Fermilab

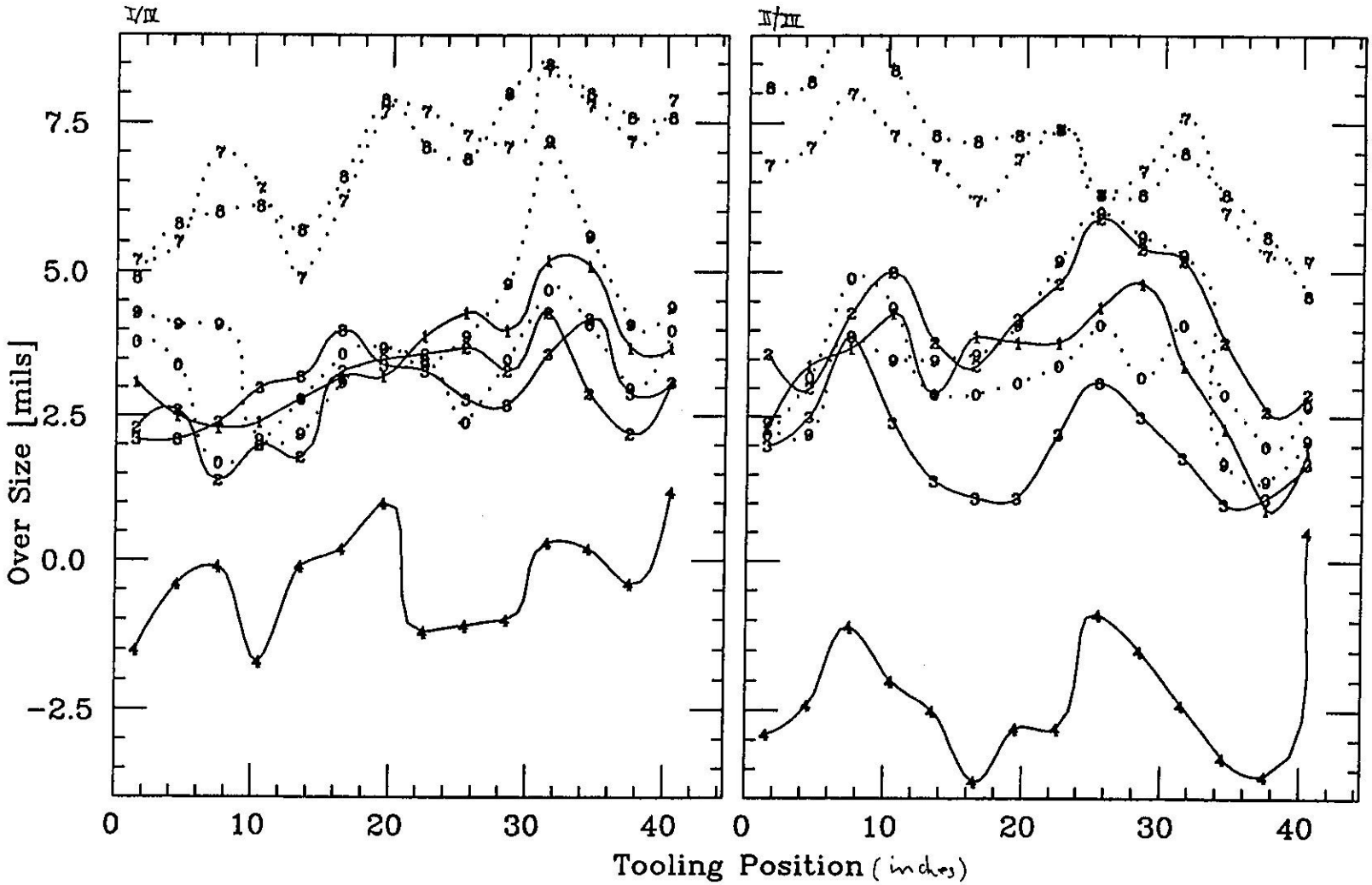
TS-SSC-91-102

Coil Size and Shimming of DSA Series Outer Coil (II) [1]

Masayoshi Wake
Fermilab,TS/Mag.R&D
May 31, 1991

The coil size of 50mm short magnets are controlled by the key size and the bar size of the tooling[2]. Since we had a little too large pressure in outer coil and too small pressure in inner coil, the change of the tooling parametaer was made recently. The first change is due to the key size which was made between 1M-50-118 and 1M-50-119. The new key is 5 mil larger than previous one. Therefore, coils after 1M-50-119 is expected to be smaller by 5mil. The attatched figure is the size distribution of these coils. The measured data are marked with using the last digit character of the coil number in the Figure. The change of the size is clearly seen in the figure. The second change was made by cutting the thickness of the tooling bar by 3 mil. This was made between 1M-50-220 and 1M-50-221. The change in the coil size was not so clear for this modification. This could be because of the change of cable size which happend to take place at the same time with the change of the bar size. Since the current target oversize of the coils are 10 mil for inner coil and 0 mil for outer coil, the third change was made by machning the tooling bar another 7 mil *i.e.* 10 mil in total. Over machined bar allowa us to control the coil size by the change of the shim size underneath the tooling bar. The winding of 1M-50-224 was made with 4 mil shim using the machined bar. A 3 mil reduction of coil size was expected. Unfortunately, there was insulation damages in this coil due to the improper waxing. However, the averaged coil size was changed about right size. The tendency of having II/IV side smaller than I/III side might be adjusted by the shim. This will be considered maybe after winding DSA326 magnet.

[1]Distribution: R.Bossert, J.Carson, S.Delchamps, I.Goncsy, S.Gourlay, W.Koska, M.Kuchnir, M.Lamm, G.Pewitt, R.Sims, J.Strait

[2]TS-SSC-91-92, M.Wake

Outer Coils @ 12 ksi