

A formation of four Thunderbolt fighter jets flying over a mountain range. The jets are white with blue and red stripes on the wings and tail. The background is a clear blue sky with a mountain range in the distance.

Thunderbirds

By John A. Tirpak, Editorial Director

Meet the Air Force's highest-profile ambassadors and recruiting tools.



As the narrator announces, “Ladies and gentlemen, *your* United States Air Force Thunderbirds!” the crowd scans the sky, searching the horizon left and right for the polished red, white, and blue F-16s. Suddenly, the entire flight line shudders as the six jets boom overhead, surprising the audience by zooming in from behind. Startled but grinning, the crowd whoops and cheers. The show is on.

At about 40 venues a year—nearly every weekend from March to November—the Air Force’s Thunderbirds aerial demonstration team shows off what high-performance fighters can really do in the hands of skilled aviators. After a ground show of about 20

minutes, in which the trim, blue-suited pilots march to their jets, salute their crew chiefs, strap in, and taxi off, the team treats air show attendees to a 40-minute program of solo high- and low-speed passes, seemingly suicidal games of aerial chicken, snap rolls, and inverted flight, interspersed with graceful formation maneuvers and turns in such tight, precise proximity the jets seem welded together. It all comes to a climax with the Bomb Burst, as all the jets fly toward show center, pull into a steep climb, spin, trail smoke, and finally separate to roar off toward all compass points. So dramatic and well-known is the maneuver that it inspired the design of the Air Force Memorial, just outside Washington, D.C.



USAF photo by TSgt. Manuel J. Martinez

USAF photo by SrA. Jason Couillard



Counterclockwise from left: The two solos peel off from the Delta formation at Daytona Beach, Fla., in 2014. / The Line Break Loop maneuver. In the “clean” configuration, the F-16C is one of the most agile jets in the Air Force. / SSgt. Stephen Leonardi, a crew chief, makes a postflight check on No. 3 in 2011 at RAF Waddington, UK. / Maj. Jason Curtis, then No. 5, signs a Thunderbirds toy for a fan at Dyess AFB, Texas, in 2015. / Maj. Curtis Dougherty chats with a future airman before a practice at JB Andrews, Md., in 2015.

Though much of the crowd will head for the exits after the finale, many will linger. After taxiing in, the pilots will usually walk over to what they call the “autograph line” to shake hands, pose for pictures, and chat up starstruck youngsters.

“I can’t tell you how many times people have said to me, ‘You [the Thunderbirds] are the reason I joined the Air Force,’” said team commander—and Thunderbird 1—Lt. Col. Christopher B. Hammond in an April interview. Though drawing a direct cause-and-effect relationship between USAF recruiting and Thunderbirds performances isn’t easy, Hammond observed, “The decision to join the Air Force doesn’t happen when you’re 18 years old.” Typically, the seeds of an Air Force career are planted at a young age, and often at a Thunderbirds show, he said.

Air Education and Training Command sees a definite link. An AETC spokeswoman said, “When Thunderbirds are present at air shows, registrants increase by 40.49 percent, and leads increase by 43.76 percent.” A “registrant” is someone close to enlistment age who signs in at an Air Force recruiting trailer to take in a short video about the service. A “lead” is someone who’s not only interested but qualified to enlist and whose name is referred to the recruiting service.

Most of the pilots he’s encountered got the bug to join by seeing the Thunderbirds put on their dramatic performance, Hammond said. US Air Forces in Europe commander Gen. Frank Gorenc, in a recent talk with reporters

in Washington, D.C., volunteered that the Thunderbirds hooked him, too.

“The mission, the airplanes intrigued me,” Gorenc said. “When I was growing up, my dad used to drag [us] to the air shows, and I used to go watch the Thunderbirds. I grew up in the time [when the Thunderbirds flew] the F-4s. ... We were drawn to the Air Force by the public displays of the military and the people that represented the military.” Gorenc’s older brother, Stanley, then Gorenc himself—both immigrants—earned appointments to the Air Force Academy and became pilots and USAF general officers.

Gorenc added, “I’m an absolute beneficiary of the military being out there at air shows demonstrating to the American people exactly what we’re buying and the people who are operating [the equipment]. ... That inspired me.”

Hammond said the team’s mission is to show off “the precision, professionalism, and power of the Air Force.”

USAF photo by SSgt. Larry E. Reid Jr.



USAF photo by SFA. Rachel Maxwell



USAF photo by SFA. Rachel Maxwell



USAF photo by SrA. Daniel Hughes



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USAF photo by SSgt. Larry E. Reid Jr.



USAF photo by TSgt. Christopher Boltz



USAF photo by SSgt. Natasha Stannard

so taxpayers can get a glimpse of what they're getting for their military dollar, and yes, to encourage youth to want to join up.

To avoid disappointing fans, Hammond said the team has three shows ready to go, depending on the weather. The "high" show is the full program,

flown on days with sunny skies and high ceilings; "medium" is flown on gray days with lower ceilings and eliminates the high-altitude formation work; and "flat" is a basic series of passes that hug the airfield in marginal weather.

Opposite, top: The T-Birds in trail over Nellis AFB, Nev., at a 2012 open house. In some formations, the jets fly as close as 18 inches apart. **Opposite, bottom:** TSgt. Joseph Maestre leaps to check his Thunderbirds jet after a 2012 training sortie. **Clockwise from top:** SSgt. Tacota LeMuel, then T-Bird 7 crew chief, polishes her jet in Cleveland, 2011. Behind is an un-numbered two-seater, used as a spare or for crew or VIP orientation flights. / SSgt. Eduardo Sibaja, then assistant crew chief on No. 6, applies a new flag prior to a performance in Finland. Due to budget austerity, the team has not traveled overseas since the 2013 sequester. / A team member stands ready to start preflight checks at JB Langley-Eustis, Va., in April. / No. 8 checks controls before a media flight. **Below:** TSgt. Andrew Junker explains his job to high school students at Newport News (Va.) Aviation Academy in April.

Air shows are only a fraction of the team's activities, however. Aside from the performances themselves, there is extensive advance work for every venue. The team pays prearranged calls at elementary, middle, and high schools, vocational schools, hospitals, and churches. They meet with community organizations, Boy Scouts and Girl Scouts, ROTC and Junior ROTC cadets, and kids from Special Olympics. They also visit with airmen at the bases, both as a morale-builder and to recruit members to the team.

"I'd say 60 to 70 percent of our time is engagement with the public," Hammond observed. "The reception is always warm. Ever since Desert Storm [in 1991] our relationship with the public has been a good one."

One duty that Hammond said is particularly satisfying to him is that at just about every show, "I get to swear in a group of new airmen" or re-enlist oth-



USAF photo by SrA. Tabatha Zarrella



USAF photo by A/C Jamie Nicley



USAF photo by Dennis Rogers



USAF photo by TSgt. Christopher Boitz



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Historical Thunderbirds



USAF photo via National Museum of the US Air Force



USAF photo



USAF photo via National Museum of the US Air Force



USAF photo

Opposite, clockwise: Capt. Petrina Hanson signs autographs at a 2010 Nellis open house. Even non-pilot team members experience a Thunderbird flight so they can talk up the experience on the autograph line. / Nos. 5 and 6 perform the Calypso pass, one of several mirror-image maneuvers. Note the No. 5 painted so it appears right-side up when the jet is inverted. The No. 5 lead solo pilot also wears an upside-down No. 5 on his flight suit. / SSgt. Madeline Davis explains aircrew life support gear to the author prior to his media flight. T-Birds wear G suits and positive-pressure oxygen masks to overcome high G forces in flight. / Team flight surgeon, No. 9, Maj. Christopher Scheibler explains proper muscle-tensing and breathing techniques before a media flight. The techniques help pilots and aircrew avoid G-induced blackouts. / Two solo jets make a close crossover pass at the Air Force Academy in 2009.

ers. The team also recognizes “home-town heroes, ... firefighters, police, ... someone who’s made a difference in the community.”

Hammond said the demonstration team gives good value in making that connection between the public and the service, and “It’s not just the Air Force.” The Department of Defense, in the wake of the 2013 sequester, took a hard look at all the service demonstration teams, such as the Thunderbirds, the Navy’s Blue Angels, Army Golden Knights, etc.—“and they think we are all relevant and they revalidated the requirement to keep them operating,” he said.

The Air Force cancelled the 2013 season because of the sequester, and the team, based at Nellis AFB, Nev., did not even fly basic proficiency sorties until late that year. While grounded, team pilots visited local schools in the Las Vegas area, while enlisted members took up alternate duties, such as inspecting base housing.

The return to flying had to be done in a “building block approach,” adding more difficulty and more jets with each sortie. Eventually, team members were extended for a year so that the regular rhythm of training and performing could be restored.

The team numbers about 110 to 120 people, of which 90 are maintainers in dozens of specialties, 12 are officers, and the rest perform logistical and administrative functions, according to Maj. Scott Petz, who flies Thunderbird 8. A Reservist, he’s the advance pilot, the show narrator, and also flies VIPs and journalists in one of the team’s two-seat F-16Bs. Of the entire complement of the unit, about 60 deploy for a given performance, abetted by a C-17 or two C-130s to haul the support gear.

Pilots do a two-year tour with the team, and their tours are staggered so that half the pilots have a year’s seasoning in the aerial routines and can pass on what they’ve learned. To

be selected, they must have more than 1,000 fighter hours, have recommendations from prior commanders, and go through extensive interviews and evaluations. The Thunderbird commander then forwards his preferred short list of new hires to the head of Air Combat Command for final selection.

Enlisted Thunderbirds serve a three-year tour with the team, but they can extend to four. They, too, must be exceptionally proficient in their specialty to qualify and, as Hammond noted, “We all have to be comfortable talking to people.”

The enlisted members of the team get to fly in one of the two-seat F-16Bs at least once during their tour. SSgt. Madeline Davis, a life support specialist, said such flights are not for motivation but for essential knowledge.

“I have to know how this equipment is supposed to work up in the air,” she said, especially since she has to explain the equipment to VIPs who may have

Bottom left and bottom: The straight-wing F-84 was the first jet of the Thunderbirds. Through most of the team’s history, frontline Air Force fighters were the aircraft of choice. / From 1955-56, the swept-wing F-84F Thunderstreak was the team mount. / The F-100 served many years as the T-Bird jet; it was replaced for only six performances by the F-105B. An accident caused the team to go back to the F-100. / The F-4E was the first team jet to be painted white instead of bare metal. A special paint had to be developed for this purpose. / The energy crisis in 1973 caused the team to trade to the far more efficient T-38 Talon trainer. Though not a frontline fighter, everyone who saw a performance could be told that if they qualified and went to USAF flight school, they, too could fly the “white rocket.” The team switched to the F-16 in 1983.



USAF photo via National Museum of the US Air Force



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Opposite, top: The T-Birds perform a Diamond Loop over Gary, Ind., in 2015. Opposite, bottom: At the closer of the Amigo Air Show in Santa Teresa, N.M., in 2014, the team performs a finale Delta. This page, clockwise: The team casts a striking shadow on the Ocean City, N.J., boardwalk in 2012. / Maj. Alex Turner, No. 6, fist-bumps a Special Olympics competitor at Joint Base Langley-Eustis in April. / One of the two-seat F-16Bs powers up an orientation flight for the author. / Team commander Lt. Col. Christopher Hammond administers the Oath of Enlistment to new USAF recruits at Langley in April.

never flown in a combat aircraft before. She said enlisted members of the team work the autograph line and have to be able to talk about the Air Force and the flying Thunderbirds.

“We get asked, ‘What’s it like to fly one of these?’ And I’ll say, ‘Well, I’m not a pilot, but I’ve been up in one of these jets and it’s pretty cool.’ And I can talk about that experience.” The entire team receives media training once a year.

An email from Brig. Gen. Christopher M. Short, then commander of the 57th Wing at Nellis AFB, Nev.—the Thunderbirds’ parent unit—to fighter units around the Air Force went viral in March. Short exhorted fighter unit commanders to encourage more people to apply for the team, as applications were down and he wanted a greater “diversity of gender, ethnicity,” and aircraft-type backgrounds. Though there

have been women pilots on the team, the 2016 season is an all-male group. Short asked unit leaders to offer their insights as to why fewer top pilots were applying.

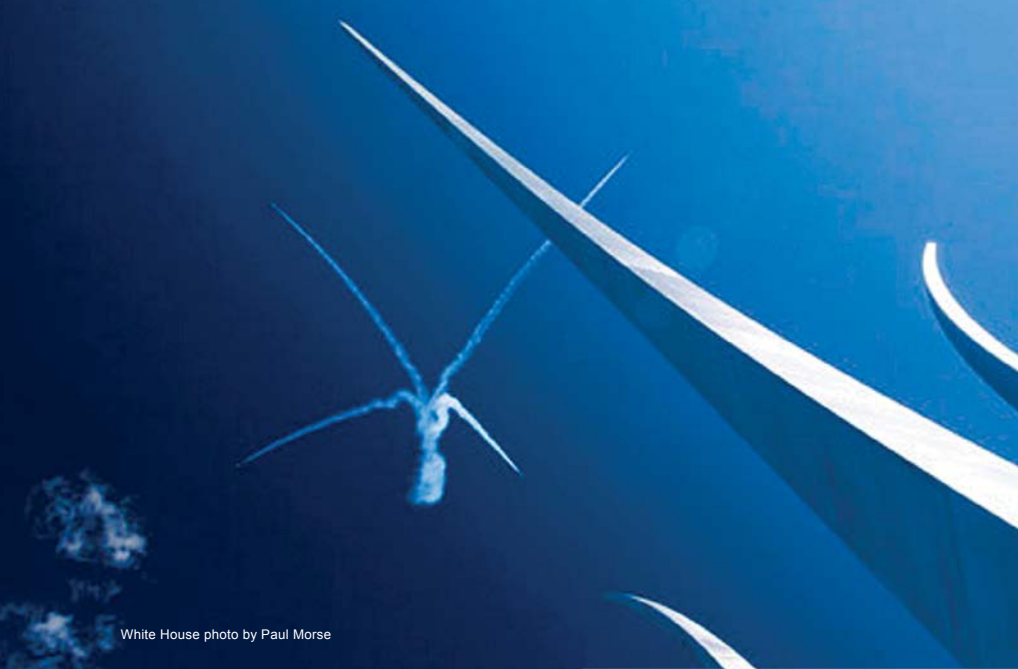
“We’re on the road a lot, ... 220 days a year,” Hammond said. After back-to-back-to-back combat deployments, fewer pilots may wish to sign up for a tour that will keep them away from their families so much, he acknowledged, and “you can’t volunteer someone for this.” He observed, however, that “the Air Force values diversity, and we want to be representative of the true Air Force.”

At every base or airfield visit, the team provides one or two orientation rides in one of the team’s two two-seat F-16Bs. The rides are offered to “influencers”: opinion-shapers and journalists with large audiences, who would present the Air Force and the Thunderbirds in a favorable light. Pro-

spective guest flyers must pass a full flight physical and fill out elaborate forms explaining how they’ll use the experience to broaden public understanding of the Air Force.

Such flights give a real appreciation for the demands of high-performance flying. What looks graceful and powerful from the ground is a rough-and-tumble experience that ranges from shaking and jarring to crushing G forces and weightlessness. In the full Thunderbirds routine, pilots will experience up to nine Gs—nine times the force of gravity, making a 200-pound pilot feel like he weighs 1,800 pounds—and up to three negative Gs: that free-fall sensation like an extended drop from the top of a roller coaster. While enduring these forces, pilots must have their heads on a swivel, keeping constant attention to their instruments, where they are in a given maneuver, where they are relative to the ground, and the other jets, which can be flying as close as 18 inches away.

Petz, the narrator, noted a friendly rivalry with the Blue Angels and said



White House photo by Paul Morse

any is needed—has been taken. In 1964, the F-105B was removed as the team's jet after only six performances because a fatal crash indicated the aircraft was unsuitable for the maneuvers demanded.

Today's 11 F-16s—eight of which go on the road—differ from combat aircraft only in the addition of the smoke generating system (taking the place of the gun), and the absence of some electronic warfare gear. In a national emergency, the jets can be reconfigured and repainted for combat within 72 hours, Hammond asserted. Most of the team's aircraft came from a combat unit at Mountain Home AFB, Idaho.

The F-16C has performed well with the Thunderbirds, but some of the jets

that while the Navy jets pull a maximum of 7.5 Gs in their F/A-18s, the Thunderbirds pull nine Gs. "We're a little tougher," he joked.

To cope with the physical demands, pilots must spend up to two hours exercising each day. In fact, the Thunderbird show manual for host facilities spells out that the pilots must have free access to a fully equipped gym for the duration of their visit.

The exercise helps the team present a fit appearance. Both officers and enlisted wear a unique, close-fitting uniform. MSgt. Chrissy Best, a Thunderbirds public affairs specialist, said the first time her father saw her in her dark blue uniform, "he asked me, 'how do you work in that?'"

The team practices at its home base at Nellis during the week and deploys on the weekends. Hammond said, "I wouldn't say we are always changing the show, but we are always refining it," making small tweaks that "improve transitions, make things more efficient." A recent add was the inscribing of a heart in the sky as the jets trail smoke.

The ground crew is part of the performance, making exaggerated, precise, squared-off movements as they check the aircraft, remove the chocks, and send the jets on their way.

Despite the lighthearted atmosphere of air shows, flying with the Thunderbirds is inherently risky, given the speed and close proximity of the jets when maneuvering in formation. During the team's 63 years, some 20 Thunderbirds aircrew have died in accidents—three during air shows. The



USAF photo by David Meade

Top: The Thunderbirds Bomb Burst maneuver inspired the design of the Air Force Memorial near Washington, D.C. **Above:** Flying high-performance jets always carries some level of risk. Twenty airmen have died during the team's 63-year history. In June, following a flyby of the Air Force Academy graduation, Maj. Alex Turner safely ejected after experiencing a problem with No. 6 jet. It crash-landed remarkably intact near Colorado Springs, Colo. Here, crews load the jet 6 onto a trailer for transport to Peterson AFB, Colo.

worst was in 1982, when four Thunderbirds, practicing the diamond formation loop, crashed together at Indian Springs Auxiliary Field (now Creech Air Force Base) near Nellis.

The most recent accident was in June, when Thunderbird 6, Maj. Alex Turner, suffered a mishap shortly after a flyover of the Air Force Academy graduation. Turner ejected safely, apparently having been able to trim the F-16 to land largely intact in a field near Colorado Springs, Colo. After any accident, the team usually stands down until the cause is identified and corrective action—if

are "nearing the end of their service life," Hammond said, and will probably need a service life extension to continue on in the role. Though realistic-looking computer imagery of the F-35 in the red, white, and blue livery have circulated in recent years, service officials say they've made no decision that the Lightning II will replace the F-16 on the Thunderbirds as it will in the USAF fleet.

For now, "we're here to display the combat might of the Air Force," Hammond said, and the F-16 "does that very well." ✪