

MAGNET DIVISION NOTES

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Title: Sensitivity of SSC-P11 Coil Geometry to Post Shim Changes  
Task Force: Coil Geometry

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RCF:vm

(This paper consists of 2 sheets).

**Sensitivity of SSC-P11 Coil Geometry to Post Shim Changes**

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We have examined the effects of post shim changes on the multipoles for the SSC-P11 coil geometry. It is assumed that any shim deviation from the nominal value of 30 mils is distributed equally to the mean thickness of every turn in the coil layer. The figure shows the multipole and transfer function (TF) changes resulting from a given shim change. It is assumed for each plot that the other shim is fixed at the nominal value. It can be seen that the sextupole is about equally sensitive ( $\sim 0.5 b_2' / \text{mil}$ ) to changes at either post. The  $b_4$  and  $b_6$  terms are only sensitive to inner shim changes. We also show in Table 1 the room temperature predictions for the first two SSC magnets.

**Table 1. Room Temperature Prediction**

Magnet	Side	In Shim	Out Shim	TF	$b_2$	$b_4$	$b_6$	$b_8$
SBN001	L	21	21	14.782	-85.1	33.4	0.8	0.6
	R	21	18	14.774	-87.1	33.4	0.8	0.6
SBN002	L/R	30	17	14.807	-83.5	31.3	1.7	0.3

