F-22 Endures 3-week, Cold-Weather Test at Eielson

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11/29/2007 - **EIELSON AIR FORCE BASE, Alaska (AFPN)** -- An F-22 Raptor came here for three weeks in November to test the aircraft's braking system on ice in time for the first snow at Elmendorf Air Force Base, Alaska, home to several F-22s since August.

An F-22 Raptor flies above Alaska as it arrives Nov. 5 to Eielson Air Force Base, Alaska. The F-22 underwent cold-weather testing on its braking system, with emphasis on its ability to maneuver, stop and go on slippery surfaces. The aircraft was tested by the 411th Flight Test Squadron during a three-week deployment on incrementally low-level runway condition reading surfaces, with temperatures ranging between 37 to -13 degrees. The F-22 is from Edwards AFB, Calif. (U.S. Air Force photo/Kevin Roberston)

"We were validating the F-22 braking system's stability and performance as well as evaluating cold-weather operations and maintenance procedures," said Maj. Jack Fischer, the 411th Flight Test Squadron deployment commander and an F-22 test pilot.

"We were testing the Raptor's behavior while maneuvering and stopping on slippery surfaces," he said. "Whether during a snow storm or ice fog, we have to be able to land on poor surfaces. Stopping on problem-surfaces is a challenge for every Air Force jet."

The F-22, from Edwards AFB, Calif., has already undergone extensive hot and cold weather testing at the Air Force McKinley Climatic Lab at Eglin AFB, Fla. The major said the aircraft was subjected to incredible environmental conditions; however, they could not test the braking system there.

The aircraft was tested on incrementally low-level runway condition reading surfaces, or how contaminated the runway is and how much concrete you will need to stop the aircraft, in temperatures ranging between 37 to 13 degrees below zero, said Richard Backs, a 411th FLTS project manager.

The team needed the temperature to be cold enough to freeze water in order to create a test surface.

"We started with basic ground maneuvering on an icy surface and progressed to high-speed braking tests and eventually, both real and aborted, take-off and landings under low RCR conditions," he said.

The F-22's anti-skid system is only used in the F-22. No other planes have this kind of system, Major Fischer said.

An F-22 Raptor performs manuevering, stopping and going on low runway conditions Nov. 7 at Eielson Air Force Base, Alaska. The F-22 underwent cold-weather testing on its braking system, with emphasis on its ability to maneuver, stop and go on slippery surfaces. The aircraft was tested by the 411th Flight Test Squadron during a three-week deployment on incrementally low-level runway condition reading surfaces, with temperatures ranging between 37 to -13 degrees. The F-22 is from Edwards AFB, Calif. (U.S. Air Force photo/Kevin Roberston)

An F-22 Raptor performs 60-knot testing on low runway conditions Nov. 8 at Eielson Air Force Base, Alaska. The F-22 underwent cold-weather testing on its braking system, with emphasis on its ability to maneuver, stop and go on slippery surfaces. The aircraft was tested by the 411th Flight Test Squadron during a three-week deployment on incrementally low-level runway condition reading surfaces, with temperatures ranging between 37 to -13 degrees. The F-22 is from Edwards AFB, Calif. (U.S. Air Force photo/Kevin Roberston)

"It's like an anti-lock brake system in your car, but on steroids," he said. "In addition to looking at wheel slip (like in your car) this system also accounts for deceleration through its navigation system, and allows the aircraft to safely and reliably stop on any surface that it may encounter."

The F-22 came up for a three-week deployment; however, the team was able to finish all mandatory test points within the first five days. They were able to use the rest of their time to fine tune and to collect as much data as possible.

"The F-22 demonstrated incredible brake-system stability on low-friction surfaces," the major said. "Mother Nature also helped out by giving us the necessary weather conditions during the majority of our test window. Testing is about finding strengths, weaknesses and limits. The team learned plenty.

"We obtained information that will enable us to update the aircraft's flight manuals to enhance the safety of the operators in the field," Mr. Backs said.

The data will also contribute to other important factors.

"We were also able to develop F-22 cold weather pilot and maintenance techniques and procedures, as well as gather enough data to update the takeoff and landing distance charts in the F-22 publications," Major Fischer said.

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