To: X3T9.2 Committee (SCSI)  
Mar. 6, 1987

From: Gerry Houlder  
MP1/CDC

Subject: Clarification of Invalid LUN Reporting

The recent discussions held at various working group sessions about invalid LUN reporting were mostly about how to piece together the various places that addressed invalid LUN's. I think it would be better to bring all of this together in one spot, where a reader can see all of the nuances of handling an invalid LUN at one time.

A logical place to do this is section 6.2.2 which describes the Logical Unit Number. I would like to propose that the following paragraphs be added to that section:

"A valid LUN is any LUN that can be supported by the target. A valid LUN that is not currently connected will report a NOT READY sense key for REQUEST SENSE command and a Peripheral Device Type other than logical unit not present (7Fh) for the INQUIRY command. An invalid LUN is one that cannot be supported by the target. An invalid LUN will result in logical unit not present (7Fh) Peripheral Device Type for the INQUIRY command and an ILLEGAL REQUEST sense key with an INVALID LUN error code for the REQUEST SENSE command.

When a target receives an INQUIRY or REQUEST SENSE command with an invalid LUN, it shall respond as described in the preceding paragraph and end the command with GOOD status. When a target receives any other command with an invalid LUN, it shall request and accept the command bytes, end the command with CHECK CONDITION status, and set up the ILLEGAL REQUEST sense key and INVALID LUN error code for a subsequent REQUEST SENSE command."

Also, since part of the Logical Unit Number explanation is in the IDENTIFY message section, a reference from that section to section 6.2.2 would be appropriate.

To: X3T9.2 Committee (SCSI)  
Mar. 10, 1987

From: Gerry Houlder  
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Subject: Implementors Notes for Differential Cables and Drivers

In the course of testing the differential driver version of our product, we have noted noise problems associated with using regular (not with signal pairs twisted together) flat cable or using differential drivers that only drive the active state and just release the signal instead of driving to the inactive state. One example of this is described in document X3T9.2-87/26.

In view of the problems we have seen, I am proposing these implementors notes to strongly warn users that these conditions can swing out the normal noise margins and cause unacceptably high error rates.

Add to section 6.2.1.1 (which should be called 4.2.2 instead):

"IMPLEMENTORS NOTE: The use of twisted pair cable (either flat or discrete wire type) is strongly recommended. Even at slow data rates and very short distances, cross talk between adjacent signals cause spurious pulses with differential drivers."

In section 6.6.1, replace the last sentence (it starts "The advantage to actively drive signals false ...") with the following:

"The advantage of actively driving signals false is that the transition from true to false occurs more quickly and the noise margin is much higher than if the signal is simply released; this is required to reliably transfer data at maximum rates, especially at the longer cable lengths used with differential drivers."

As a related issue, the SCSI Standard doesn't specify what the maximum asynchronous and synchronous data transfer rates are. Everybody seems to know that 1.5 Mbyte/sec and 4.0 Mbyte/sec are the recommended maximum rates, however. Why shouldn't we say so somewhere in the standard? This will take on more importance now that we are discussing faster transfer rates and will probably change several parameters defined in section 4.7 in order to allow faster rates. How about adding a new sentence in section 4.7 as follows:

"The timing requirements described here are designed to allow asynchronous data transfers of 1.5 Mbyte/sec and synchronous data transfers of 4.0 Mbyte/sec at maximum cable length with excellent reliability."