



## Laboratory for Computer Science

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## MEMORANDUM

TO: Wes Burner  
FROM: Ken Pogran *KP*  
DATE: May 5, 1976  
SUBJECT: ABSI Grounding

On a Friday afternoon several weeks ago, we experienced our first thunderstorm of the season. While this meteorological event may seem to be of little significance to the operation of Multics, I don't believe it was coincidental that the Network Control Program crashed twice during the thunderstorm, each time after a particularly loud clap of thunder. These occurrences led me to think about the grounding of the ABSI, and the ABSI-to-IMP cable, in the Building 39 third floor machine room.

As you may know from BBN Report 1822, the entire Distant Host Interface circuit in the IMP operates at a ground potential supplied by the host computer's IMP interface on the shield of the Distant Host Interface cable. The purpose of this ground reference, and the differential transmission scheme used on the cable, is to provide greater immunity to noise which may be picked up on the long cable, and greater immunity to differences in the ground potential at the host and at the IMP. The success of this scheme depends upon the shield of the cable being tied to a solid ground at the host computer end.

If my recollection of the method of grounding of the cable shield at the ABSI end is correct, we are not presently providing a good, solid ground. When the 316 IMP was located in the machine room, the cable interconnecting the ABSI and the IMP was equipped with a large ground strap at the ABSI end. This ground strap was screwed to the connector mounting plate, thus providing a good ground. The mounting plate, and the ABSI, were located in the Datanet 355, which was securely grounded to the computer system ground bus. The cable which presently connects the ABSI to the long distance underground cable to Tech Square is grounded only by a single connector pin. The corresponding pin on the connector of the ESL-built ABSI is grounded, I believe, by a single-conductor wire tied to the connector mounting plate. I also believe that the entire ABSI chassis is grounded only by the ground wire of the ABSI power supply line cord. It is possible that the combination of the

poor cable grounding method, and the line cord grounding of the entire ABSI cabinet, could be causing us some problems which I believe should be corrected before the thunderstorm season is upon us in earnest.

I recommend that: (1) the ABSI cabinet be strapped to the computer system ground bus with a heavy ground strap, and (2) the connecting cable be replaced with one which has a good ground strap, or that the present cable be modified by the addition of a good ground strap.

I have no way of knowing, of course, if this will be the final solution to what appears to be a grounding problem, but I believe it's a good start. What's more, these simple modifications should be quite inexpensive, and the ESL people should be able to implement them with little trouble. If you have any questions, please call me at extension 3-6012.

xc: D. Clark  
J. Saltzer ✓

KTP/gn