Appendix Q

AIRWORTHINESS QUALIFICATION REQUIREMENTS

Criticality Determination and Critical Characteristic Selection Criteria

DISTRIBUTION STATEMENT A. Approved for public release. Distribution is unlimited.
Criticality Determination and Critical Characteristic Selection Criteria

An item shall be determined CSI when failure of that item could result in loss or substantial damage to the aircraft or weapons system, or death or serious injury to personnel.

The foundation for criticality determination is based on a Failure Modes, Effects, and Criticality Analysis (FMECA). The Prime System Contractor or OEM shall be required to accomplish the FMECA during the design phase of weapons system development. The FMECA is used to incorporate design changes or outline maintenance requirements to minimize risk of a functional failure or mishap. If a FMECA has not been performed, as in the case of legacy platforms, then an informal analysis such as a Hazard Risk Assessment, hazard analysis performed in an Airworthiness Impact Statement (AWIS) or equivalent analysis may be performed and used for criticality determination. Criticality determinations are established by the Military Airworthiness Authority using JSSG-2001B as a guide. It is desired that the Prime Manufacturer provide recommendations for categorization but the final decision regarding the criticality determination lies with the service Military Airworthiness Authority. Criticality determinations for each aircraft consumable or repairable item shall be established by the prime Contractor beginning with the initial aircraft design, and must be updated throughout the design process.

These criticality determinations must be reviewed and approved by the cognizant service design control activity prior to initial supportability analysis to allow adequate support planning for CSIs.

Key Development Activities: - Include, but are not limited to, the following:

a. SRR/SFR: Analyses of preliminary designs and processes indicate that identification and management of CSIs is being considered at the aircraft level and is being flowed down to the subsystem and component levels

b. PDR: Preliminary failure modes effects and criticality analyses (FMECA) indicate that critical items are being identified, and that creation of a composite CSI list is being considered and manufacturing processes are being established to ensure proper emphasis on CSIs.

c. CDR: Inspection of the designer’s CSI lists by the cognizant Government basic design engineers confirms that the lists are accurate and all inclusive. Inspection of drawings and associated technical data confirm that critical safety items are clearly identified, along with critical and major characteristics, tolerances, critical processes and inspections, and other quality assurance requirements.

d. SVR: Analyses of the final design confirm that all CSIs have been identified. Inspections of CSI lists for the aircraft include components contained in lower-level
subsystems. Review confirms that CSIs have been identified and that this information is in a format suitable for use by the appropriate logistics support organizations/inventory control points.

e. Final Verification Criteria: The critical safety item identification requirement shall be satisfied when all aircraft CSIs, including all critical and major characteristics, have been identified as confirmed by the cognizant Government basic design engineers and all applicable data has been delivered as verified by the appropriate logistics support organizations/inventory control points. Final verification shall be conducted prior to Full Rate Production (FRP) Note: In legacy aircraft programs, criticality determinations have generally resulted in less than adequate identification of critical safety items during initial provisioning. As a result, when critical safety items have been transitioned to alternate sources other than the prime manufacturer or OEM (as required by DoD competition requirements), the identification of an item as critical, or the delineation of the exact characteristics that constitute that criticality, has often been obscured, resulting in procurement of critical safety items from alternate sources without proper consideration for those manufacturing processes or materials required to ensure an acceptable item.