

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
2101 NASA Road 1
Houston, Texas 77058-3696



November 30, 2004

Reply to Attn of: EA-04-045

Professor Samuel Ting
MIT
Building 44-114
51 Vassar Street
Cambridge, MA 02139

Dear Prof. Ting:

Per our conversation last week, I am writing you regarding my serious concern with-respect-to the "integrated magnet," which I define as the magnet completely assembled, fully tested and ready to ship to CERN for assembly with the detectors. Please remember that at the TIM at CERN in July '04 there was considerable discussion regarding the integrated magnet delivery date. Shortly after the TIM Prof. H. Hofer, Mr. Trent Martin and I visited Hans Bieri Engineering and Space Cryomagnetics, Ltd. Neither organization was able to give me a copy of their schedule to produce the flight hardware: Mr. Bieri said a flight Super-Fluid Helium (SFHe) Tank schedule did not exist, but they committed to produce one, and SCL declined to give us a copy of their schedule. Prof. Hofer committed at that time to have a flight integrated magnet schedule for the Oct. '04 TIM. Later at that TIM he stated it was not ready, but he might be able to have one by Jan. '05. Until this time I was unwilling to entertain the rumors of serious integrated magnet financial and schedule concerns. However, the fact that a detailed schedule could not be produced in three months forces me to address these concerns.

Earlier this month, HBE informed us that the SFHe tank schedule has slipped dramatically due to manufacturing problems on the thru-tubes. The STA lower half was to be completed by the end of November; it is now scheduled for mid-February. Since this was the critical path, we feel that this has a direct impact on the magnet delivery date. However, Prof. Hofer has not notified us of any integrated magnet slip. They may well not have the management tools in place to fully understand the impact of the SFHe delay or potential "work-arounds" to mitigate the schedule impact.

SCL has consistently told us not to deliver the Vacuum Tank until "just in time" due to their dramatic shop floor-space issues; This delivery was scheduled for late this year or early January '05. The fact they are now asking that we delay delivery until late summer is additional evidence of severe, unreported schedule slippage.

During my discussions with Prof. Hofer, my Lockheed Martin engineers & management, as well as the component providers, I have been unable to discover any integration management

group for the magnet. The failure to coordinate schedules may well be the "tip of the iceberg" if similar lack of coordination exists for the technical requirements. This would imply a complete lack of a "baseline" to delineate requirements, delineate provider responsibilities, define hardware interfaces, define test requirements, define roles & responsibilities after delivery of components and define roles and responsibilities during integrated magnet assembly, etc. If this baseline does not exist the risks to cost, schedule, performance, and technical compliance are manifold.

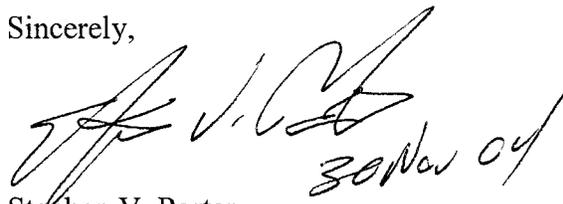
Other serious issues and concerns are:

- At the TIM in October, we found out that although the strap design is complete and all of the component-level testing is complete the straps have not been ordered. The manufacturing time for these straps is considerable and is very probable in the critical path for the magnet. This would effect the testing of the overall payload leading to a delay in the integration of the AMS at CERN.
- Despite promises of information on the warm helium supply and warm valve design, NASA and LMSO have received nothing on this system. Besides being a critical item for our Phase II Flight Safety Review, we see how this could also have a detrimental effect on the magnet schedule.
- At the October TIM, we identified 12 magnet related actions for Phase II Safety Review. None of those actions have been addressed.
- We have seen no updates on magnet endurance based on latest inputs from Carlo Gavazzi thermal analysis. In fact, the magnet team does not even participate in any of the TCS telecons or meetings. We see this as a serious risk to mission success, specifically SFHe endurance.

I believe it is time to ensure we have a viable schedule. I suggest a meeting to address the issues with Prof. Hofer. I further suggest that an audit of the schedules, financial status, and technical status of all "integrated magnet" components in the very near future is in order. In addition, since the integrated magnet is the keystone for the entire payload, we may entertain the idea of a better monitoring function of all "integrated magnet" components progress.

I hope your holiday season is progressing well and that you and Susan get rest from your busy schedule and time with your family. I am looking forward to the January TIM at KSC with hopes we'll be able to fully address these issues and have them well on the way to solution. Until I see you again, may your holidays be bright.

Sincerely,

A handwritten signature in black ink, appearing to read 'S. V. Porter', with a date '30 Nov 04' written below it.

Stephen V. Porter
NASA AMS Project Manager