

FINAL REPORT: FAA/Boeing Joint 787-8 Review

Summary

- The FAA and Boeing have completed a comprehensive review of the 787's critical systems. This joint review included an examination of the processes for the design, certification and production of the 787-8.
- The review's findings validate the integrity of the airplane's design and confirm the strength of the processes used to identify and correct issues that emerged before and after the airplane's certification. The review also found that the 787 meets the intended high level of safety expected by the FAA and Boeing. The report from the joint review shows that start-up issues with the 787 were identified and addressed promptly to ensure that delivered airplanes met all regulatory requirements. Boeing has already taken significant steps to implement the report's recommendations.
- Boeing supports the findings and continues to work cooperatively with the FAA to ensure ongoing improvement and continuous compliance of the 787 to all regulations.

Review and Report

Q: *What was the purpose of this review?*

A: Launched in January 2013 after an in-service issue with the 787 battery, the review was a comprehensive examination of the airplane's critical systems including an examination of the processes for the design, certification and production of the 787-8 and validation that the airplane meets expected levels of safety.

Q: *How many people at Boeing were involved in the review?*

A: A small number of highly qualified employees were involved on a nearly full-time basis during the six-month duration; others were brought in as needed through the process, with around 100 people in total providing input.

Q: *Who from Boeing participated in the review?*

A: While there were some 787 veterans on the Boeing team participating in the review, we purposefully selected long-time Boeing experts who had not been directly involved in the program to fill most of the Boeing positions on the team.

Findings

Q: *What are the report's findings for Boeing?*

A: A more detailed explanation of the findings is available in the report but in summary the following can be said: four recommendations were identified for Boeing: 1) establish a means to ensure suppliers identify realistic program risks and complementary mitigation plans through a closed-loop flow down validation of requirements; 2) continue to implement and mature the gated design and production processes with sufficient resources for development programs, and to minimize risks throughout the life cycle of the program; 3) ensure suppliers are fully aware of their responsibilities, including integration responsibilities and accountability for sub-tier

performance; 4) require suppliers to follow industry standards for the training, qualification and certification of supplier personnel performing Boeing-required inspections.

Q: *What has Boeing done to establish a means to ensure suppliers identify realistic program risks and complementary mitigation plans through a closed-loop flow down validation of requirements?*

A: This refers primarily to work done during the development phase of a program. Boeing made adjustments to how it works with suppliers in identifying risks and mitigation plans and has implemented these improvements on today's development programs.

Q: *Has Boeing continued to implement and mature the gated design and production processes with sufficient resources for development programs, and to minimize risks throughout the life cycle of programs?*

A: Yes. In fact, we have reorganized our development programs into a single organization – Airplane Development – with the express purpose of ensuring that the gated process is applied in a more disciplined fashion and that it is matured and improved on an ongoing basis.

Q: *How are you ensuring that suppliers are fully aware of their responsibilities, including integration responsibilities and accountability for sub-tier performance?*

A: Because of what we learned during the development of the 787-8, Boeing has increased its presence with suppliers and with sub-tiers with a clear focus on ensuring a consistent flow of requirements, responsibilities and accountability across the supply chain for all of its airplane programs. This process continues to improve and mature.

Q: *Do you now require suppliers to follow industry standards for the training, qualification and certification of supplier personnel performing Boeing-required inspections?*

A: Yes we do require suppliers to follow industry standards for the training, qualification and certification of their personnel performing Boeing-required inspections. We continue to work with them to ensure they understand and apply the industry standards.

Q: *What are the industry standards for the training, qualification and certification of personnel?*

A: Industry standards vary based on the nature of the work. We team with our partners and consult with the FAA to ensure we have a common understanding of which industry standards apply and to ensure we continue to evolve our understanding as the standards themselves continue to evolve. This is an ongoing process, not a one-time event.

Q: *Are you making any changes as a result of the report?*

A: The specific issues are already being addressed by changes implement on the 787 program. As a result of this report and other activities, the FAA and Boeing have redoubled our efforts to ensure deeper and better understanding between our two organizations, re-implementing an ongoing series of meetings designed to ensure a spirit of cooperation and mutual trust among our senior-level leaders.

Q: *Should the flying public be concerned with the level of safety of 787s built early in the program?*

A: The report's conclusion states, "The 787 meets its intended level of safety." The safety of those who fly on our airplanes is our top priority. There were no systemic issues identified in the report. The concerns found focus on ensuring better stability and sharing of information. It appears that the lack of these attributes early in the program resulted in the need for rework and slowed progress, but all delivered airplanes have met regulatory requirements.