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C-141B Traffic Alert and Collision Avoidance System



DESCRIPTION

Traffic Alert and Collision Avoidance System (TCAS) presents a display of surrounding aircraft to the pilot. If necessary, provides an audible warning and maneuvering instructions to help the pilot avoid a mid air collision. The multi-function display (MFD) is part of the TCAS modification effort being integrated into the C-141B aircraft and C-141B flight simulator. The MFD provides a visual dis-

SUMMARY

PROBLEM:

- The Air Mobility Command expects the TCAS modification to the C-141B flight simulator to be completed concurrent with the modification of the aircraft. To meet this schedule, the flight simulator development has to be performed in parallel with the aircraft. Not completing the effort on time would cause a disruption in training and increase aircraft flight training hours to the customer. To reduce development time, the simulator contractor chose to use aircraft equipment in the flight simulator.

SOLUTION:

- The C-141 government simulator engineer worked with various engineering teams and management to isolate the problem. The investigation led them to a software integration problem between the MFD and the FSAS. The C-141 system program director was notified, who initiated action by the prime contractor and the MFD vendor to correct the problem for the aircraft. Early identification of this problem saved the aircraft at least a month on an already aggressive schedule. The fixes to both the aircraft and the simulator were completed in the beginning of the year 2000.

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play of the surrounding aircraft. In the C-141B TCAS effort, the MFD also displays Fuel Savings Advisory System (FSAS) data.

One of the war fighter's expectations is to field the flight simulator modifications before or at the same time as the aircraft. To meet this expectation, the aircraft and the flight simulator modifications needed to be designed and developed in parallel. In this particular case, to reduce schedule, the flight simulator is using the same display and integrating the same avionic equipment as the prime aircraft integrator.

During system integration, the simulator engineers discovered certain FSAS data could not be displayed on the MFD. The prime aircraft integrator was contacted and had not yet integrated the FSAS and the MFD and had not expected this type of problem. The engineer for the simulator contractor requested help from the govern-

ment simulator engineer. The government simulator engineer worked with the contractor to ensure the flight simulator was not generating the problem.

When the cause of the problem could not be determined, the C-141 System Program Director (SPD) was contacted to assist in setting up a forum for discussions with the aircraft prime contractor and vendors. During these discussions, the problem was determined to be a prime aircraft integrator issue. The prime integrator issued a change order to the subcontractor who is now working on a correction. This correction is to change logic in the MFD to work with all the modes of the FSAS computer.

The early identification of this problem is estimated to save at least a month on the aircraft schedule.

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