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AGS Programmed B Field vs. Hall Probe and Gauss Clock Readbacks

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AGS Complex Machine Studies (AGS Studies Report No. 355) AGS Programmed B Field vs. Hall Probe & Gauss Clock Readbacks
Study Period: Nov. 26, Dec. 27, 1996; Jan. 9, 1997
Participants: J.W. Glenn and Various Logs
Reported by: J.W. Glenn
Machine: AGS
Beam: Gold
Tools: Main Magnet Program, Gauss Clock and Sieman's Hall Probe
Aim: To confirm agreement of AGS Main Magnet command program with readback

Mourning Numbers, Clyde printouts, the RF Dipole Log, and Archived Mmagnet control setups were scanned for readbacks and "commands" for this fall's running. There is a few percent discrepancy between the two views of the field in the AGS.

Injection fields were obtained from "mourning #'s" Hall probe readings. Extraction fields were from an assumed 436.4 Gauss at injection plus slow Gauss clock up-down's divided by 5; a picture of flat top, with some down counts recorded, show the field within 1/4% from FT start to clock read time. At the rf dipole porch, field was recorded by the Hall probe plus the fast Gauss clock up-down's divided by 20.

All points were taken at zero Bdot at least 30 mSec. into the flat top; there are no Bdot effects in the data.

The Sieman's power supply servos on current. J Sandberg reports the current error is occasionally monitored and is always found to be less than 1/2%.

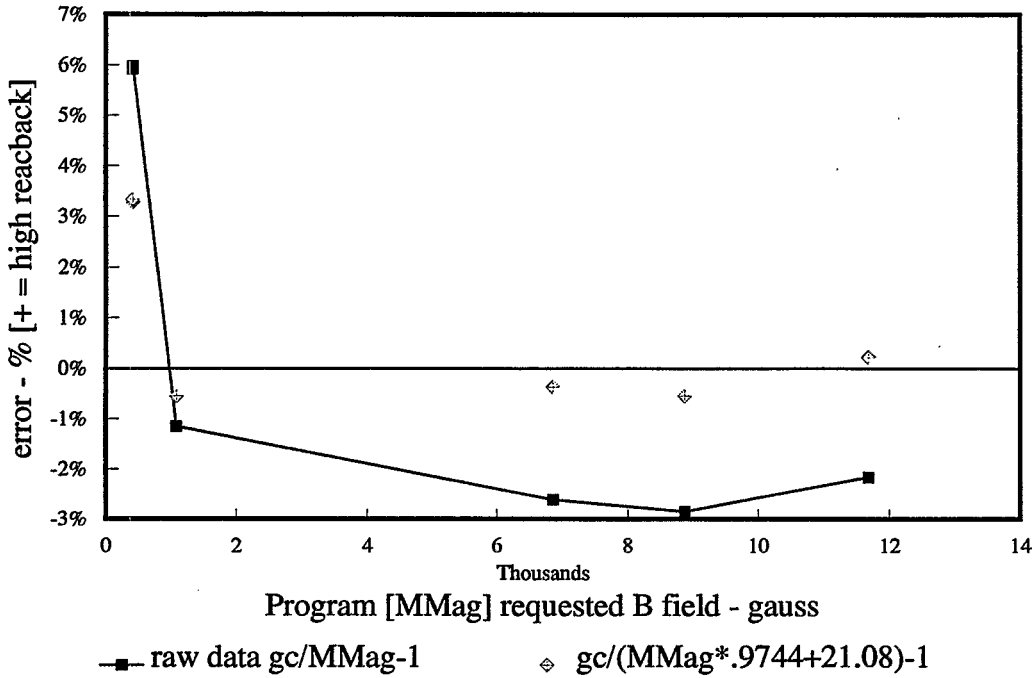
"Re-normalizing" the program fields [by 123] to the Gauss clock and Hall data does not make the data "fit". The error is not simple scaling of the Hall probe and/or Gauss clock.

Thus:

There exists a significant error in the B field of the AGS, either in command or readback -- or both.

Command [MMag] vs Readback [GaussC+Hall]

error: gc/MMag-1



B pgm	B gc+hall	rdbk-cmnd delta	"fitted MMag" delta
412	436.4	5.92%	3.28%
412	436.6	5.97%	3.32%
1080	1067.6	-1.15%	-0.55%
6865	6685.8	-2.61%	-0.37%
8879	8625.8	-2.85%	-0.55%
11680	11428.2	-2.16%	0.23%
11680	11427	-2.17%	0.21%