
MIKE GOETTINGS PHOTO


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Left: **PVD-01 Crew Chief Bob Pierce checks out the rotor system on heavily instrumented PVD-01, the first Apache Longbow off the production line and a veteran of the company's ongoing Longbow flight-test program.**

Right: **Pilots Mark Metzger (top) and Roger Hehr fly the "Queen" during tests with extended-range fuel tanks.**

Graced by royalty

Meet PVD-01, 'queen' of flight testing for the Apache program

By Hal Klopper and Lisa Dunbar

She's a high roller who knows her limits but goes beyond them. She's heavy—more than 23,000 pounds—but not too concerned. She doesn't bathe, but that's her business.

She's Apache Longbow, U.S. Army Serial Number 96-5001, better known as "PVD-01"—the queen of flight testing. To date, she's flown more than 800 hours to validate modifications and experimental designs for the Apache Longbow program.

When Boeing began using the Apache to perform air show aerobatics, guess who performed the first loops and rolls to establish the flight envelope for the demonstrations? When new survivability equipment was added to the aircraft recently, this No. 1 performer got the call to test it. And, whenever the lifespan of an Apache component needs to be validated, PVD-01 is there.

"Technologies, weapons and tactics are constantly evolving," and that results in upgrades and changes to the Apache, said Senior Flight Test Engineer Joe Flint. "We use the PVD-01 aircraft to validate the improvements and determine any detrimental effects."

Case in point: The aircraft recently was equipped with snow skis that allow it to land in soft, deep snow but may take away from its capability to carry extra ordnance. The added drag also could affect its combat radius or high-speed maneuverability.

PVD-01 has more than 600 data checkpoints wired to her fuselage to capture test data as well as monitor and record thousands of messages or parameters passed around its four electronic data buses. That's why the queen appears a little disheveled. Her heavily instrumented fuselage can't be washed.

These days, PVD-01 is helping the Boeing team in Mesa, Ariz., home of the Apache, find a new center of gravity for the eight-ton helicopter. It's her 540th experimental assignment since her 1997 delivery.

"By adding new equipment and sensors to the aircraft, we effectively change the aircraft's sense of balance or center of gravity," said Mark Metzger, Rotorcraft's chief pilot. "The designers have to put everything in the right place. Our job is to evaluate the flight performance. She needs to fly as well after the changes as before."

The Apache Longbow typically weighs around 17,650 pounds, depending on fuel load. Fully combat-ready, it can weigh around 19,200 pounds. But for validation testing, PVD-01 has been lifting off at 23,000 pounds, the heaviest it's ever flown.

"The end result of successfully flying at this weight," Metzger said, "is confirmation the aircraft is safe to fly at all design weights and stress limits." ■

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