

“Good Light-off”-Airstart Testing in the F-35B

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Airstart testing in single engine aircraft has always been high risk flight test. Today, engines have become more reliable and computers in the form of Full Authority Digital Engine Controls (FADECs) play a large role ensuring safety during this testing. With these added safety features, the test team can focus more on efficiency and effectiveness while maintaining safety as the number one priority. During F-35B air-start test planning, many procedures aimed at ensuring safety were implemented. These procedures included specific control room communication, Hardware-In-The-Loop (HITL) test team training, set-up conditions designed to ensure optimal flameout approach profile in the event of a no-relight, and even the location of testing itself, Edwards Air Force Base, was chosen with safety in mind. Other procedures, however, were used to optimize efficiency and effectiveness of testing, especially since this testing is to be performed on a detachment. The aim is to keep the costs of the detachment as low as possible by increasing test efficiency and making the detachment as short as possible while safely completing all testing. Test efficiency will be maximized by taking maximum credit for testing performed on the F-35A and ensuring only the minimum number of airstarts, at the appropriate conditions, are completed to proceed with the test program. Efficiency is being enhanced by extensively using the F-35 simulator, not only to practice flight test techniques and test team coordination, but as a more effective training tool for performing flameout approaches than the F-35, since the aircraft does not provide a representative profile for simulated flameout approaches. This paper highlights these test team procedures specifically designed to increase effectiveness and efficiency without compromising safety throughout this high risk testing.

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