

June 2019 marked the 50th anniversary of the entry into service of the US Navy's McDonnell Douglas TA-4J Skyhawk advanced jet trainer. It is remarkable to think that this venerable aircraft remains valuable today, albeit in civilian hands providing training for the US armed forces.

REPORT AND PHOTOS **Richard Collens**

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GLORY DAYS // TA-4J

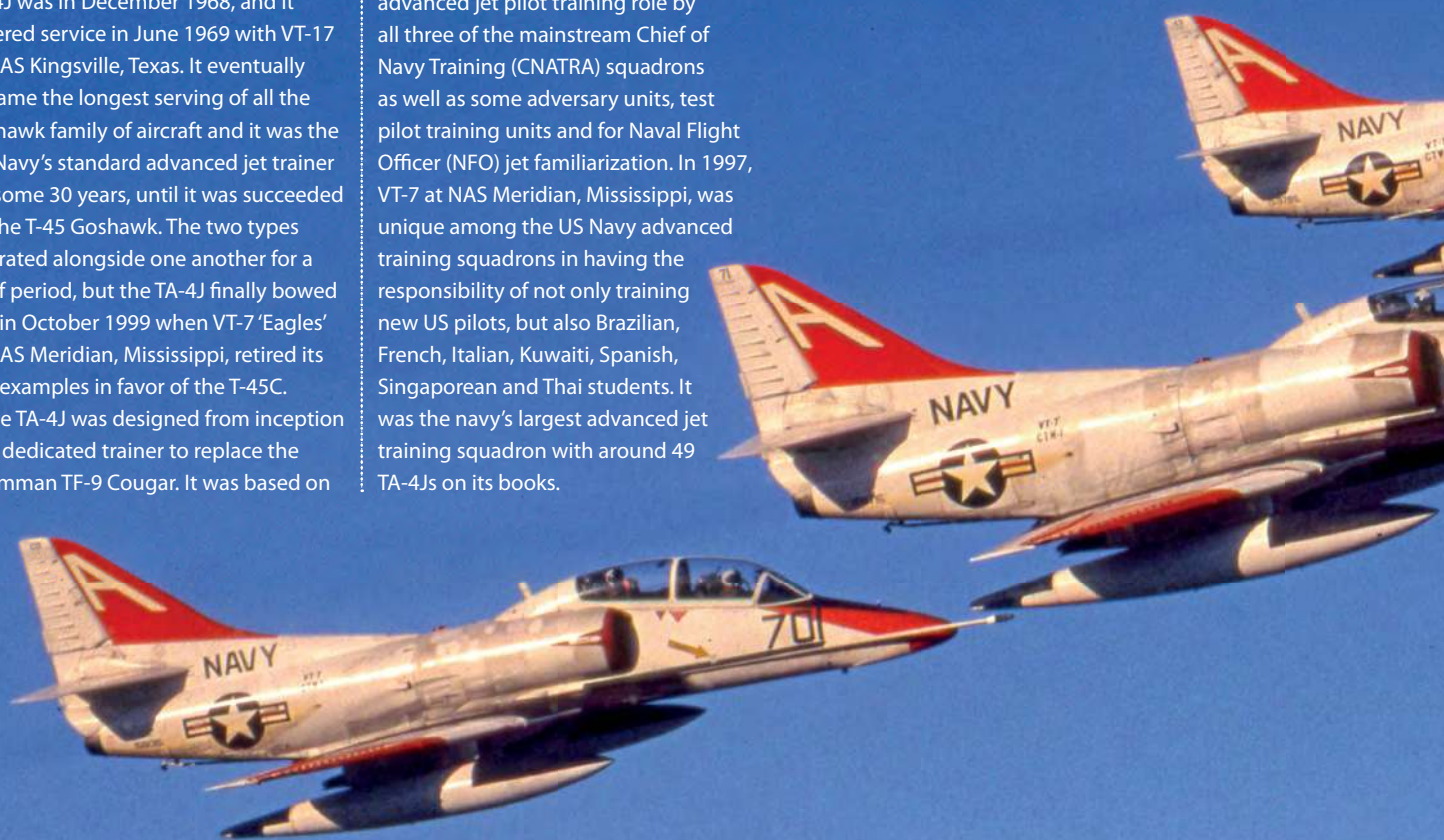
THE TA-4J SKYHAWK trainer was born out of the Vietnam-era single-seat light attack aircraft of the US Navy and Marine Corps, designed by a team of Douglas

Aircraft engineers led by designer Ed Heinemann, and which first flew in June 1954. The inaugural flight of the spin-off TA-4J was in December 1968, and it entered service in June 1969 with VT-17 at NAS Kingsville, Texas. It eventually became the longest serving of all the Skyhawk family of aircraft and it was the US Navy's standard advanced jet trainer for some 30 years, until it was succeeded by the T-45 Goshawk. The two types operated alongside one another for a brief period, but the TA-4J finally bowed out in October 1999 when VT-7 'Eagles' at NAS Meridian, Mississippi, retired its last examples in favor of the T-45C.

The TA-4J was designed from inception as a dedicated trainer to replace the Grumman TF-9 Cougar. It was based on

the earlier TA-4F twin-seat version of the A-4F, but was devoid of weapons systems. The TA-4J also featured a lower-rated Pratt & Whitney J52-P6A engine. Some 281 were built from new, supplemented by most of the TA-4Fs that were converted to this standard for navy training squadrons.

The TA-4J was operated in the core advanced jet pilot training role by all three of the mainstream Chief of Navy Training (CNATRA) squadrons as well as some adversary units, test pilot training units and for Naval Flight Officer (NFO) jet familiarization. In 1997, VT-7 at NAS Meridian, Mississippi, was unique among the US Navy advanced training squadrons in having the responsibility of not only training new US pilots, but also Brazilian, French, Italian, Kuwaiti, Spanish, Singaporean and Thai students. It was the navy's largest advanced jet training squadron with around 49 TA-4Js on its books.



REMEMBERING THE NAVY

'SCOOTERS'

A division of TA-4Js in the sky above NAF El Centro, California, after one of the type's final weapons detachments here.



CDR (ret'd) Joe 'Yuri' Guerrein was a student on the Skyhawk with VT-7 back then, before progressing to fly both the F/A-18C and the F/A-18E in the US Navy fleet. He says: 'When I was a student, the navy was well into the transition to the T-45 and only one squadron of TA-4Js remained. Since the navy didn't have enough T-45s to go around, there were basically three different pipelines for intermediate and advanced jet training.'

The 'traditional' way to train new pilots was first on the T-2C Buckeye for an intermediate phase, then the TA-4J for advanced flying. At that time, T-2-to-T-45 was running in parallel, as was an all-T-45 pipeline for both intermediate and advanced phases. Initial carrier qualifications (CQs) were flown in either the TA-4J or the T-45.

'I thought it was an incredible honor to be one of the last students to fly the TA-4J since this aircraft was an operational jet during the Vietnam War and formerly used by the Blue Angels,' says Guerrein. 'I felt that if I could fly and do well in a former fleet jet without all the new technology [of the modern trainers], then I would know what my stick and rudder skills truly were. Once I was selected for the 'traditional' pipeline, I was ecstatic! I couldn't wait to climb into that cockpit and see if it was as maneuverable as I'd heard.'

Into the 'Scooter'

Guerrein explains: 'My first impression was how small the cockpit actually was. I had to turn my shoulders slightly to get the canopy down. Also, all the handles were miniaturized compared to what I'd flown before. The gear and hook handles were small and I was afraid they would break when I put them down! Flying the Skyhawk was a dream — it was a little 'squirrely' on the ground but airborne it was a sports car. It felt very unstable compared to the other trainers. However, that's what provided the maneuverability; amazing roll rate and immediate responsiveness. Although not as fast as flying a Super Hornet, it sure felt fast enough as a student.

'The cockpit was archaic and simple. No glass displays, no HUD [head-up display], no TCAS [traffic collision avoidance system], one radio and one TACAN





[tactical air navigation system]. That was it — not a great aircraft to bring back to the field in the morning fog at Meridian or on a rain-soaked runway at NAS Jacksonville. It was a long way from the spoiled students in the T-45 Goshawk with multi-function displays and a HUD.'

LT (ret'd) Patrick Downey was both a student and an instructor on the Skyhawk. He tells *Combat Aircraft*: 'I flew the TA-4J as a student with VT-22 at NAS Kingsville and as an instructor with VT-7 at Meridian. After struggling with landings in the T-2C Buckeye, I was pleasantly surprised to find I could fly and land the TA-4 far better and more intuitively. As I progressed through training, the student self-consciousness gradually fell away as I gained confidence with the Skyhawk. It was fortuitous that after five-and-a-half years flying the A-6E Intruder, a last-minute change in orders shifted my next posting from T-45s in Kingsville to the A-4 in Meridian. The muscle memory came back and it was even more fun to fly the second time around without the stress of being a student!'

The Skyhawk proved to be extremely successful and well adapted to the advanced training role. 'The TA-4 had characteristics similar to fleet aircraft,' says Downey. 'You had to manage external fuel and avoid certain flight envelopes otherwise you could enter a spin. You had to be exceptionally disciplined in the landing pattern in order to get

a good start behind the boat [during carrier operations]. It forced one to really develop the three-dimensional situational awareness. For example, you could be upside down in a dogfight yet know exactly where you were in the military operating area and know which way was north.'

Learning the ropes

The TA-4J advanced training syllabus lasted about six months and it started out with instrument flying, with the student flying more than 30 events in the back seat ensconced under an extendable hood, trying to be up to the task and ready to face the dreaded 'AirNav 10X' event — the instrument rating ride.

The workup for this was exceptionally demanding, forcing students to execute precise turning descents and climbs referencing a clock face. This was done to help develop the skills necessary for the 'scan' as a pilot approaches the final turn to the aircraft carrier. 'We also did full aerobatics on instruments, which prepped us for all-weather weapons delivery,' Downey adds. Next came familiarization, which only gave the student eight rides up front to sort out the landing pattern and various emergency procedures, with the last flight being a solo. Formation was also ticked off fast because the T-2 syllabus was formation intensive. 'The twist now was that we would do barrel rolls and aileron rolls with a student on our wing.



Above: Bristling with practice bombs, a student-flown TA-4J takes the runway at El Centro.

Left: Student and instructor discuss their mission as they head back to the squadron after a sweat-soaked mission.



Two rides, then a two-ship flown solo, a forth ride and then a division [four-ship] flown solo. The difficult part here was to be relaxed enough while upside down and only a couple of feet away from the instructor's plane!

At this stage the syllabus had flexibility. If the squadron was about to go on a weapons/low-level detachment, then that was what the student concentrated on. Otherwise, they would start in the tactical formation stage; the precursor to air combat maneuvering. 'It just depended on what the squadron schedule was,' says Downey. 'The weapons phase taught iron sight bombing — looking through a fixed reticule coming downhill in a 30-degree dive at 450kt and releasing at a fixed altitude. The trick was to make the jet fly through a very precise window and be able to make your 'pipper' cross the aim point at exactly the right altitude. Once the student learned to manage these variables, they would achieve a respectable score. Operational navigation — or low levels — taught you to fly a few hundred feet off the deck at high speed while navigating with a clock, map and compass. It taught faith in physics and how to orientate yourself by looking left and right, because the soda straw out the front didn't give sufficient detail.

'Tactical formation taught the student how to maneuver in combat spread. We would fly about a mile apart and learn how to maintain relative position with altitude adjustment [down, faster, up, slower] and how to make 90 and 180-degree turns as a formation. Once the student learned how to maintain his relative bearing, the rest was easy.'

Downey explains that air combat maneuvering (ACM) taught three-dimensional spacial awareness to the

point where the student could be inverted and slow, and therefore use a smaller radius of turn to gain an advantage over the adversary. 'It also taught you to recognize when you were losing, and when to run away to fight another day,' he says. 'To me, the really difficult part was the three-dimensional rolling scissors where your energy state was constantly changing, and it demanded that you flew to the maximum performance of the A-4. If you didn't you lost, as the instructors knew how to do it and would patiently await your mistake. It was very humbling.'

Mixed into all of this was carrier qualification, which could happen after

Above: An impressive line-up of TA-4Js at Meridian as a storm looms.

Below: Frequent detachments to NAF El Centro remain a part of US Navy fast-jet training, making use of local ranges and great weather.

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CDR (ret'd) Joe 'Yuri' Guerrein

a certain number of hours in the jet. This was typically reached by the end of weapons or ACM phases, whichever came first. 'I had finished weapons and most of ACM when I started my boat workup; afterwards I returned to where I left off,' explains Downey. 'The [carrier] workup consisted of 13 or so Field Carrier Landing Practice [FCLP] flights where every pass [landing or touch-and-go] was graded by a landing signals officer [LSO], who quickly recognized your trends and worked to sort out any bad habits that you may have developed. The last event was a trip to the boat to put it all together and see if you could compensate for the ship movement.'

Super 'Scooter'

The TA-4J was simple to fly on one hand, deadly on the other. It would go exactly where the pilot wanted it, but they had to be very aware of energy state, configuration, and flight envelope. It was easy to depart from controlled flight in ACM, it was easy to add too much angle-of-bank in the landing pattern, yet it was very stable as a bombing platform and when flying low and fast. 'My fellow students and instructors universally loved the jet,' smiles Downey.

CDR Jim 'Spot' Galanie was the CO of VT-7 when it retired the Skyhawk, and was also the very last pilot to launch an A-4 from the deck of a US carrier. He says: 'I





Left top to bottom: Carrier qualifications were a challenging part of the TA-4J course. Training squadrons take opportunities to go to the boat as and when the chance arises.

A TA-4J on the flight deck as the student prepares to depart after a 'trap'.

On the carrier deck and ready to launch. The TA-4J had a plumbed in-flight refueling probe but it was only used for ground refueling.

The TA-4J finally bowed out in late 1999, making way for the T-45 to assume the full remit of the fast-jet training role.

have flown the TA-4J, TA-4F, the A-4E and the A-4F. I flew the TA-4J as an adversary pilot, in test pilot school as well as in training command as a CO. They all flew much the same, but the single-seaters had tiny cockpits. Only the A-4F had enough thrust to make it a decent air combat adversary for the fleet fighters with afterburners, but all the Skyhawks flew smoothly, had good initial turn performance and presented a small cross section as an adversary asset. As a young flight student you felt like you had arrived flying an aircraft with real combat vintage. It was always fun to fly, despite the pressure on you to avoid failure as a student naval aviator.

'I really enjoyed teaching in the jet. There was enough fuel to allow me to demonstrate and then for the student to practice, all in the same sortie. As a student, the hardest thing for me personally was learning how to land properly. The T-2C would raise its nose automatically when you added power, but the TA-4J flew much more like a fleet aircraft where you needed to use power and stick to fly the 'Ball' [landing marker on a carrier approach]. Formation flying was easy. The syllabus moved so quickly that just about the time you figured one thing out it was on to something new. Carrier qualifications were, of course, a challenge, but we were well prepared as students with plenty of FCLPs and emergency procedures training.



‘With its larger cockpit, the TA-4J was a more comfortable aircraft to fly than the T-45, although it was not as fuel-efficient, but you had more range to go places! It was an aircraft that a pilot could easily understand because it was mechanical. It flew smoothly and easily in formation but needed to be hand-flown the whole time, which increased stick and throttle skills. It had good visibility and was generally reliable [except for the electrical generator].’

Galanie also talks about the multi-national training programs that were a feature of VT-7’s remit, saying: ‘We treated our international students the same way as the US students, other than the fact that they could receive more training [if their country was willing to pay for it] if they needed extra instruction in a particular stage. Since their country had already invested so much, they effectively received as much training as necessary to complete a stage, as long as they were safe. That said, we did attrite some foreign students because we never lowered our standards.’

LT Downey saw many foreign students in his front cockpit while at VT-7 as an instructor: ‘I remember my first instructor hop as a formation instructor in the back seat with a Thai student [in the front] who did not have smooth hands. The tension watching this guy fly close while doing aerobatics


was unbelievable because I was scared half to death. When we finally landed I could barely get out because my entire back was in knots.’

The final student aviator to ‘trap’ aboard a US Navy carrier in a TA-4J was Lt Jose Vicente de Alverenga of the Brazilian Navy, doing so on October 8, 1999 — he was also the last student naval aviator to receive his wings on the Skyhawk. It was a period of great change. The final VT-7 TA-4J Skyhawk departed Meridian on October 20, 1999, flown by CDR Erick ‘Gordo’ Gerdes, who now flies MD-11s for UPS (United Parcel Service). ‘It was my absolute favorite,’ he says of the TA-4J. ‘After flying the S-3 Viking in the fleet, my first choice was to fly the A-4 again. I was very fortunate to fly the Skyhawk for the next 10 years between active duty and the US Navy Reserve in Meridian. Today, I am honored to continue the relationship with the TA-4J thanks to outstanding folks in the Collings Foundation.’

‘When the US Navy selected the TA-4 for the training command role to replace the Korean-era Grumman F-9 Cougar, it simply made sense in many cost and operational areas,’ Gerdes reflects. ‘The extensive use and success of the aircraft in the fleet came from the fact that the US Navy had already selected the A-4 as an adversary aircraft and instrument trainer for fleet aviators in the late 1960s.

Being a common and proven airframe, its low operating costs and relative ease of maintenance [in that era] made it a natural choice for the fighter/attack students to earn their wings of gold in the TA-4J.’

Although retired from US Navy ranks, Skyhawks remain active in the US with Draken International in relation to contracted training services for the US military. While the Draken fleet is predominantly a single-seat operation, the company retains a single TA-4J. The Collings Foundation in Houston’s Ellington Field, Texas, also operates an immaculate TA-4J.

Summing up, ‘Yuri’ Guerrein says: ‘Looking back, after flying both the ‘legacy’ and Super Hornets in my navy career, the Skyhawk was great to fly — bending the metal around the clouds. It wasn’t an aircraft I would want to take into combat. It was a ‘blue collar’ aircraft that was simple and small. That being said, I would love to have one parked at my local airfield that I could take out and just enjoy being a pilot without relying on technology.’ 

This article is dedicated to the memory of CAPT Jim ‘Spot’ Galanie, the last skipper of VT-7 during its Skyhawk era, who sadly passed away during the preparation of this feature. Jim was the last US Navy pilot to land aboard an aircraft carrier in a TA-4J.

A section of TA-4Js pours on the coals on the way to a bombing mission.

