Fermilab

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Collar Gage Pack Positions for DC0303

The specification for locating the two collar gage packs in the long 40 mm SSC magnets calls for positioning them at the points where the sums of the azimuthal sizes of the four inner coil quadrants are maximum and minimum. Measurements are made on the coils by starting approximately 6" from the lead end and measuring, in 3" increments, the azimuthal size down the length of the coil. When the return end is reached, the measuring apparatus is moved to the other half of the coil and measuring is continued back to the lead end. The turn-around position at the return end, for the coils used in DC0303, was at 215-216 for the two inners and at least one of the outers. It was assumed to be so for the other outer coil as well. The measurements on either side of a coil could be out of phase by as much as 1 1/2" and variations in the beginning position of the measurements could produce systematic offsets of similar size between coils. Steps have been taken to improve the measurement procedure in the future so that better correlation between measurement positions from side to side and coil to coil can be obtained.

The best estimate of the summed azimuthal inner and outer coil sizes at 12 kpsi for DC0303 are shown in Figure 1. The four spikes above 17.5 mils at positions 123, 145, 185 and 196 are produced by measurements of a single quadrant which were anomalously large relative to measurements on either side. These were assumed to be bad measurements. The "lead end" and "return end" gage packs were centered at positions 20 and 108, or 64 7/8" and 328 1/2" from the outside edge of the lead end G-10 saddle. These corresponded to the largest (15.8 mils) and smallest (3.7 mils) excursions of the summed azimuthal inner coil sizes.

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Summed Azimuthal Measurements vs. Longitudinal Position for DC0303

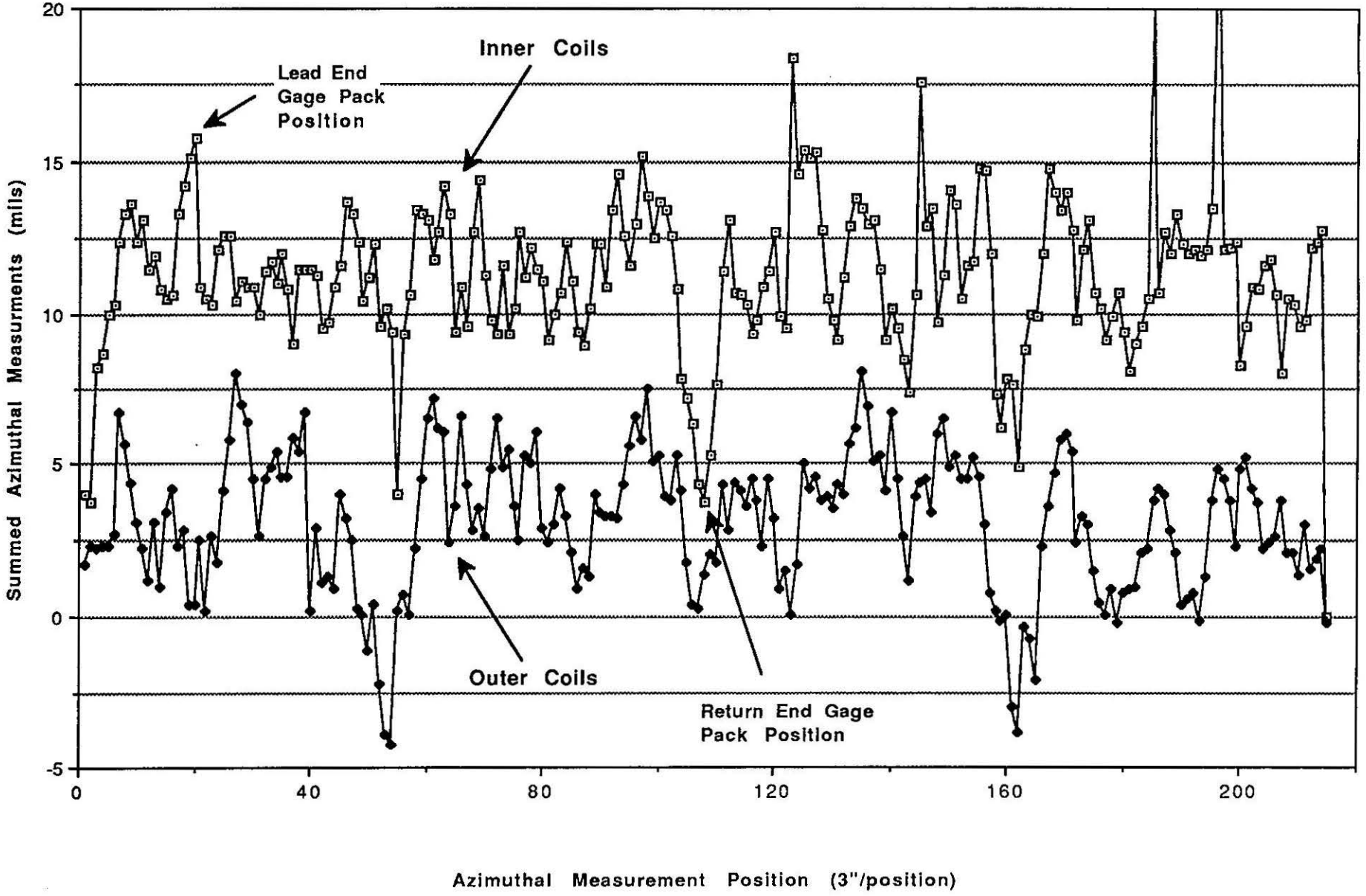

Figure 1