



TS-SSC 91-109

Time Histories of Selected DS0315 Strain Gauge Data at 4 K

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Attached are plots giving the time histories of data from selected strain gauges on DS0315. The first plot shows the test temperature for the full test period showing all three thermal cycles. For the strain gauge plots that follow data are included only for $T < 4.5$ K as determined by the top carbon thermometer. Points with $I(\text{magnet}) > 0$ are included causing significant excursions in the data. The magnet current for the measured points is shown in one of the figures. One each of the inner and outer collar pack gauges and one of the bullet gauges was broken for most or all of the testing cycle. On day 57 (April 9) the outer coil gauges "went south" and they are not plotted from this point on.

The shell gauges record the change in strain from the initial state at 4 K at the end of the first cooldown. No cold calibrations were measured. Shell gauges labeled "A" ("z") measure azimuthal (axial) strain. The position of each gauge is given by its angle from the weld (at the vertical parting plane) and its z coordinate. The shell gauges are all plotted on the same scale to make comparison among them easier. This scale was chosen to allow the net change of all the gauges from the beginning to the end of the test cycle most evident. However, the gauges at the ends of the magnet, both axial and azimuthal, have a large excursion in the middle of day 57 (April 9) which goes off the scale on which the other gauges are plotted. The last two figures show these four gauges on scales that show the full excursion. Following the excursion the apparent strains are significantly different than before. The failure of the outer coil gauges occurred on the same day but apparently somewhat later than this excursion. They may or may not be related. A cursory look at the on-line log file DS0315.LOG does not reveal any obvious cause of this behavior and it is left for another day to investigate further.















