



left: A gaggle of F-117As taxis at Holloman during the 30-aircraft launch phase of the 'Silver Stealth' celebration on October 27, 2006. (Richard Cooper)

developed and tested by Det 1 works with a PCMCIA type of card, basically similar to a modem card. These cards are pocket-sized, highly reliable and come with sufficient memory. Pilots can always carry a spare, minimizing mission delays or aborts in case of data transfer problems.

This was a clear example of the Combined DT and OT effort — the unit has been part of the entire development and test cycle, joining up with the contractors and the development test team, concluding the program with a fielding recommendation to the operational fleet. However, as the 'Dragon' has been retired in the meantime, it remains the only aircraft in the operational fleet that had this new ETDS built-in. Although Det 1 released its recommendation to field it in August 2006, only a handful of 8th and 9th FS F-117s will receive the upgrade when they go through depot maintenance at Palmdale, as funding is limited.

Over the past three years, Detachment 1 also tested and released two Operational Flight Programs (OFFs), with Force Development Evaluation of F-117 OFF-86 running from July 19, 2004 until July 13, 2005. When that was completed and fielded, the Dragon Test Team immediately started testing the new software release under the F-117 OFF-87 Combined DT/OT/FDE effort.

Almost certain to be the last software upgrade for the F-117, OFF-87 mainly integrates the JDAM and WCMD weapons capability on the F-117. After OFF-86 was fielded, only specially-produced laser-guided bombs like the GBU-27 or hybrid EGBU-27s could be dropped from the Nighthawk. As a good number of the latter were expended during different conflicts and they have a significantly higher price tag than the off-the-shelf GPS and INS-guided bombs, the Stealth community was sure to start using smart bombs like JDAM and WCMD. Also, during Operation 'Allied Force', the need for smart weapons on the F-117 was highlighted as over 50 per cent of F-117 sorties had to be cancelled due to unfavorable weather for laser-guided bombs. Adding JDAM to the F-117's arsenal was to resolve all this by expanding the F-117's adverse weather, accurate weapons employment capability and permitting attacks against certain target sets without visual acquisition.

Although the integration of smart weapons was already part of OFF-86, it was not certified until OFF-87. When the initial release for OFF-87 in combination with JDAM on the F-117A was issued by Lockheed Martin at Palmdale, a significant amount of operational testing had to be done before it could be released to the front-line units. This was not about testing the weapon itself, but testing the aircraft as a platform employing the new weapon to make sure any software, aerodynamic or configuration problems were ironed out.

The initial OFF-87 upgrade tests were done dropping existing weapons (like GBU-27) to make sure no conflicts arose with the normal weaponry and to compare the results with the known parameters. Trials continued with asymmetrical (mixed) weapon loads of a single inert JDAM and a 'legacy' weapon, followed by the full-up tests with two inert JDAMs. As with the Raptor, the bombs are in the closed bomb bay. Their precise navigational co-ordinates are fed into the weapons up to the moment of opening the doors and their release. Within a few seconds, the antenna on the bomb needs to find the satellites for orientation and guidance to the target.

Different types of tests were done, from putting the aircraft and its weapons to their limits in terms of speed and altitude to flying missions testing the upgrade under similar conditions as the warfighter would experience. During these, no instrumented or live JDAMs were dropped as the test team at Palmdale had already done this. The bombs Det 1 has used are so-called separation test vehicles (STV), used

purely to test the separation characteristics of the weapon. Once the weapon clears the aircraft in accordance with the specifications, it is considered a successful test.

Obviously, the use of JDAM will open new possibilities for the F-117, as previously pilots would only squeeze the trigger at the optimum release point and had to maintain the laser fix until impact. With JDAM, the pilot can release the weapon the moment the aircraft reaches the release point within the Launch Acceptable Region (LAR), with the GPS then guiding the bomb to the target.

During FY05, testing continued on the F-117 Time Sensitive Targeting TD&E test plan, carried over from the previous year. Also initiated during 2005 was a series of trials involving the Night Visual Imaging System (NVIS), with operational testing starting in September 2005. Although the Head-Up Display (HUD) was already NVG-compatible, many of the cockpit lights were not, and were thus given different covers with different filters to make them compatible.

The Dragon Test Team also supported GPS jamming tests by the 586th FLTS as part of a program called 'Gypsy Echo'. In another test organized by AFRL, the unit participated in testing commercially-available ground-based laser systems that could potentially defeat the aircraft's weapon systems like targeting pods or night vision equipment.

Based on earlier results and the fact that lighter gray can sometimes create unwanted reflections in the sky, the unit wanted to experiment with a darker livery. To this end, the test F-117 received a new single-tone gray scheme in January 2006. This was of the same composition like any other operational Nighthawk, albeit with an F-15E Strike Eagle pigment.

This was also done in preparation for the F-117 Advanced Threat Defeat — TD&E program, in which follow-on testing was scheduled to further explore the gray scheme and to continue developing the

