

TS-SSC 90-075

October 16, 1990

MEMO TO: R. Bossert, J. Carson, S. Delchamps, N. Hassan,  
W. Koska, P Mantsch, D. Sims, M. Wake, M. Winters

FROM: Jim Strait

SUBJECT: Plan for Short 50 mm Practice Magnet DSA320

This is a draft plan for experiments to be done with the short 50 mm practice coils. I would appreciate any comments you have on this procedure.

### Objectives

Determine the correct collaring shims and the correct coil size to achieve simultaneously the correct harmonics and the correct preload.

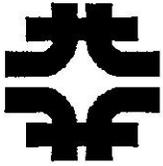
### Plan

- 1) Mold several coils (inner and outer) with at least two different molding shims. The goal is to produce two "identical" coils of each type that are several mils larger than the normal size at 10 kpsi.
- 2) Collar the coils with no collaring shims. Record the prestress. Measure the harmonics (center position only) with the mole. Compare measured  $b_2$  and  $b_4$  with values predicted for the collared coil. Compute inner and outer shims required to set  $b_2$  and  $b_4$  to their correct values.
- 3) Re-collar with the shims chosen in step (2) and repeat prestress and harmonics measurements. Iterate the shims and re-collar if necessary to achieve the required  $b_2$  and  $b_4$ .
- 4) From the prestress data from steps (2) and (3) choose shims that will give  $\sigma_{IN} = 10$  kpsi,  $\sigma_{OUT} = 8$  kpsi. Re-collar and measure prestress. Iterate shims to achieve the desired prestress.
- 5) The desired inner (outer) coil size at 10 (8) kpsi is:

$$l_{COIL} = l_o + t_p - t_H$$

Where  $l_0$  is the size of the coils used in this experiment (average of upper and lower),  $t_p$  is the shim thickness required to achieve the correct prestress and  $t_H$  is the shim thickness required to achieve the correct harmonics.

- 6) Using the relation determined in step (1) between coil size and molding shims, choose molding shims to achieve the coil size determined in step (5). Mold several inner and outer coils with these shims. Iterate these shims if necessary to achieve the desired sizes.
- 7) Collar a set of coils of the correct size with the shims chosen in step (3). Record prestress and measure harmonics.



Fermilab

November 5, 1990

MEMO TO: R. Bossert, J. Carson, S. Delchamps, N. Hassan, W Koska,  
P. Mantsch, P. Mazur, D. Orris, G. Pewitt, R. Rihel,  
G. Tassotto, M. Wake, M. Winters, W. Zimmerman

FROM: Jim Strait

SUBJECT: Revision to Instrumentation for 40 mm Long Magnets

Attached is a revised specification for the instrumentation on long 40 mm SSC dipoles built at FNAL. I have changed the specified locations of the skin gages to more closely match what has been put on BNL magnets tested here.

cc: T. Bush  
R. Coombes  
A. Devred  
J. Jayakumar  
J. Tompkins