­12 GeV Superconducting Magnet Review

SHMS-Horizontal Bender (HB) Magnet in Hall C

Charge

The committee is requested to assess if the design, fabrication, installation, protection systems and operational procedures of the SHMS HB Magnet satisfactorily support safe and efficient operation of the magnet within performance specifications.

The HB will be operated for the first time during commissioning and acceptance tests after its arrival to JLab and completing successfully this review. The following points will summarize the magnet status and test plans to the committee,

* Summary and results of the major magnet analyses done.
* High-level commissioning plans.
* “What if” scenario if performance specifications are not met.

The committee is requested to assess if the points below were taken into consideration when performing the various magnet analyses. The committee should add any other consideration in addition to the areas and points listed below, that it deems necessary to perform the requested assessment.

1. Mechanical & cryogenics:
* pressure vessel ratings of each vessel in the magnet
* applicable codes & analysis
* material test/code documentation (if any)
* cryogenic circuit: supply, return, cooling procedures
* relief sizing to handle a quench or catastrophic loss of vacuum
* ODH analysis - worst credible release
* cryogenic controls

1. Power & magnet protection:
* quench analysis
* power lead ratings - flow requirements, voltage drop, etc.
* power supply characteristics/design
* magnet interlock & protection system(s)
* quantities monitored/expected thresholds/behavior logic
* failure mode and effect analysis/"what if" analysis
1. Magnet operation & documentation:
* instrumentation and controls
* drawings and schematics for the complete magnet system
* work rules/training requirements
* operation manual/procedures - integration with other magnets/systems
* identification of any special issue in the magnet system that requires special training and/or attention

The committee shall write a report to the Deputy Associate Director for Physics with their findings and recommendations. Any magnet limitation or operating constraint should be clearly stated in the report. The report should also state, for each issue found, which phase of the magnet acceptance and operation plan is in hold until the issue is

corrected (e.g. magnet cool-down to 4K but not making liquid, filling magnet with liquid Helium, power magnet to low current, power magnet to high current, release magnet to general use by users and so on).