



regularly practice these 'captives'. The briefing covers the flow of the mission and working area-specific manoeuvres.

"For this type of mission a pilot will be on board, being the safety pilot. He will perform all the normal ground checks through taxi-out. The aircraft is then taxied to surveyed spots on the dedicated runway for drones at Holloman, runway 22. First the ground crews perform their last-chance checks, after which the controllers perform their system checks.

"To perform these system checks, the simulated drone is engaged with the WSMR Drone Formation Control System (DFCS). Det 1 is basically a unit on its own, not only with all its own facilities, but moreover as it has its own type of missions. In fact, the control systems of the aircraft are different. At Tyndall they use the Gulf Range Drone Control System (GRDCS) while at Holloman they use Drone Formation Control System (DFCS).

"The latter is run by the Army. BAE does not make two different modifications, but the modifications are such that different ground

software can be used and, as Det 1 is using the WSMR army range, the army software is used so that the aircraft is linked into the army telemetry systems".

Pre-takeoff checks

Jeff Ault continues: "The controller assigns the drone to a runway reference point before the test is activated. With the aircraft positioned on the right point, the controller performs an automatic calibration of the barometric altimeter in conjunction with the auto-wiggle [wiggle is derived from the movement of the flight control surfaces].

The QF-4 auto-wiggle test is a series of automatic tests designed to check the drone's responses to specific commands. There are 46 sets of tests used in the auto-wiggle, including 25 using the primary autopilot and 21 using the back-up autopilot systems. If a particular test fails, it is flagged on the display screen and the remainder of the tests are processed. Multiple drones can be tested at the same time and each drone is tested independently.

A pair of Phantoms flies over snow near the White Sands Missile Range. Few F-4 sorties are flown in NULLO unmanned mode – even those involving full remote control very often have a pilot aboard for safety reasons. Generally, NULLO flights are used only for live missile tests.

"Once the tests are completed, the controller initiates the Automatic Take Off (ATO), using the automatic flight control system (AFCS) to take the drone to the airspace located over the adjacent White Sands Missile Range. During these type of missions the pilot is merely a passenger providing feedback from the cockpit on the handling of the aircraft, and can disengage the controls from the computer in case of uplink or downlink communication problems or in case of an emergency. But under normal circumstances, either the DFCS computer will

A Phantom pops the brake chute on landing back at Holloman. Recovering the drone is usually accomplished using an autoland system or by the onboard safety pilot. The 82nd has a remote landing site at Northrop Strip for recovering aircraft that are too badly damaged to land at Holloman.

