



AT ABOUT 4:45 PM ON JUNE 7, Harry “D-Day” Daye released the brakes of the Vietnam War Flight Museum’s F-4D Phantom at Ellington Field near Houston and pushed its throttles into afterburner.

Eleven seconds later, the 61-year-old fighter lifted off runway 17R and rocketed into the skies with the familiar sound of its General Electric J79-15E turbojets splitting the air and echoing off the airfield’s hangars and buildings. It had been seven years since airplane had last flown on D-Day in 2019.

The day after this year’s D-Day, “D-Day” and fellow museum pilot and lead volunteer, Jerod Flohr, climbed into a variable overcast to feel the Phantom out and execute the initial items for the F-4’s Functional Check Flight. Word of the aircraft’s return to flight spread fast via videos posted on YouTube, aviation news websites and enthusiast forums.

THE LAST FLYING PHANTOM

America’s only airworthy F-4D returns to the sky

BY JAN TEGLER

ABOVE: Need caption
(Photo by James Firmin)

RIGHT: Need Kerby caption
(Photo by Erik Johnston,
erikjohnstonphotography.
com)



"It's unreal," Flohr says. "The response to our returning to flying has been overwhelmingly positive. It's cool to see how excited everyone is and we are too!"

Located at Ellington in a historic hangar that dates back to 1938, the Vietnam War Flight Museum (VWFM) is an independently operated part of the Collings Foundation. Helmed by the museum's chief pilot and owner, Rick Sharpe, the collection's Vietnam-era aircraft are largely airworthy. They include a North American F-100F (the only example flying) piloted by Sharpe, a Douglas TA-4J Skyhawk flown by Flohr, three MiG fighters (MiG-15, MiG-17, MiG-21UM), a Messerschmitt Me-262 Schwalbe reproduction built by Classic Fighters Incorporated, a BAC Jet Provost Mk.5, Folland Gnat T.1 (also flown by Flohr), Douglas AD-1 Skyraider and an Aero Vodochody L-39C Albatross.

But it's the Phantom, acquired by the Collings Foundation in the late-1990s, that gets more buzz than any of the museum's other rare aircraft. "Our other aircraft

act of Congress for Collings Foundation to be allowed to have a flyable example.

The 1999 National Defense Authorization Act included an amendment that permitted the Foundation to acquire the Phantom. The aircraft was selected from a pool of F-4s that had been retired into long term storage at Davis-Monthan AFB.

Though it wears the markings of Phantom 66-7680, an F-4C Col. Robin Olds flew during Operation Bolo in January 1967 (later shot down in November of 1967, falling into the Gulf of Tonkin), the airplane is actually Phantom 65-0749, an F-4D delivered to the USAF in 1965. The Collings Foundation chose this particular F-4 because of the low number of airframe hours it had accumulated during its active duty service career as a nuclear-mission fighter-bomber in Europe.

"It was at Hahn [Air Base] in Germany for a little while and spent some time at Torrejon in Spain, but most of its time overseas was at RAF Bentwaters in England," says Chris George another lead volunteer and mechanic

WORK TO GET THE D MODEL BACK INTO FLYING SHAPE INCLUDED THE REPLACEMENT OF ITS J79S WITH ZERO-TIME UNITS, AVIONICS UPGRADES, AN OVERHAUL OF HYDRAULIC SYSTEMS AND COMPONENTS, AND MUCH MORE.

draw attention, but we get the F-4 going and everyone in the world is excited about it," Flohr notes. "The aircraft has such an incredible fan base."

The only F-4 flying in the U.S.

On December 21, 2016, the last Phantoms in the U.S. military inventory made their final flights when the U.S. Air Force's 82nd Aerial Targets Squadron sent their QF-4Es into retirement with a ceremony at Hollman AFB, New Mexico. Today, the VWFM's Phantom is the only airworthy F-4 in America and the only flying example in private hands globally.

So capable is the Cold War fighter that upgraded F-4Es are still serving as active-duty strike aircraft with the air forces of Greece and Turkey. By the mid-1990s when Phantoms were retired from front line service with the USAF, U.S. Navy and U.S. Marine Corps, the big, fast F-4 had become a multi-role fighter with enough remaining lethality that it took an

with the VWFM.

"After Europe, it came home and spent a number of years with the Kansas Air National Guard. It spent the last few years of its service life with the 147th here at Ellington [the Texas Air National Guard, now flying MQ-9 Reaper drones]. They were the ones that sent it to the desert. So she's back home now," George notes.

"We didn't choose it because it was an Ellington bird," he adds. "A lot of different factors went into picking out the airplane. "Most of it was that it had led a pretty sedate service life. There are airplanes out there that had MiG kills or were combat veterans of South East Asia. But those airplanes were rode hard and put away wet with lots of corrosion issues. When you're trying to maintain a flying airplane, those cool factors suddenly become real detractors. It has pretty low hours compared to a lot of the F-4 fleet."

Work to get the D model back into flying

shape as 20th century became the 21st century included a thorough 600-hour inspection, the replacement of its J79s with zero-time units, avionics upgrades, an overhaul of hydraulic systems and components, test and repair of structural items, ejection seat component replacement, and much more.

Once airworthy again, the Collings Foundation flew the F-4D sparingly, showing it off at Ellington and choosing air show appearances away from home carefully. Flohr says the Phantom flew off and on until 2019 when needed maintenance got underway. Then 2020 and the Covid-19 pandemic intervened, effectively grounding the entire Vietnam War Flight Museum fleet. In 2022 museum owner Sharpe made the decision to try to get the collection flying again.

"He's the silent but deadly leader," Flohr quips. "He lets Chris and I do what we need to do and if we need him to do something, he does it. After Covid, Rick got with Rob Collings and said let's get these airplanes going again."

Whack-a-mole

The initial cadre of volunteers that returned the F-4D to flight in the year 2000 has changed and morphed over time with a new group of skilled mechanics, engineers and former Phantom maintainers having joined the museum in recent years. Some of the original volunteers have remained, however, according to George.

"Our head IA [inspection authorization airframe and powerplant mechanic] was a crew chief on Phantoms in the Air Force, then in the Air Guard. He's been working on this one since 1999 or so. He's got a lot of experience we can draw on and he's trained some of our other people. We've had volunteers whose fathers have worked on it and now they are because they learned over the years."

Daye has been flying the Phantom since the museum acquired it. With almost 2,500 hours flying F-4s as an active duty Air Force pilot in several squadrons as well as a decade flying F-15E Strike Eagles and a role as the former

Need crew caption
(Photo by James Firmin)



commander of the Holloman AFB-based squadron responsible for training Luftwaffe F-4F pilots, his experience is invaluable to the VWFM as its Phantom safety-pilot and alternate air show pilot.

Jerry “Jive” Kerby has also flown the museum’s F-4 for years and currently serves as its primary air show pilot. His active duty experience as an Air Force Phantom driver isn’t as extensive as Daye’s, but as you’ll read in the accompanying pilot report, he has a wealth of experience in other jet fighters.

Flohr says that the museum’s volunteers number about 30 people now, many of whom work during the week as well as on weekends. George, who describes himself as the museum’s “chief orderer of parts” says the amount of work required to get the Phantom flying again was daunting, with the biggest challenge being waking the F-4 from a three-plus-year slumber.

“The airplane had just sat,” he explains. “And like any mechanical device, it doesn’t like sitting. So as you start trying to reactivate

Flohr adds that having a “GE J79 expert on speed dial is really helpful.” Maintaining most warbirds is a steep challenge. Complex decades-old ex-military aircraft once supported by large staffs of government employees and active supply chains when in-service become much more difficult to keep airworthy when in the care of museums or civilian organizations with limited staffing or volunteers and financial resources.

Surprisingly, however, George says the VWFM’s de-militarized F-4D isn’t quite as complicated to maintain as one might imagine. “The airplane is complex but it’s not magic,” he explains.

“I like to say that without the weapons systems the airplane is probably on par with a mid-size business jet as far as its complexity. Probably the biggest difference is the time it takes us to do maintenance and service the jet. We can’t just run over to a supply unit if we need something. If I have to order something, it’s going to take a week or more.

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systems, you’ll find little things that don’t work or they leak or that seal needs to be replaced.

“For a while it can be like playing a game of whack-a-mole. The list of things we needed to do to get it back in the air was long and we wanted to do a very thorough, honest inspection of the aircraft. Some days you looked at the list of things to do and thought, ‘Are we ever gonna make it through this?’ Then one day you look up after about four years and, ‘Oh my goodness. We’re almost done!’”

Finding parts for the Phantom and the collection’s other aircraft isn’t easy, George acknowledges. But the network of contacts the VWFM volunteer staff has built makes it possible. “We’re fortunate that there is reasonable access to parts on the surplus market for the aircraft we operate,” George says. “I won’t ever say it’s easy but they are out there if you have the resources and contacts.”

If it needs something overhauled it might take a couple weeks if you’re lucky.”

A historically correct Phantom is a simpler Phantom

Flohr and George say the museum’s F-4D has a few carefully chosen upgrades to comply with modern FAA regulations and make it operable in civilian air space. Otherwise, the airplane is basically as it was in Air Force service.

“We went ahead and put an Aspen Avionics GPS/HSI/AEI and an Avidyne 440 control head in the front cockpit,” Flohr notes. “In the rear cockpit, it’s got a Garmin G5 [directional gyro/horizontal situation indicator and attitude indicator with GPS Nav interface].

“Outside of that it really hasn’t been upgraded and we don’t really have plans to upgrade it much further because we just don’t need to.”

George says the aircraft’s communication equipment is civilian now, with radios and



Need Kerby caption (photo by Erik Johston, erikjohnstonphotography.com)

FLYING THE PHANTOM

VWFM F-4D display pilot Jerry “Jive” Kerby describes the “Rhino”

Jerry Kerby, call sign “Jive,” has amassed a staggering 18,000 hours-plus in over 120 types of aircraft. A retired Air Force lieutenant colonel, he flew both the F-15C Eagle and QF-4E on active duty, piling up 3,400 hours in the Eagle and several hundred in the Phantom as commander of the 82nd Aerial Targets Squadron in QF-4Es and as a member of the USAF Heritage Flight in the F-4E.

Since retiring from the Air Force in 2006, Kerby co-founded Draken International with current NASA administrator Jared Isaacman. The firm is a commercial adversary training company that provides integrated contract “Red Air” forces to militaries in the U.S. and Europe. Currently Draken’s executive for fleet aircraft acquisition, Kerby also flies as an aggressor pilot in Draken’s Dassault Mirage F1s, Douglas A-4 Skyhawks and Aero Vodochody L-159s.

With over 400 airshows under his belt in aircraft ranging from the L-39, MiG-17 and T-33 to the T-28 Trojan, and a rating as a Certified Aerobatic Competency Evaluator through the International Council of Air Shows, he is immensely well-qualified to display the Vietnam War Flight Museum’s F-4D.

In the week prior to our conversation in late June, Kerby had re-qualified in the museum’s Phantom, flown an F1 for Draken and a Northrop F-5 owned by Isaacman. Together, Kerby with Harry “D-Day” Daye in the rear cockpit completed the Phantom’s functional check flight on June 13.

It had been eight years since he’d flown the VWFM’s F-4. After thorough preparation and review of F-4 training manuals and situational emergency procedure training, Kerby taxied the Phantom out to runway 17 Right at Ellington Airport.

TAKEOFF AND CLIMB

Prior to the flight, Kerby wondered whether flying the F-4 would come back to him after eight years. “But I would say from the time I hit the 90 degree point of the first turnout of the taxiway, I was back,” he explains. “It just felt so natural, the throttle response, the trimming of the airplane, the brake response all came flooding back. And I thought, ‘I remember this. This is fine.’

“Everything from the seat height to what you’re looking at or where your hands go almost automatically came back. It was just there. There was no hesitation whatsoever.”

With its twin J79s generating up to 34,000 pounds of thrust in afterburner, the takeoff sequence happens rapidly in the F-4D.

“You release the brakes and light the burners, you raise the nose and get the gear up,” Kerby says. “The flap switch is probably the hardest thing to find. I have look down to the left to make sure that I’ve got the flap switch in my hand.”

The Phantom rotates at about 145 knots and leaves the runway at 160 knots.

“Then it’s everything forward because the airplane accelerates so fast to 250 knots,” Kerby notes.

His first flight back in the F-4 served as the second part of the functional check flight for the aircraft with a number of items for he and Daye to check off. One requirement was a climb to above 10,000 feet at 250 knots.

As general aviation and commercial pilots know, the FAA sets a speed limit of 250 knots below 10,000 feet. But a clause in the rule “allows us to go at a higher speed if that speed is deemed a safe minimum speed,” he explains.

“We typically like to accelerate at 350 knots,” Kerby says.



you adapt so quickly that you don't notice the pitch sensitivity anymore. But it does, relative to other airplanes, have a bit of a pitch-overshoot tendency. You quickly damp that out with your brain after about 30 seconds of flying the airplane. Like on the initial takeoff, 'Oh there it is.' After that you don't even notice it."

UP AND AWAY FLIGHT

Once at altitude, the Mach 2-plus F-4 continues to feel like other jet fighters Kerby flies, he says. "It feels like every other jet fighter. I don't want to make it sound like it's common because it's certainly not. There's a certain power feeling. You move the throttles this much, you get this much speed."

"But it just feels like a fighter. I'm so used to flying that kind of an airplane. Flying the Phantom again wasn't anything out of the ordinary from what I'm doing in the F1 two weeks a month or about 15 flights per month.

"The air's thinner up high of course. The wing's not going to be nearly as efficient. The engines won't have nearly as much air so you don't get as much thrust out of them."

TURNING THE PHANTOM AND MANEUVERING DOWN LOW

As the VWM's primary display pilot, Kerby has a good feel for how the F-4D performs at low level. The D model and earlier Phantoms have what pilots refer to as a "hard wing". By 1972, the F-4E was upgraded with leading edge slats that deployed automatically, improving the fighter's high angle of attack maneuverability at the expense of top speed.

"Our margins are super high for the Phantom displays," Kerby

says. "We're never on the edge. We've got so much safety margin built in for all the speeds, all the turns. We're not max-performing the aircraft."

"I only do a horizontal display in the Phantom, nothing vertical. I'll do a barrel roll so there's a vertical component to that but that quickly transitions to a horizontal turn.

"The fact is, I would need 10 to 12,000 feet to do any kind of a loop. For an artistic display I try to keep the airplane as tight to the crowd as I can.

“Down low, it’s a solid airplane.

"When I roll and select afterburners, that kicks my energy up and gives me the G that I need to maintain an airspeed that won't bleed much energy at all. That's 350 to 450 knots. The airplane doesn't feel shaky. I roll, I set and I pull. I know exactly what I'm getting and I'm in control of how much energy I'm bleeding or not.

"That's a very comfortable feeling that you get with these big fighters. It's easy to interpret what you've got. It's easy to maintain the exact flight path you want to fly."

Kerby shows off the F-4D in a 360-degree display turn, allowing viewers to see it from different angles. "I roll into that and it's about a 4.5 to 5G pull in afterburner," he says. "It's not a minimum radius turn, it's a display 360."

With hydraulically boosted controls, the big Phantom communicates well with stick forces that feel natural Jive notes. "You pull back this much, you get this much. It's an honest airplane."

APPROACH AND LANDING

"We typically enter the pattern at 300 knots and do the pattern-break from 1,500 feet then go to the downwind," Kerby says. "I have a [maximum] gear speed of 250 knots. We'll get those down and then select my leading edge and trailing edge flaps down. The airplane feels really solid at 200 knots coming off the perch [turning to base from the downwind portion of the landing pattern]. I think one of the most common things after not flying the Phantom for a little while is to stay fast.

"Ideally, we want to be around 180 to 185 knots on the turn to final and we'll slow to a speed commensurate with the weight of the airplane. But we're really flying angle-of-attack in the landing pattern. Our normal on-speed angle of attack is 19.2 units and that will give us somewhere around 155 knots or so on final to the runway.

"With the bleed-air boundary layer control that you get in the Phantom, once you pull the power off, that boundary layer resistance is less and less. So you don't really slow down like in a conventional airplane. You kind of time it so that the throttle is going to idle as you touch down with a little bit of a flare to help arrest the sink-rate but that's about it."

As a fighter originally designed for the U.S. Navy, the Phantom has “huge, insanely long” gear struts, Kerby notes.

"They had one purpose: to absorb the shock of a carrier landing. So when we land in an Air Force style, most of the time you cannot even feel yourself touch down. It just rolls on the ground even though from the outside you see the tire smoke on touch down and the smoke twirl in the wingtip vortices."

Finally, Kerby deploys the Phantom's drag chute to save wear and tear on brakes on runways less than 10,000 to 12,000 feet in length.

"But we use the chute on landing at every display location because it's part of the history of the airplane. And as a privately owned aircraft, anything with the Phantom is going to be expensive, so we try to save wear and tear."

AS THE MUSEUM'S F-4 IS ON ITS OWN, THE REAL PURPOSE OF IT IS TO CONNECT WITH THE AMERICAN AND GLOBAL COMMUNITY OF PHANTOM VETERANS, AND PRESERVE LIVING HISTORY.

a civilian transponder with ADS-B in place of a military transponder. "From a pilot's perspective, just doing engine runs and other things, I don't see anything else that I would need or want," Flohr maintains. "With the way it's configured now I could fly it all over the country."

Dedicated to Veterans

While the VWFM's F-4D pays tribute to the pilots who flew it and the crews who maintained it as well as the ground troops whose lives it saved during the Vietnam War, the Phantom transcends Vietnam George stresses.

"There's such a large swath of people that worked on this airplane for decades, from the 1960s through the 1990s here in the U.S. And people are still flying them and keeping them flying in military service today."

Flohr emphasizes that as cool as the museum's F-4 is on its own, the real purpose of it is to connect with the American and global community of Phantom veterans, and preserve living history. "It's one thing to have a static Phantom," he notes. "To have one flying is completely different."

Keeping the VWFM's F-4D flying takes money. Flohr and George note that people can donate to keep the Phantom and the collection's other aircraft flying by visiting the museum's website at VietnamWarFlight.com or via its [Paypal.com](https://www.paypal.com) donations page. ✈