

Constellation Tailoring

With the Constellation Program ramping up efforts to support a 2009 ARES 1-X test flight, the tailoring of range safety requirements has begun. The program is required to meet the combined requirements of NPR 8715.5; *Range Safety Program*, and Air Force Space Command Manual (AFSPCMAN) 91-710; *Range Safety User Requirements*. To better support the program, the Air Force and NASA, through the Launch Constellation Range Safety Panel, have combined efforts and developed one document that includes the complete set of range safety requirements.

A draft version of the tailored ARES 1-X Range Safety Flight Test Vehicle Mission document is complete with final signatures expected in mid 2008. The new document codifies the philosophy of shared responsibility for all aspects of range safety between the Air Force and NASA and will serve as the foundation for future tailoring efforts between the two organizations. With few exceptions, the requirements contained in the tailored range safety document mirror the requirements of both the Air Force and NASA documents.

The Launch Constellation Range Safety Panel agreed to use some design characteristics of heritage flight termination systems that may not be in compliance with all AFSPCMAN 91-710 requirements, but meet the current flight termination system requirements of the Space Shuttle Program. In particular, the launch vehicle fails to incorporate redundancy in a few components, mainly the linear-shaped charge and safe and arm device.

The limited physical separation of other redundant components also deviates from the AFSPCMAN 91-710 requirements. The panel agreed to these deviations based on the many successful flights of similar flight termination configurations flown on Shuttle solid rocket boosters. Other minor flight termination system deviations that meet the Space Shuttle Program flight termination system requirements have been approved through the panel. A vast improvement over the Shuttle flight termination system design incorporates the addition of an aft segment linear-shaped charge, which should significantly lower public safety risk.

Development of a tailored document to support the ARES 1 launch vehicle (shown below) is also underway. Many of the FTS non-compliances with the AFSPCMAN 91-710/NPR 8715.5 baselines will be eliminated for ARES 1. It is anticipated this document will also incorporate the philosophy of shared range safety responsibility between the Air Force and NASA.

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