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STEALTH REBORN

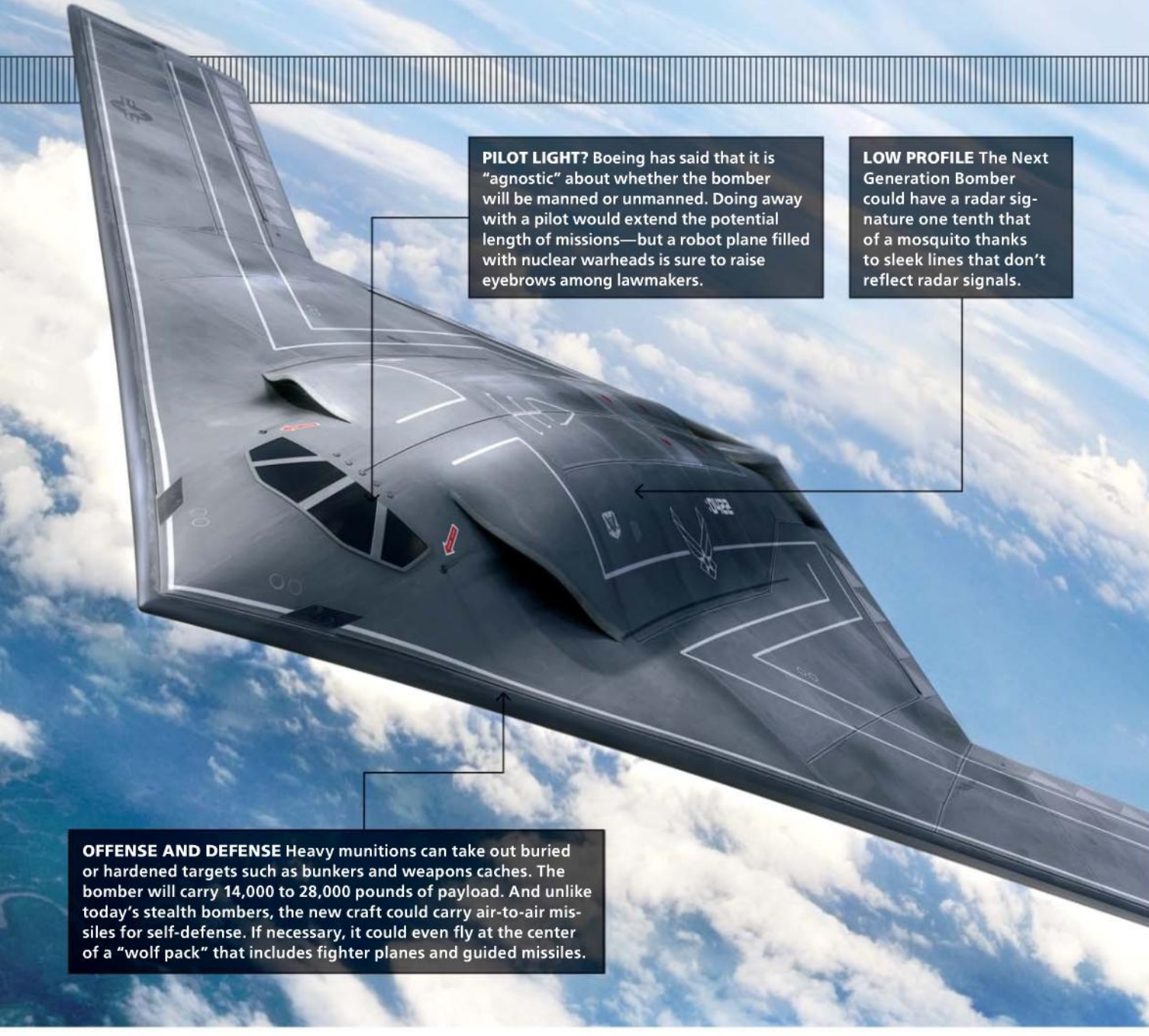
BOMB SQUAD A Boeing–Lockheed Martin coalition is competing with Northrop Grumman to build the Next Generation Bomber, a mid-range stealth aircraft set to arrive in 2018. Northrop's concept, seen here, has a kite-like shape similar to the company's X-47B Navy attack drone.

THE AIR FORCE WANTS A NEW BOMBER EQUIPPED WITH 21ST-CENTURY TECHNOLOGY. THAT COULD MEAN STEALTHIER SURFACE MATERIALS AND LASER WEAPONS—AND IT MIGHT EVEN SKIP THE PILOT

BY DAWN STOVER ILLUSTRATIONS BY NICK KALOTERAKIS

The B-2 stealth bomber, assisted by midair refuelings, can fly a 44-hour mission to the other side of the world, take out targets using laser-guided smart munitions, then sneak out of enemy territory undetected. Yet it runs on Intel 286 processors—state of the art in 1982, but these days, not so much.

Yes, the Air Force's stealth-bomber fleet is aging. By 2037, the Air Force plans to build a large, supersonic stealth bomber that can relieve the B-2 of duty. In the meantime, though, the military needs a stopgap, which is why it wants to build about 100 aircraft like the one you see here: the Next Generation Bomber, set to arrive in 2018. ▶



Boeing and Lockheed are currently working together on a design for the bomber, in competition with Northrop Grumman. The Air Force won't announce the full list of final specifications for the new plane until later this year, but the basics are clear. This should be a subsonic craft capable of flying up to 2,000 miles before refueling from an airborne tanker, while carrying between 14,000 and 28,000 pounds of ordnance, possibly including nuclear weapons.

The bomber will use the same bat-wing shape of a B-2, which means no tail to reflect radar signals, and improvements in two key areas—surface design and surface coating—could give the new bomber a radar signature as small as one tenth that of a mosquito. (Today's stealth bombers are believed to appear on radar screens as being about the size of a small bird.) Advanced computer modeling will make it possible to design shapes (sure to be kept classified) that can disappear even more effectively from radar screens. Then there's the plane's surface. The B-2 uses a rubbery skin that contains tiny beads coated with ferrite; radar waves induce a magnetic field in the coating that converts the radio energy to heat. The problem is, this coating is fragile and easily damaged by bad weather. The Next Generation Bomber will have a radar-absorbent coating that can withstand rough flight conditions.

The new craft could also have a major defensive advantage over today's bombers—fighter-jet capabilities drawn from the F-22 Raptor. Air-to-air missiles would defend the bomber from attacking aircraft. Possible onboard microwaves or laser weapons could destroy incoming missiles or radar stations on the ground. For particularly dangerous missions in which stealth is less of a concern, the bomber could fly at the center of a protective "wolf pack"; this group of fighter jets, drones and guided missiles will travel in formation around the bomber, organizing automatically by sending signals to one another using radar and satellites.

The most intriguing possibility of all, though, is the persistent rumor that the Next Generation Bomber is actually cover

BOEING'S BOMBER Preliminary designs for the Boeing-Lockheed bomber show a large center section, long, slender wings, and slit-like air inlets for the engines. The plane's belly is deep enough for a large weapons bay.

TODAY'S BOMBER FLEET

The Air Force's current bomber fleet consists of the three planes shown here—the B-52, B-1B and B-2. More than half are aging B-52s, some as old as 50. All three have a greater range and payload than is planned for the 2018 bomber, but the new bomber is expected to be stealthier and more combat-capable.

The B-52 is the old workhorse of the U.S. bomber fleet, with an average age of more than 45 years. It can carry a wider range of weapons, and loiter longer without refueling, than any other bomber. The B-52 has more than four times the range of the 2018 bomber.

The supersonic B-1B was designed as a low-altitude, high-speed bomber. Its speed makes it less vulnerable to attack than the comparatively clunky B-52, but it's not as stealthy as the B-2. The B-1B flies faster than the 2018 bomber and carries only non-nuclear weapons.

The B-2, which can carry nuclear or conventional weapons, is today's only stealth bomber. The 2018 bomber will be akin to a mini B-2: smaller, stealthier, and equipped with newer computers and communications systems that make it easier to change missions on the fly.

for a secret "black" program to develop an unmanned nuclear-capable bomber. Last spring, *Aviation Week* laid out the case: Funding for the Next Generation Bomber is nowhere to be found in the most recent Air Force budget, yet financial results released by Northrop last April show $2 billion in new "classified programs" at the company's aircraft division. Northrop, which built the B-2, more recently won the contract to build the X-47B, a Navy demonstrator drone that will fly later this year. Because the company had previously proposed building a bigger version of the X-47, many experts believe that the black bomber rumored to be under development at Northrop is an unmanned aircraft derived from both the X-47 and the B-2—like, say, an unmanned variation on the Next Generation Bomber. For Boeing's part, its president of advanced systems, Darryl Davis, told the *Seattle Times* last January that his company was "agnostic" about whether the plane would be manned or unmanned.

Why would the Air Force prefer to skip the pilot? Simple: An unmanned craft would be smaller, cheaper, and have almost unlimited endurance. "Without a pilot, you can remain over the target area for days at a time," says John Pike, director of the Virginia-based think tank GlobalSecurity.org. "You've always got air power on call." Pike says the Air Force "got religion" about unmanned planes in Iraq, where more than 1,000 smaller drones have been successfully used for reconnaissance and air strikes. This year marks the first time in history that the Air Force will buy more unmanned planes than manned ones.

That said, it's one thing to have a small unmanned plane carry conventional bombs and missiles but quite another to load up a robot plane with 28,000 pounds of nuclear weapons. As a recent congressional report put it, a nuclear-equipped robot bomber is likely to be controversial at best. If this is what the Air Force has in mind, no wonder it's keeping it a secret.

Dawn Stover is Popular Science*'s editor-at-large.*

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