



## Global Hawk Wet Runway Testing Yields Positive Results

EDWARDS AIR FORCE BASE, CA -- At the crack of dawn, a force of Airmen, civilians and contractors work in choreographed precision to conduct a test which will only last one minute. That's what it takes to conduct a wet runway test for the new RQ-4 Block 20 Global Hawk here.

The 452nd Flight Test Squadron has been conducting its Global Hawk wet runway testing with positive results throughout March. The Global Hawk recently taxied down the South Base 8,000-foot runway at 70 knots, coming smartly to a stop and thus completing the final speed requirement in the testing phase.

The wet runway test requires the Global Hawk to demonstrate taxiing and stopping from 6, 12, 30, 50 and 70 knots.

"This testing is for specification compliance, whether we can meet our targeted landing and distance goal on a wet runway," said Dave Tangren, 452 FLTS lead engineer for flight systems. "Because our plane has a completely new landing gear and brake system, we're looking closely at anti-skid and stopping performance."

The RQ-4 Block 20 Global Hawk has a new electrical braking system with a differential brake capability and anti-skid functions, making it the only remotely piloted aircraft with this brake design. Its predecessor, the RQ-4 Block 10 Global Hawk, utilizes a hydraulic brake system. The different braking system on this significantly larger Global Hawk version makes these tests crucial.

Civil engineers come out in the early morning darkness to sweep the runway for foreign object debris before the test starts. The runway is then watered down by contractors followed by firefighters who spray a diluted protein foam solution, which slows the water run-off and helps keep the runway slippery.

The water and foam solution are applied to the runway using a unique spray bar that has nozzels and is attached to a truck, specifically designed by engineers in the squadron. After the runway is wet down, a truck equipped with a runway-friction-measuring-system drives through the water to measure the runway condition reading. The RCR needs to be between 13 and 17 indicating that the runway is indeed wet and provides enough friction.

"Basically a 21 or above is dry, a 13 to 17 is wet, and 12 and below is icy," said Jan Rehacek, 452 FLTS subsystems engineer. "This method quantifies how slippery the runway is."

Once it is determined the runway is ready and personnel are clear, the "go" command is sent and the Global Hawk begins its taxi down the runway. The aircraft is followed by the Hawkeye truck which serves as the eyes and ears of the test. The Global Hawk must begin its taxi and acceleration within approximately 30 seconds after getting the green light.

"All of this is timed with only minutes and seconds apart," said Thomas Stiles, 452nd FLTS project manager. "If the time delay is too great then the RCR will go up, and water will diminish across the runway, so timing is critical."

The wet runway test takes an enormous amount of coordination and setup. Along with CE and firefighters, there are engineers, controllers from Ridley Mission Control Center, contractors and Airmen.

"The choreography is phenomenal," said Mr. Stiles. "It's not like an airplane taking off on a mission because there is so much more ground activity involved and the choreography is critical. Everybody is an intricate part of the testing, a total team effort."

The 452 FLTS is scheduled to wrap up the wet runway testing this April. The successful completion of wet runway testing



**A RQ-4 Block 20 Global Hawk completes a wet runway test March 2. 452<sup>nd</sup> Flight Test Squadron will likely wrap up its Block 20 wet runway testing at the beginning of April. (Courtesy photo-AFMC)**



marks some of the final testing requirements in the overall RQ-4 Block 20 Global Hawk testing prior to the initial operational test and evaluation.

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