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MIL-STD-1553 SEMINAR LAB SESSIONS

The Lab Sessions are an integral part of the Seminar and are designed to provide the students with a demonstration of 1553 communication and "hands-on experience" in trouble-shooting remote terminal problems. There are two one-hour Lab Sessions for each student. Lab stations are set up with two to four students at each station. Since the number of students in each Lab Session is limited, the instructor is able to provide personal assistance to the students.

In the first Lab Session, a bus scenario of six (6) non-broadcast messages is used to demonstrate 1553 communication and illustrate the material being taught in the Seminar. Using an oscilloscope, the individual command, status and data words of the messages can be viewed and the formats can be identified. The bits of command words can be decoded to identify the various fields of terminal address, transmit/receive bit, subaddress/mode, and data word count/mode code. Pulse widths, response times and intermessage gaps can be measured as specified by 1553. RT-RT transfers can be distinguished from BC-RT transfers. The order in which the command, status and data words are transferred and the number of each can be identified. Mode commands can be distinguished from other commands and their functions identified.

The "hands-on experience" in trouble-shooting remote terminal problems is provided in the second Lab Session by simulating various problems in ten remote terminals. By creating and sending messages to a remote terminal the problem with the remote terminal is identified. Using the oscilloscope in combination with 1553 test equipment, the student can gain valuable practice in trouble-shooting problems and applying the material taught in the seminar.

The greatest value of the Lab Sessions is the involvement of the student with the concepts being taught. Interaction is accomplished by providing the student with a view of what is actually transpiring on the bus. Using the oscilloscope, the student can move from words on paper to actually seeing how bits are encoded, how word formats differ and what a sequence of messages looks like. The student actually experiences the trouble-shooting process in identifying problems in remote terminals. Because a picture is worth a thousand words, the Lab Sessions will help the student gain greater understanding of MIL-STD-1553.