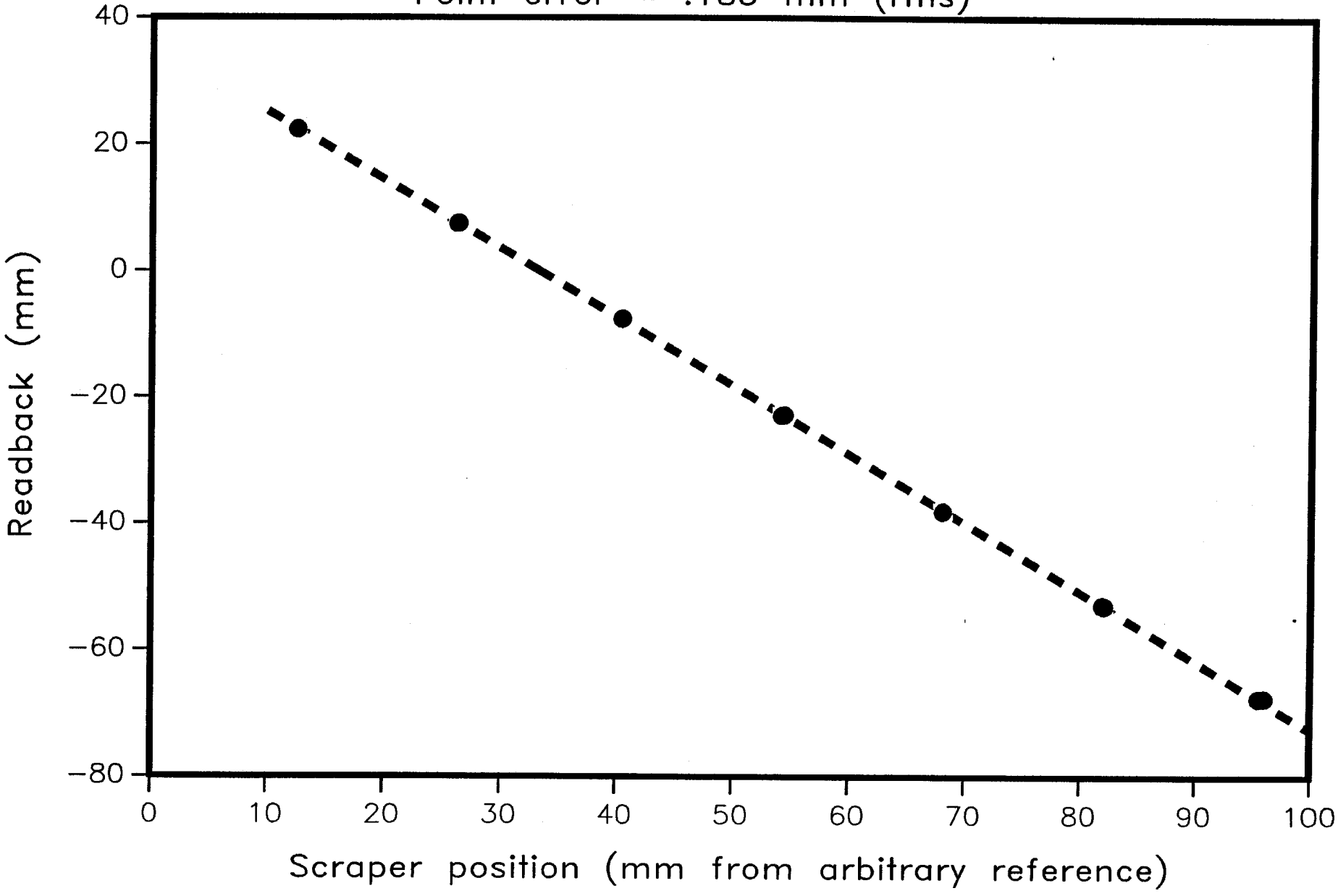
D:TJ308 Scraper Calibration

Line fit is 1.183 mm/mm (readback/actual)
Point error = .066 mm (rms)



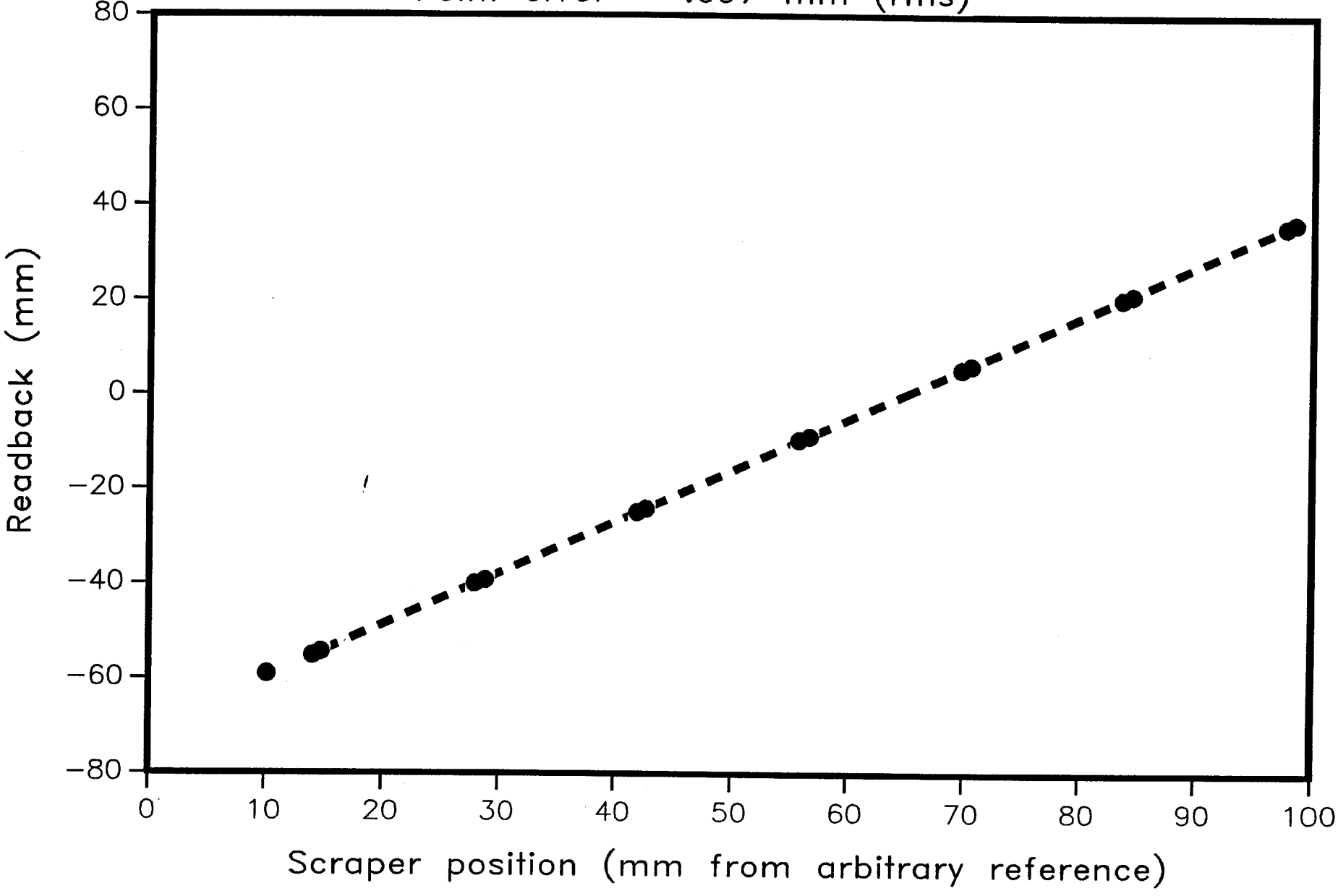
D:LJ707 Scraper Calibration

Line fit is −1.085 mm/mm (readback/actual)
Point error = .183 mm (rms)



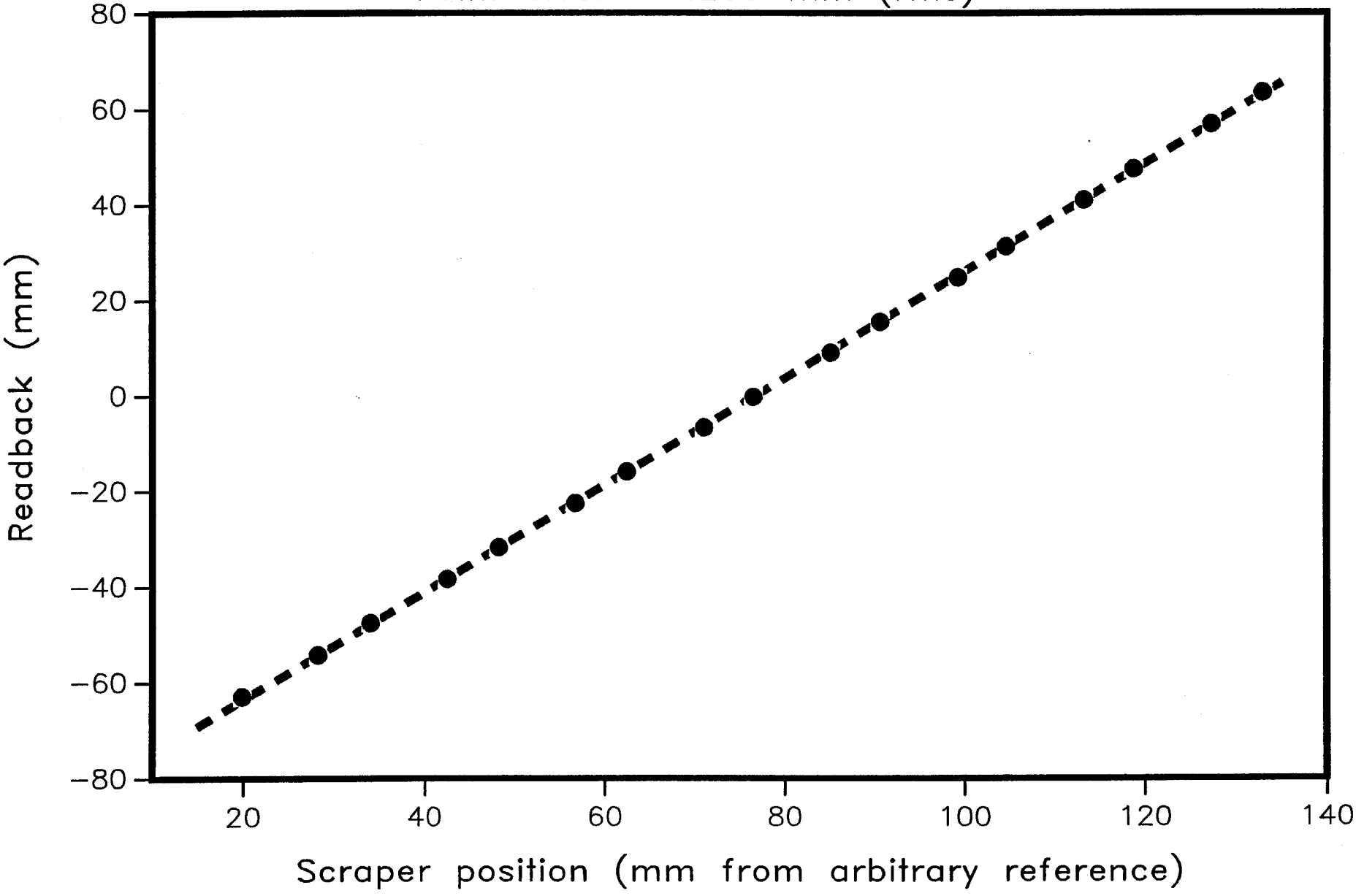
D:RJ707 Scraper Calibration

Line fit is 1.087 mm/mm (readback/actual)
Point error = .097 mm (rms)



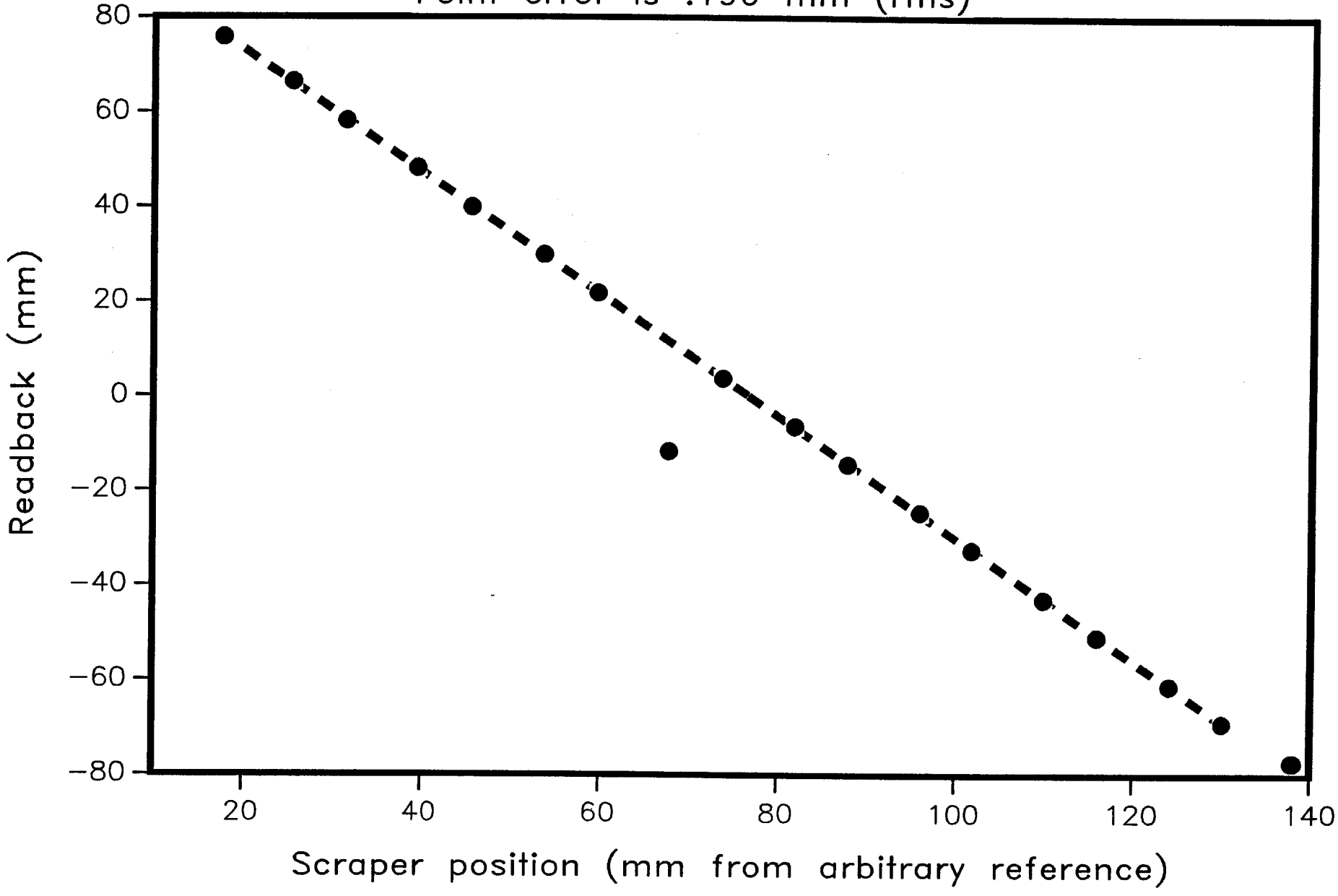
D:TJ708 Scraper Calibration

Line fit is 1.121 mm/mm (readback/actual)
Point error = .239 mm (rms)



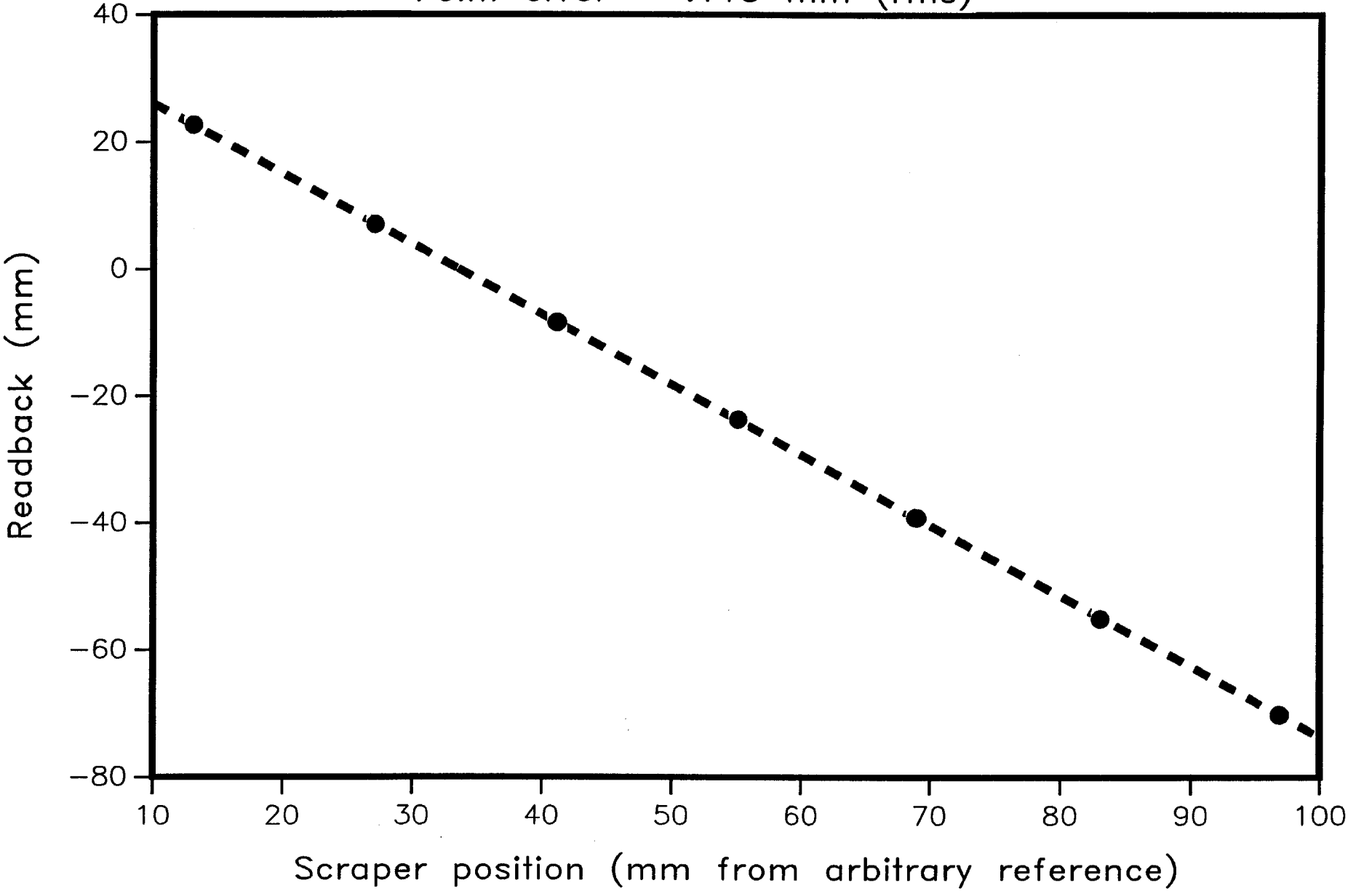
D:BJ708 Scraper Calibration

Line fit is −1.289 mm/mm (readback/actual)
Point error is .190 mm (rms)



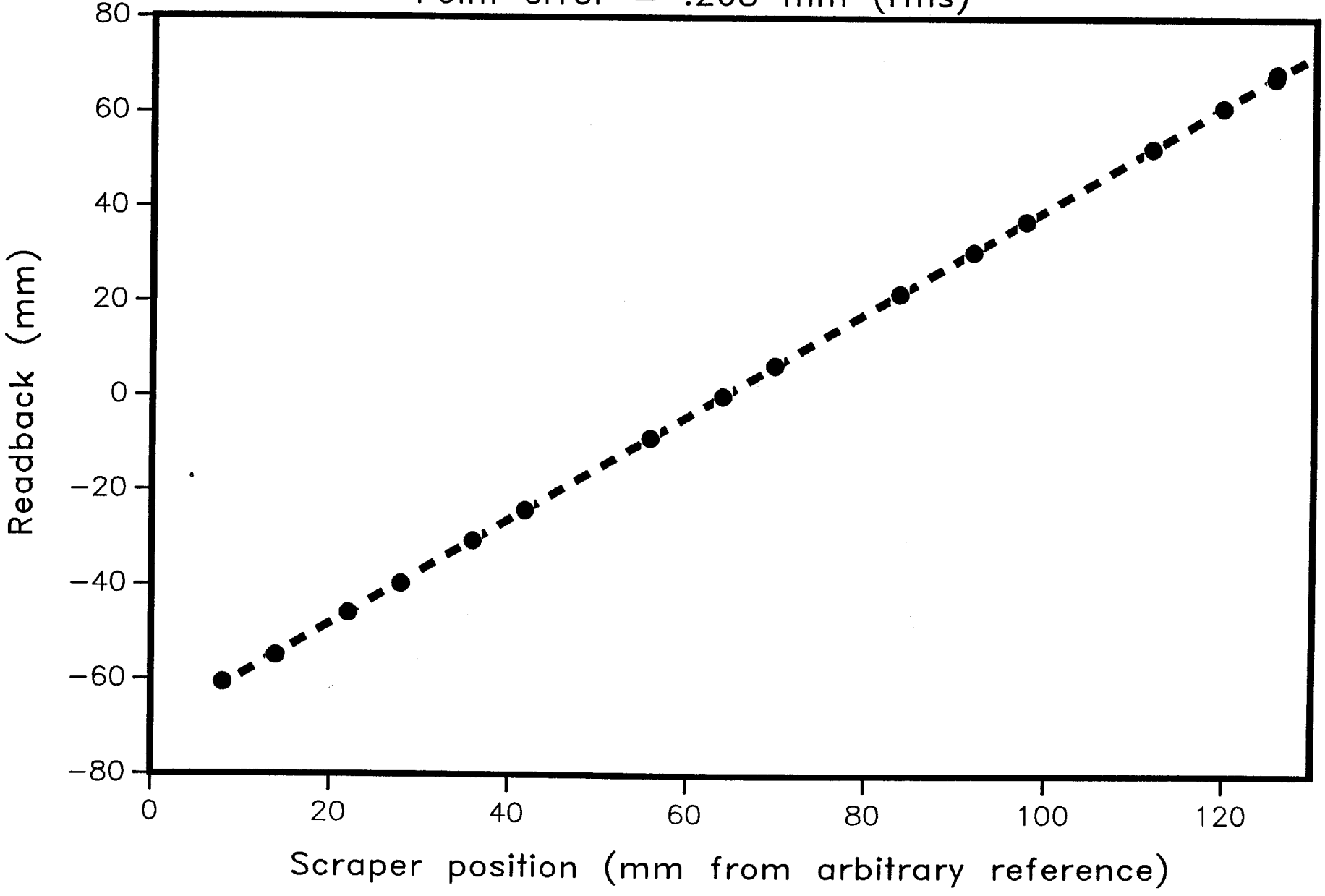
D:LJ709 Scraper Calibration

Line fit is −1.108 mm/mm (readback/actual)
Point error = .115 mm (rms)



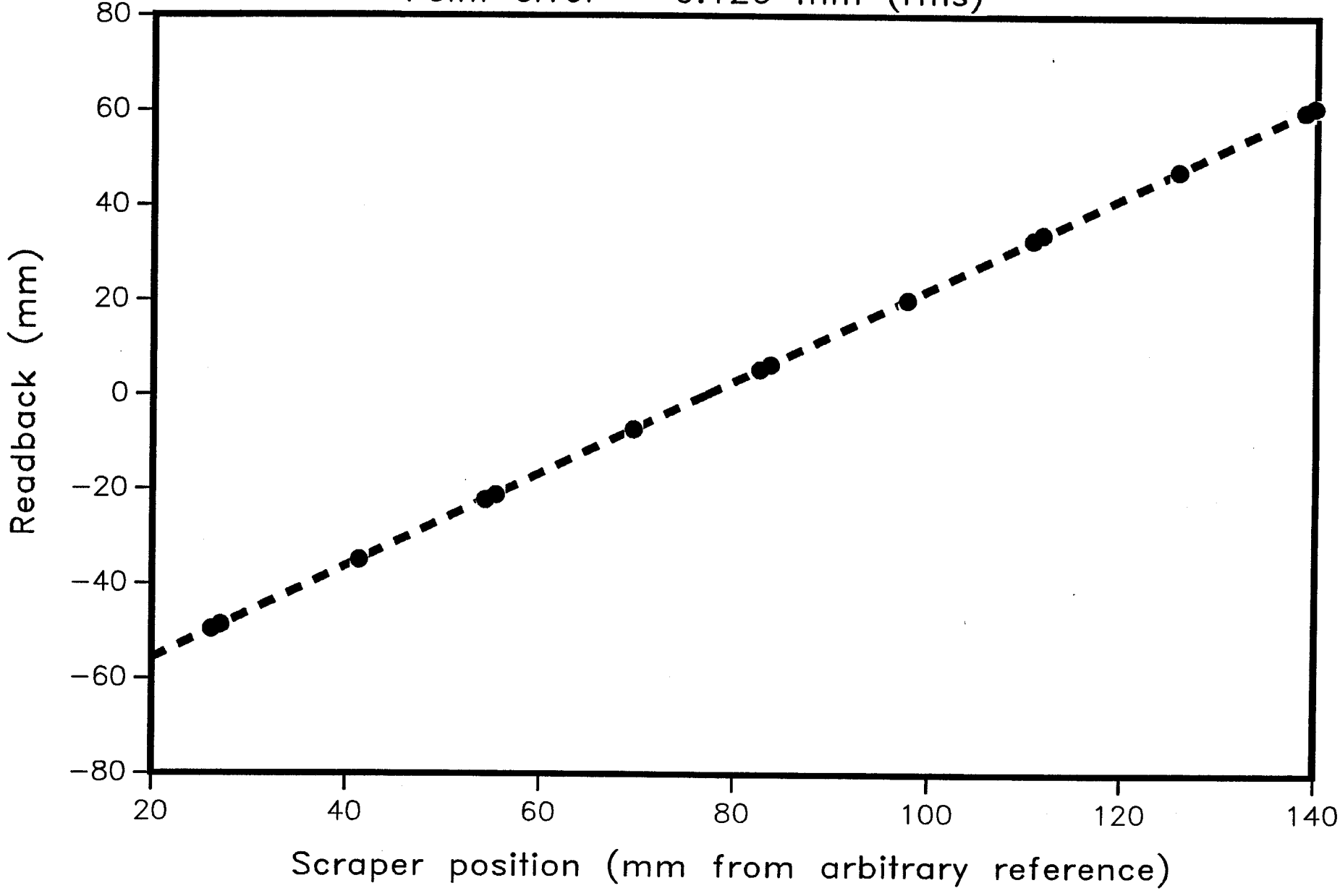
D:RJ709 Scraper Calibration

Line fit is 1.097 mm/mm (readback/actual)
Point error = .208 mm (rms)



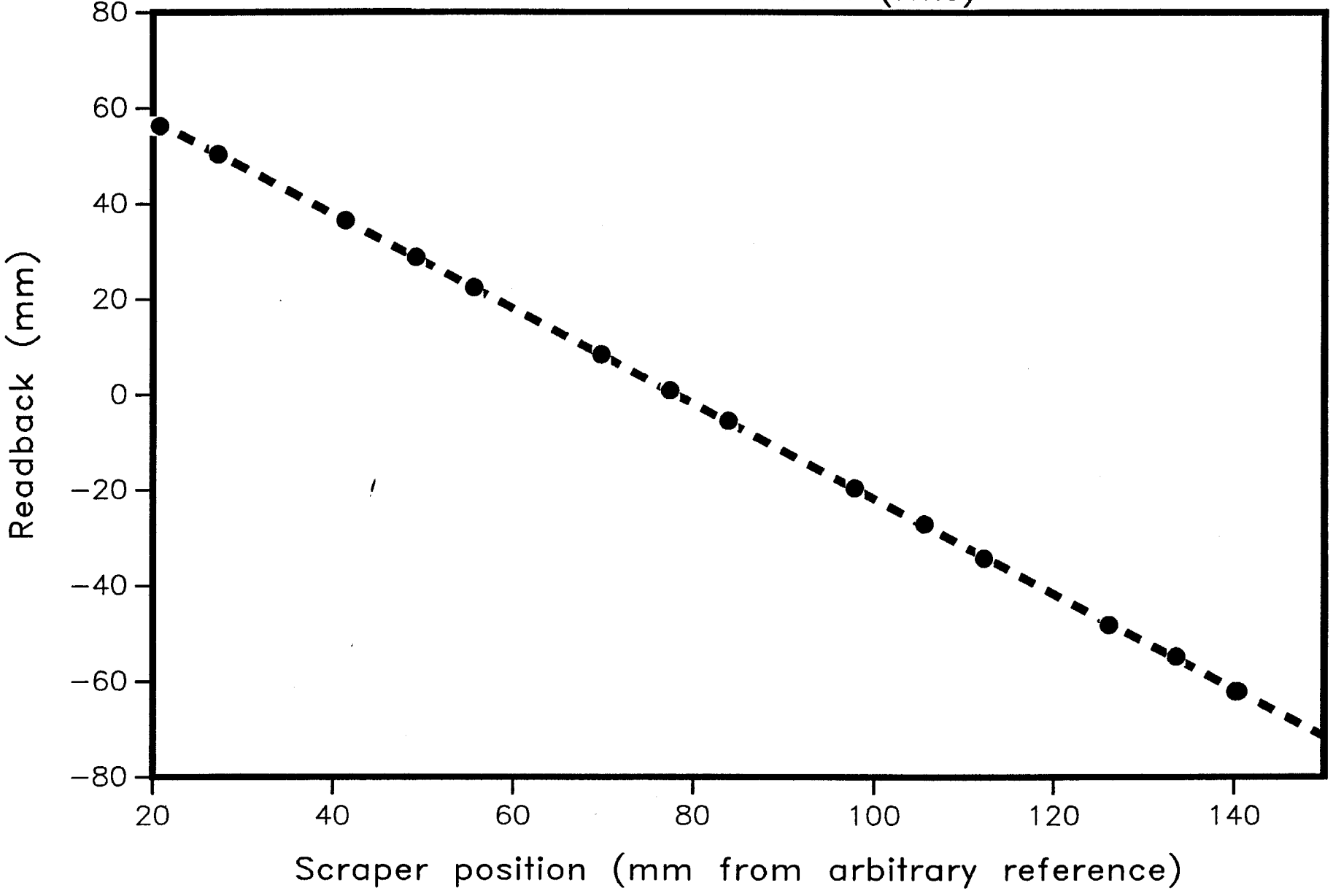
D:TJ710 Scraper Calibration

Line fit is .976 mm/mm (readback/actual)
Point error = 0.126 mm (rms)



D:BJ710 Scraper Calibration

Line fit is −.993 mm/mm (readback/actual)
Point error = .271 mm (rms)



Fermilab

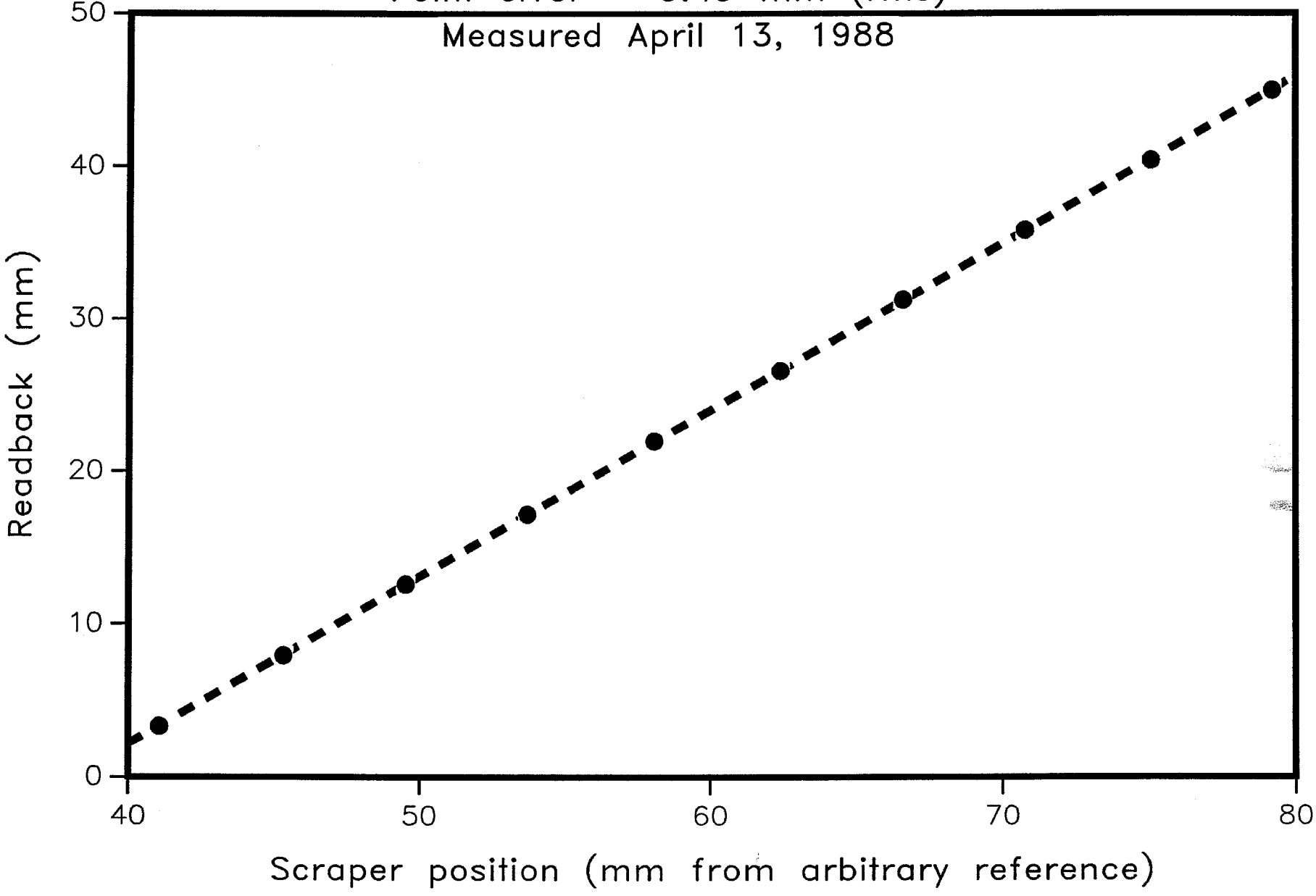
Addendum to $\bar{p}$ Note #471

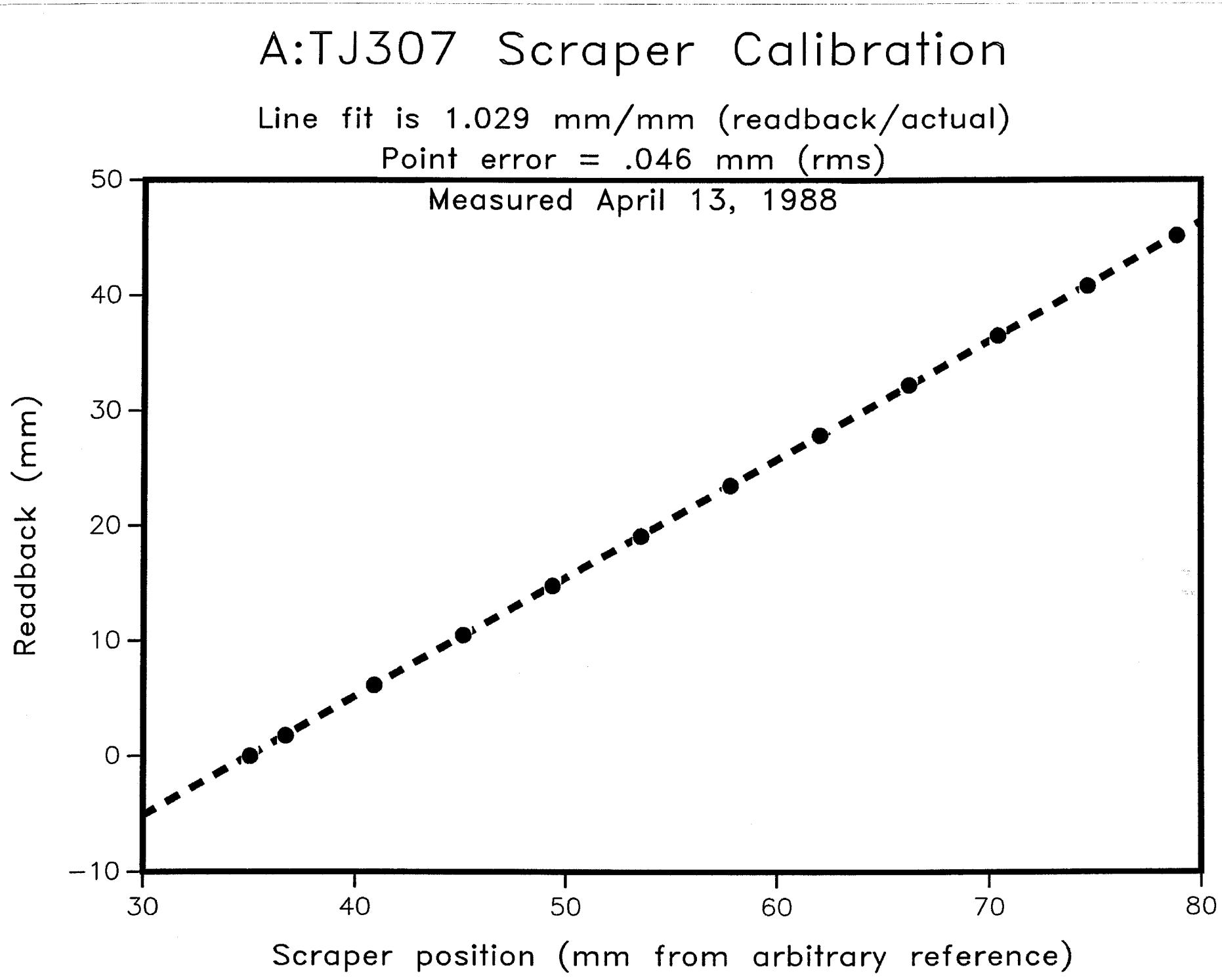
Pbar Scraper Calibration
(addendum)

J. Marriner

A:RJ500 Scraper Calibration

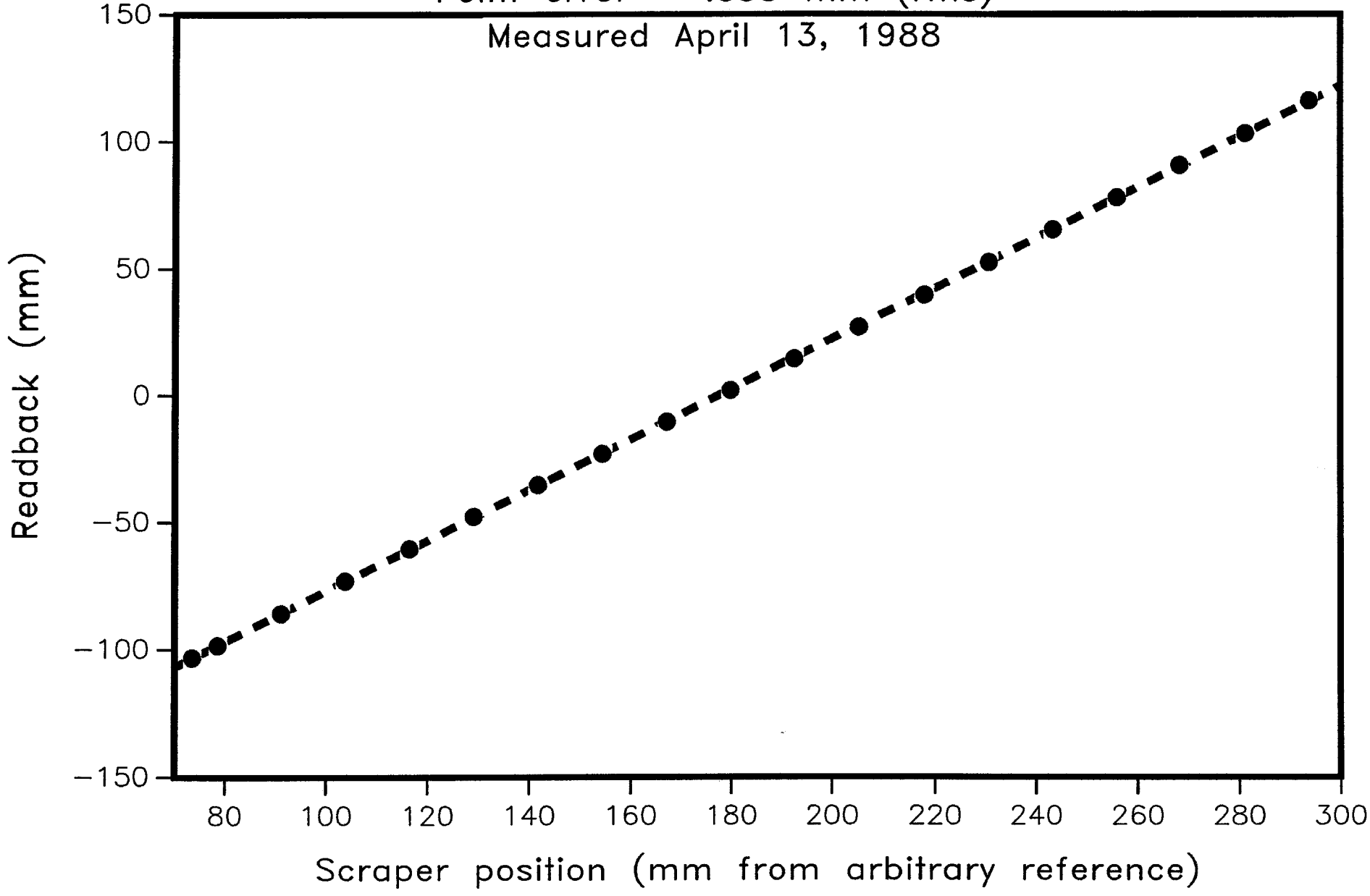
Line fit is 1.093 mm/mm (readback/actual)
Point error = 0.49 mm (rms)

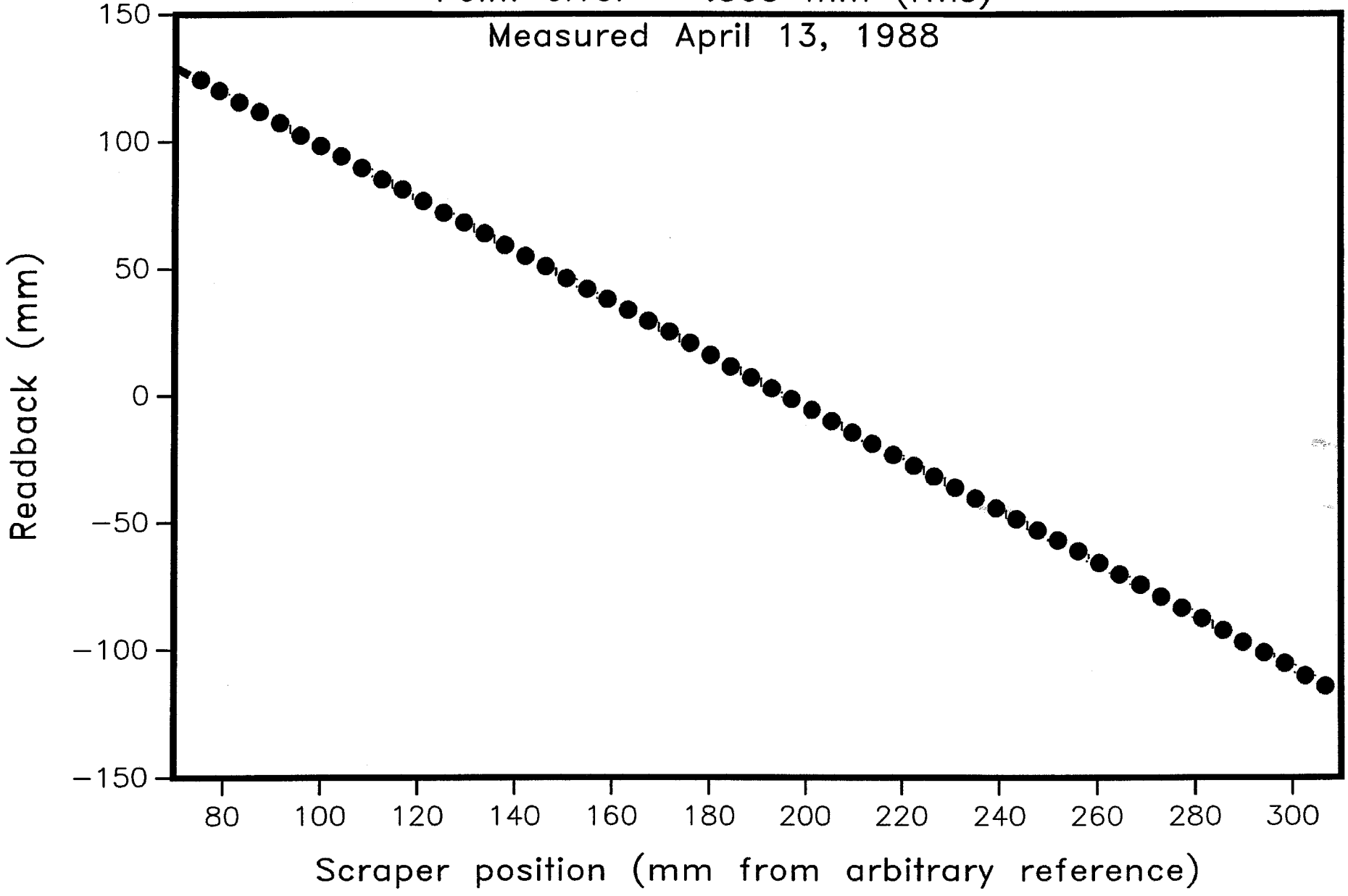



A:TJ307 Scraper Calibration
Line fit is 1.029 mm/mm (readback/actual)
Point error = .046 mm (rms)
Measured April 13, 1988
Readback (mm)
50
40
30
20
10
0
−10
30
40
50
60
70
80
Scraper position (mm from arbitrary reference)

A:RJ314 Scraper Calibration

Line fit is 0.994 mm/mm (readback/actual)
Point error = .333 mm (rms)



A:LJ314 Scraper Calibration

Line fit is −1.026 mm/mm (readback/actual)
Point error = .303 mm (rms)