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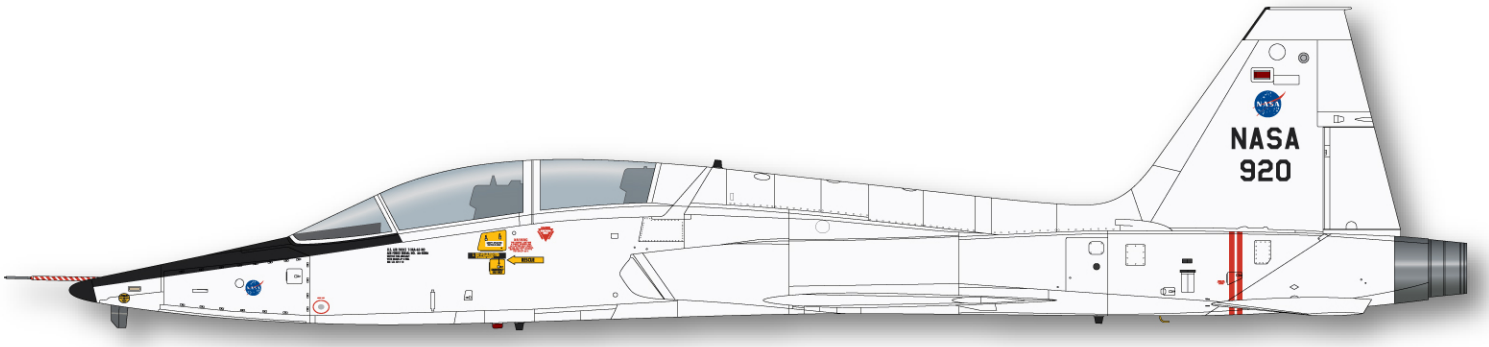
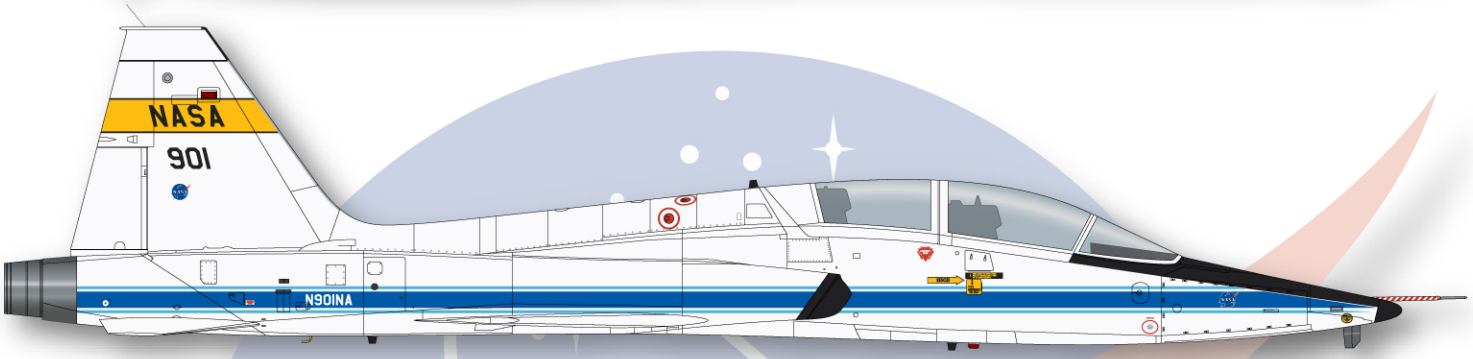


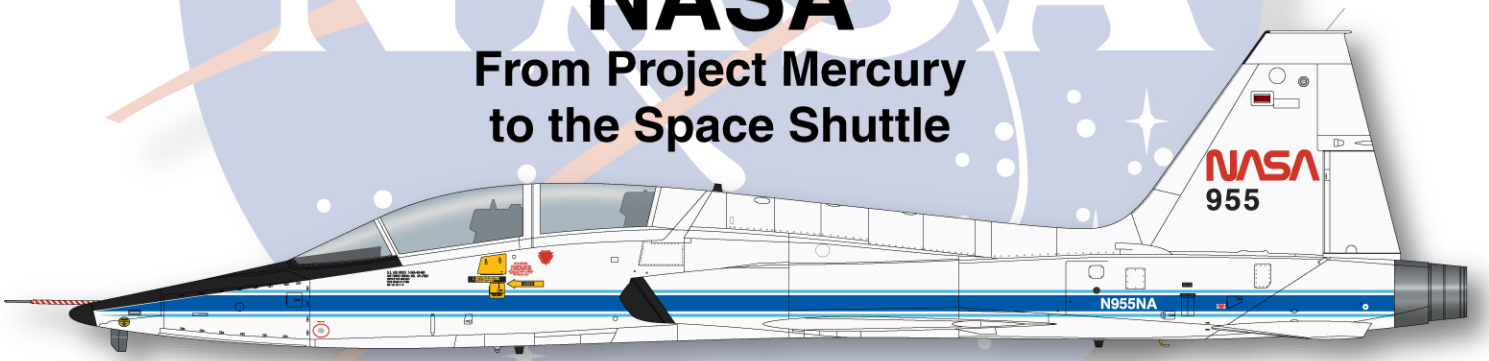


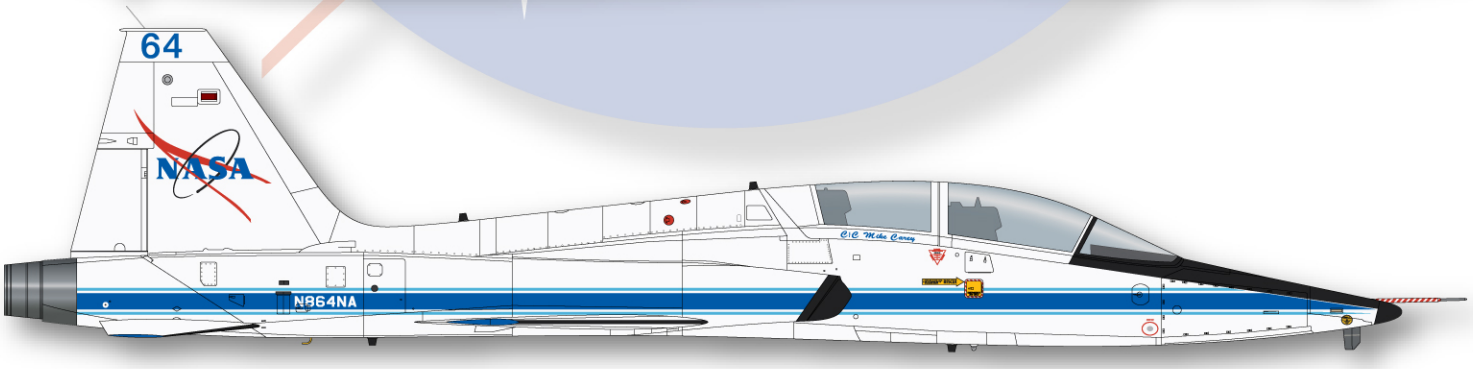
Northrop T-38 Talons

of

NASA

From Project Mercury to the Space Shuttle





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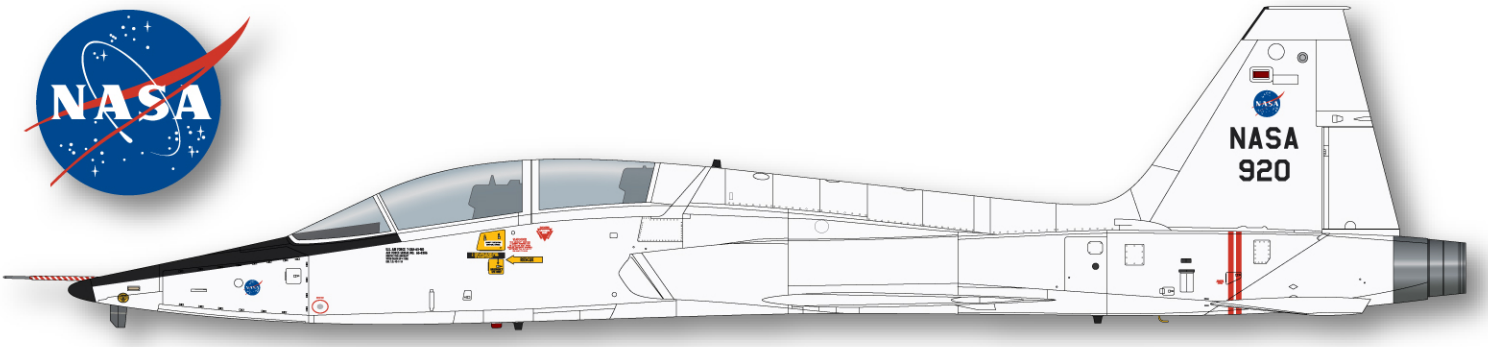
Northrop T-38A Talon

NASA 920

Ellington Field, Texas

1968

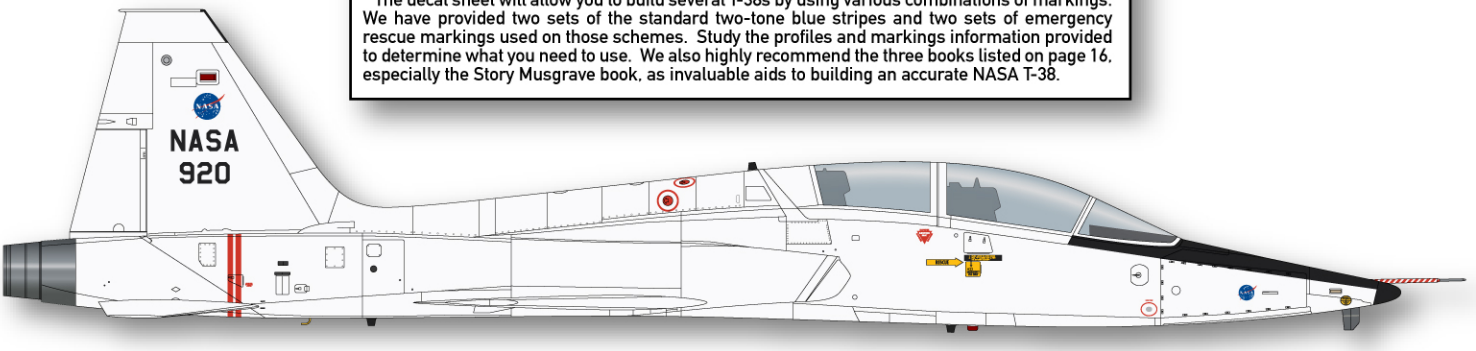


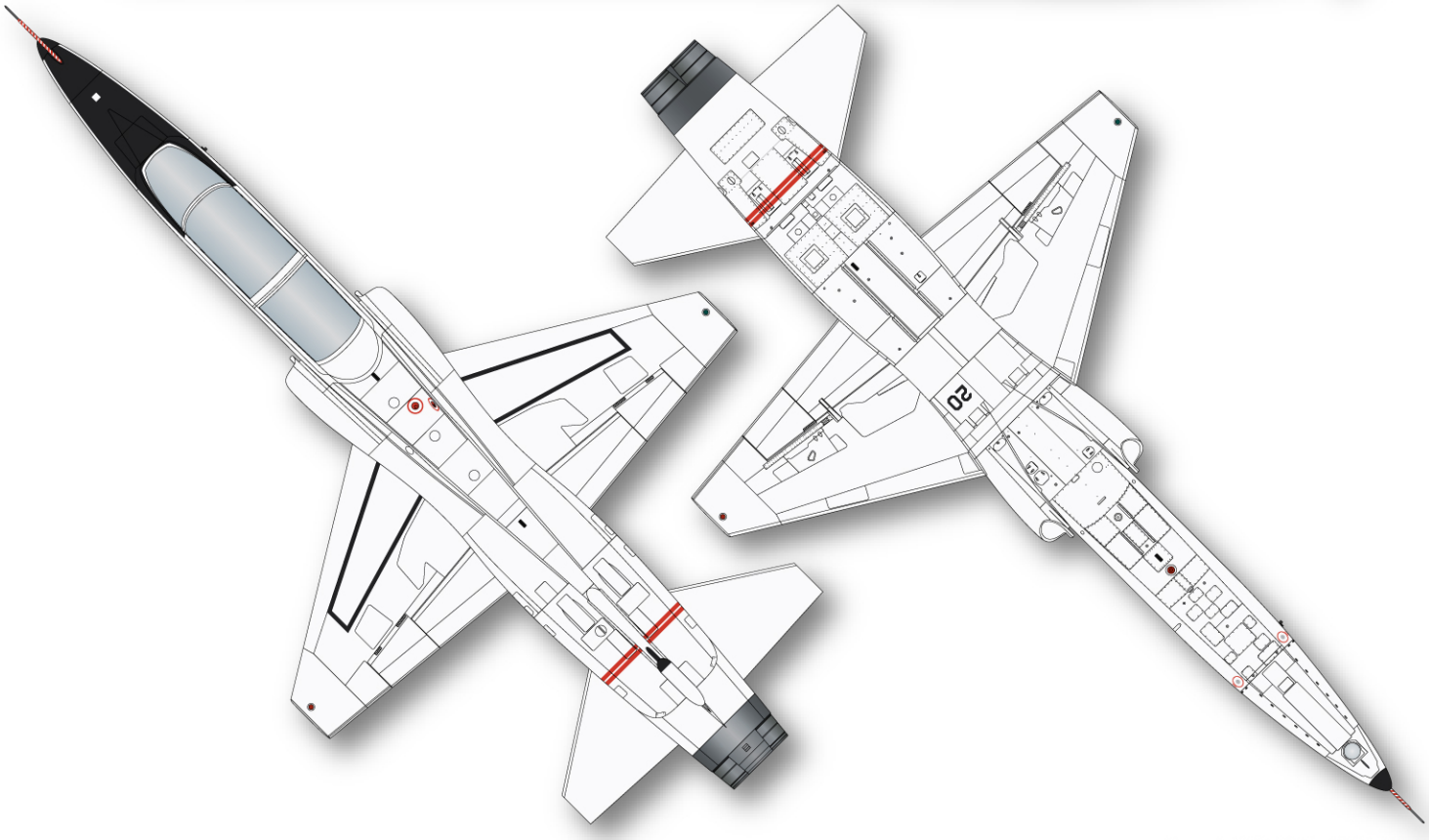
NASA received its first T-38A from the U.S. Air Force on 27 May 1964. They were used by the astronauts to maintain flying proficiency (a phrase that enjoyed very liberal interpretation in the early days). For the better part of the first decade of their lives with NASA, including the historic periods of Project Gemini and most of Project Apollo, this rather plain looking scheme is what they wore. Their USAF markings were removed - with the exception of wing walkway lines, stencils, the data block, and the turbine warning stripes - and a simple block style NASA lettering and code number were applied to the fin. The NASA 'meatball' insignia was applied to the tail and the nose on most aircraft. Note the last two digits of the code on the left hand speed brake.

In later years these aircraft appear to have had the turbine warning stripes removed, and at least one (960) carried its civilian registration number N960NA in block letters on the aft fuselage.

We have provided markings for three of these aircraft. This one is representative. See next page for other aircraft in this scheme.

The decal sheet will allow you to build several T-38s by using various combinations of markings. We have provided two sets of the standard two-tone blue stripes and two sets of emergency rescue markings used on those schemes. Study the profiles and markings information provided to determine what you need to use. We also highly recommend the three books listed on page 16, especially the Story Musgrave book, as invaluable aids to building an accurate NASA T-38.





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Northrop T-38A Talon

NASA 901, 922, 960

Ellington Field, Texas

1960s - early 1970s

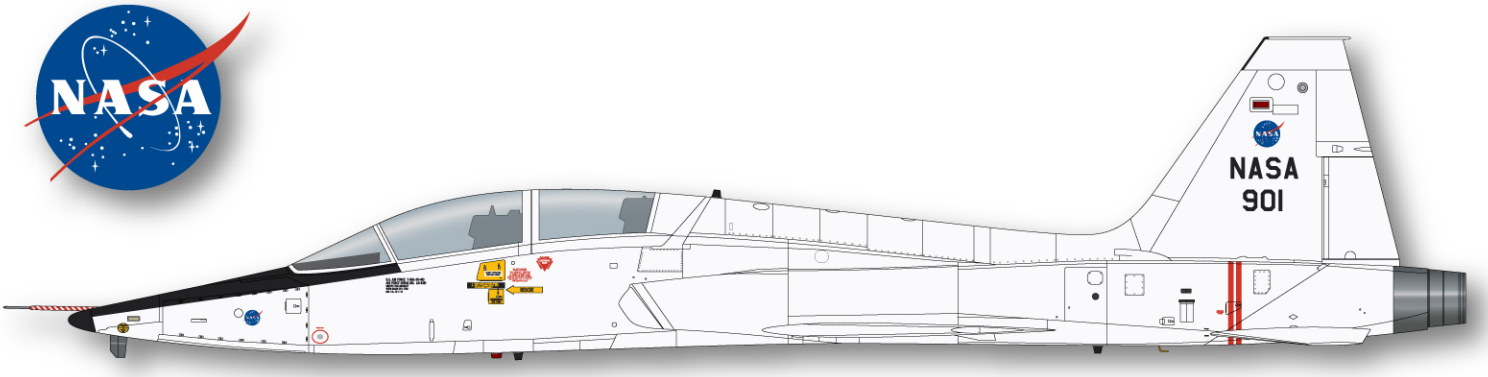
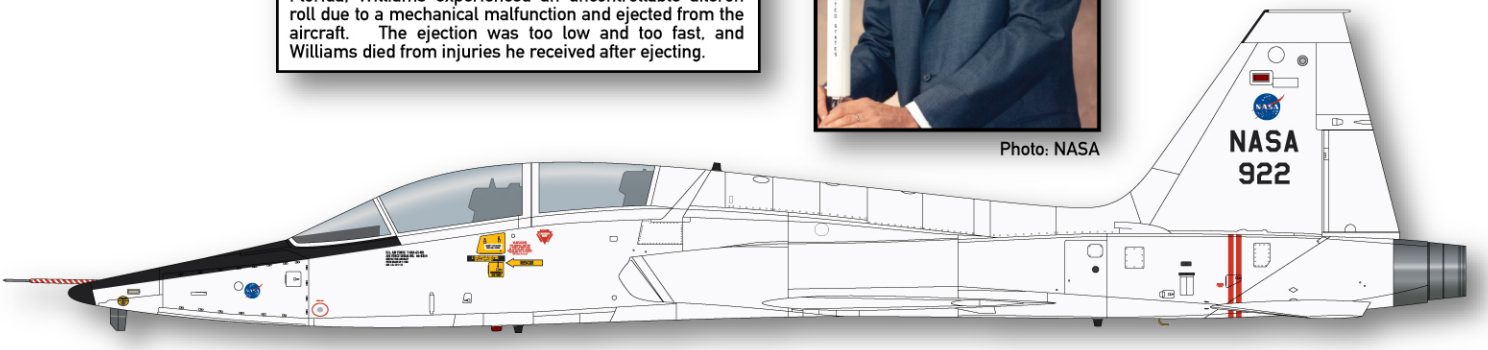


Photo: NASA

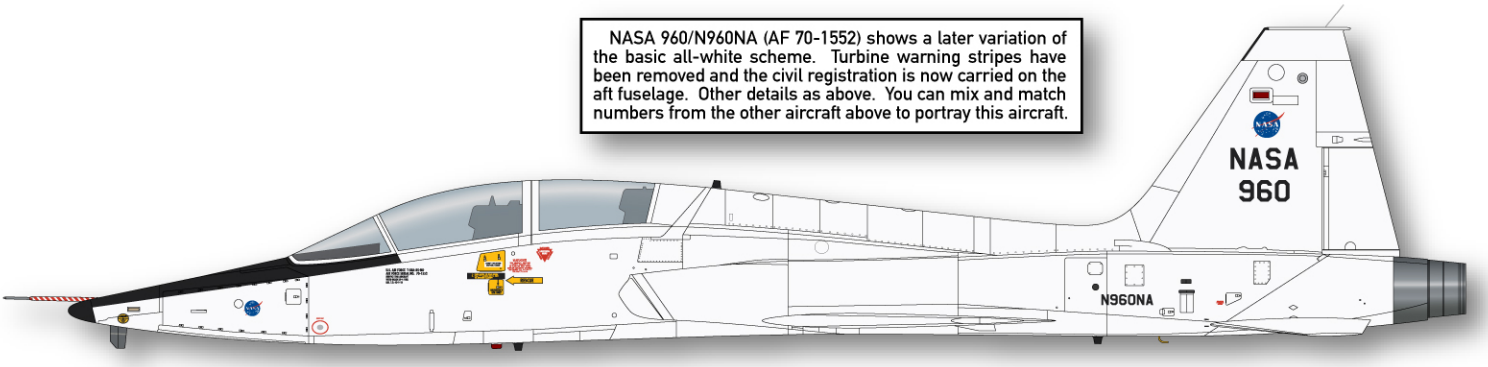
NASA 901 (AF 63-8181) was flown by Gemini astronauts Elliott See and Charles Bassett when they were killed on 28 February 1966. The two astronauts, along with fellow Gemini crew Thomas Stafford and Eugene Cernan, were flying from Ellington to Lambert Field in St. Louis for Gemini simulator training at McDonnell Aircraft, the primary Gemini contractor. Weather conditions in St. Louis were bad and deteriorating as the two-ship formation made its approach. After missing the outer marker on the ILS, See elected to circle for a visual approach, while Stafford executed the published missed approach. See lost sight of the runway in the worsening conditions and crashed the jet into the roof of the McDonnel plant where the spacecraft was being assembled. Both men were killed instantly in the crash.

On 5 October 1967, Group 3 Apollo astronaut C.C. Williams was piloting NASA 922 (AF 66-8354) on a trip from Patrick AFB, Florida to visit his ailing father in Mobile, Alabama. Aporoximately an hour out of Patrick, near Tallahassee, Florida, Williams experienced an uncontrollable aileron roll due to a mechanical malfunction and ejected from the aircraft. The ejection was too low and too fast, and Williams died from injuries he received after ejecting.

Photo: NASA



NASA 960/N960NA (AF 70-1552) shows a later variation of the basic all-white scheme. Turbine warning stripes have been removed and the civil registration is now carried on the aft fuselage. Other details as above. You can mix and match numbers from the other aircraft above to portray this aircraft.



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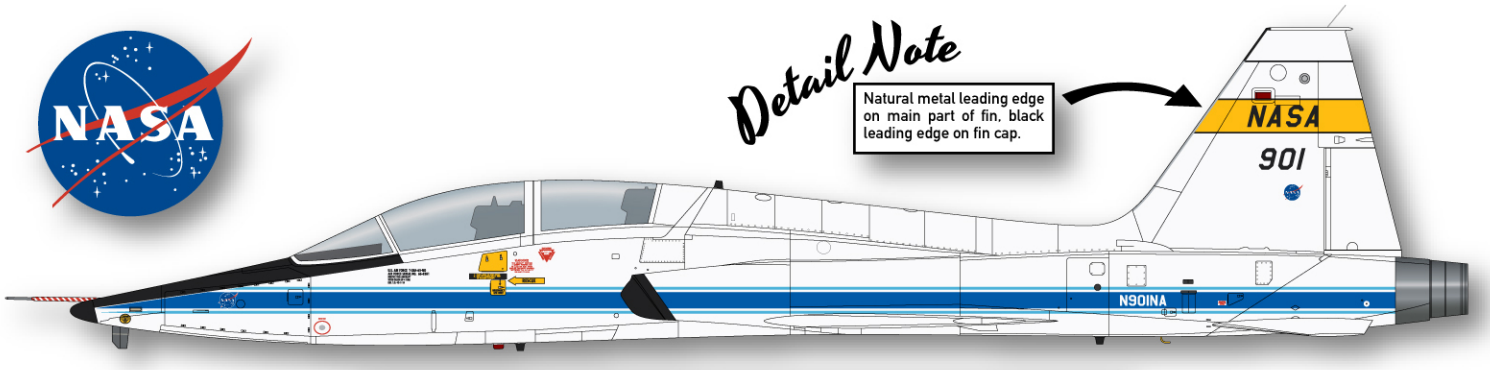
Northrop T-38A Talon

N901NA
Ellington Field, Texas, early 1970s

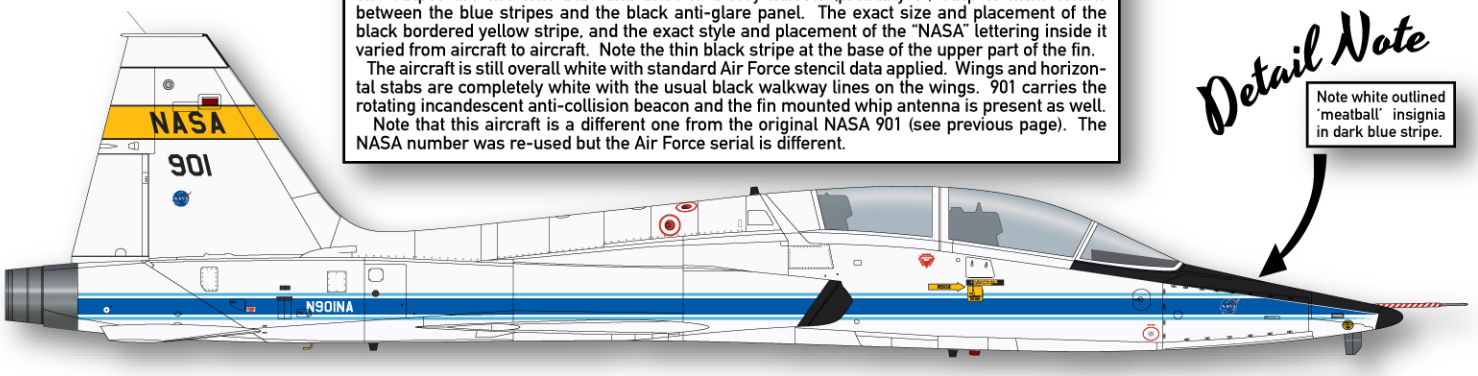
NASA 511
Langley Research Center, Virginia, mid-1970s



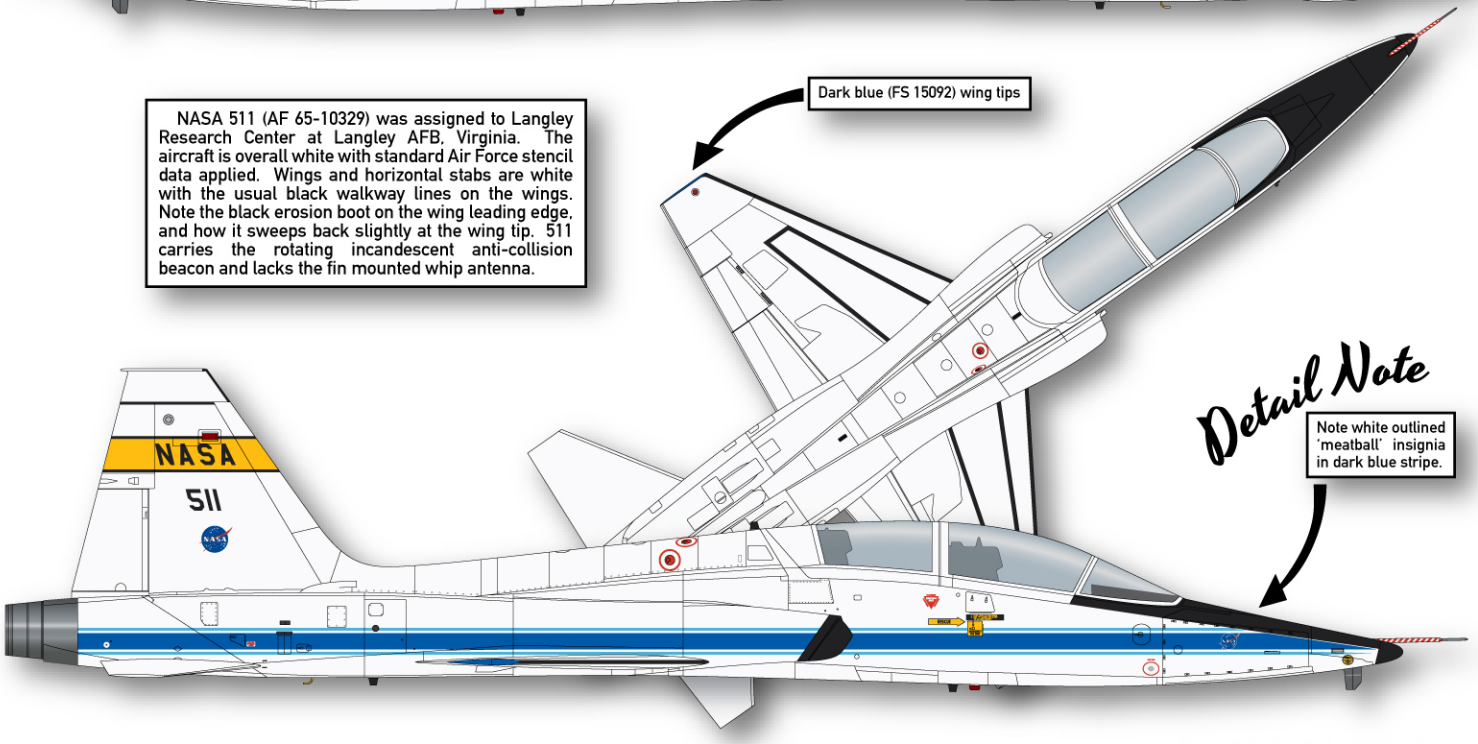
N901NA (AF 66-6381) is representative of the NASA scheme in use from approximately 1973. The stripes are two-tone blue and there is a very narrow (probably 1") strip of white visible between the blue stripes and the black anti-glare panel. The exact size and placement of the black bordered yellow stripe, and the exact style and placement of the "NASA" lettering inside it varied from aircraft to aircraft. Note the thin black stripe at the base of the upper part of the fin.

The aircraft is still overall white with standard Air Force stencil data applied. Wings and horizontal stabs are completely white with the usual black walkway lines on the wings. 901 carries the rotating incandescent anti-collision beacon and the fin mounted whip antenna is present as well.

Note that this aircraft is a different one from the original NASA 901 (see previous page). The NASA number was re-used but the Air Force serial is different.



NASA 511 (AF 65-10329) was assigned to Langley Research Center at Langley AFB, Virginia. The aircraft is overall white with standard Air Force stencil data applied. Wings and horizontal stabs are white with the usual black walkway lines on the wings. Note the black erosion boot on the wing leading edge, and how it sweeps back slightly at the wing tip. 511 carries the rotating incandescent anti-collision beacon and lacks the fin mounted whip antenna.



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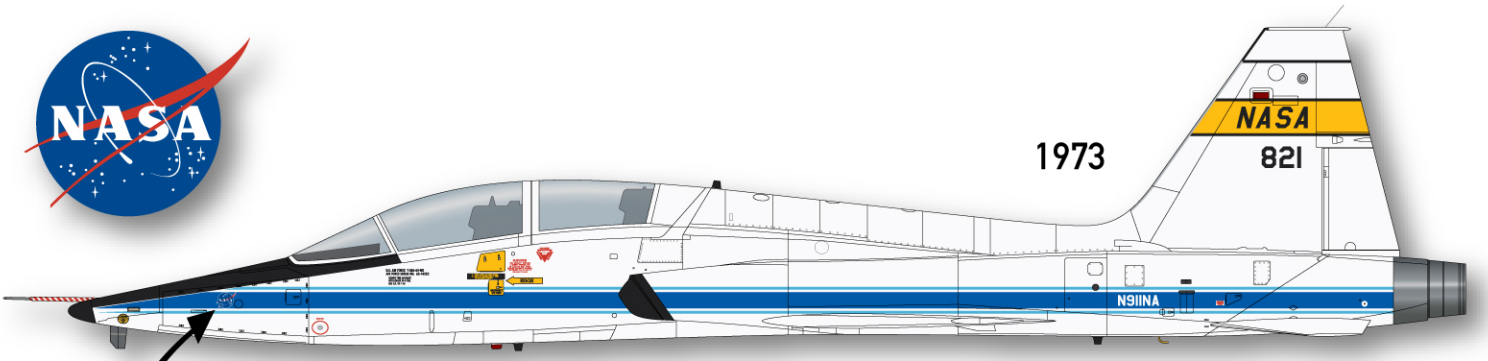
Northrop T-38A Talon

N821NA

Dryden Flight Research Center, California

1973-1977



Detail Note

Note white outlined 'meatball' insignia in dark blue stripe.

T-38A 65-10353 has a rather intersting story. From 1966 to 28 September 1972 it was 911 at Ellington, after which it was transferred to Dryden as 821. It kept its Ellington registration for some time while wearing the Dryden code (see markings note below), eventually being correctly re-registered N821NA.

In a December 1975 photo from Dryden (see p.12), it shows up wearing the stylish dark blue and metallic gold stripe. Another later photo (probably from 1977) shows it with the same stripe but now wearing a modified tail band and the Dryden title on the lower fin. As far as we can ascertain, 821 was the only NASA T-38 to wear this attractive dark blue and gold cheat line. Note that the stripe on this color scheme continues right up to the black anti glare panel. One other NASA airplane had a similar identity crisis: 65-10357 was officially NASA 915, but wore 717 when assigned to Ames Research Center.

On both of the later versions the aircraft was overall white with standard wing walkway lines and other stenicl data. Intakes, the anti glare panel, and the nose tip cap were black. There is a very narrow natural metal leading edge on the vertical fin, with black on the leading edge of the upper fin and the fin cap. At this point it still had the rotating incandescent anti-collision beacon on the belly below the cockpit. In later years this was replaced by an electronic strobe light that was much smaller and not visibly red in color.

Note

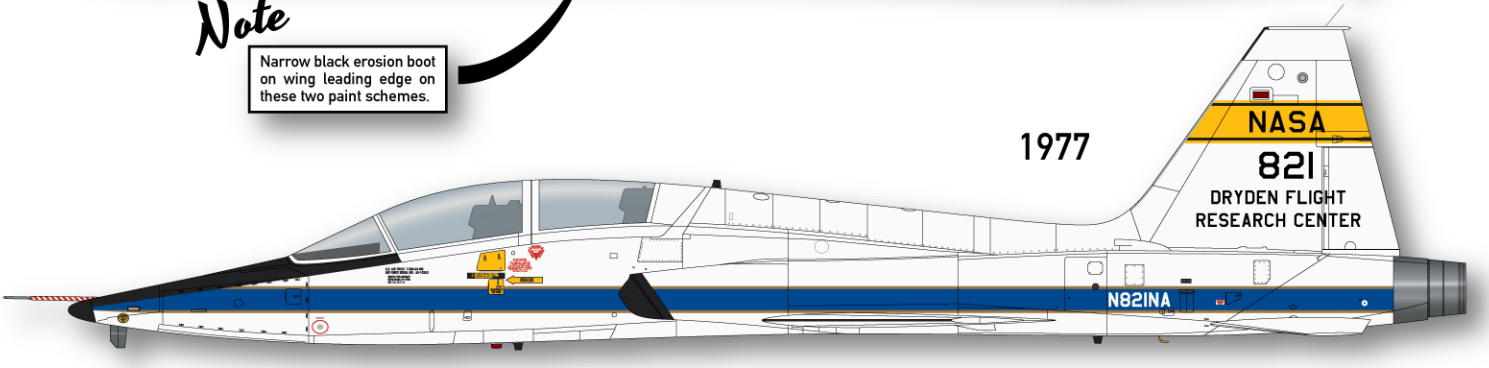
Narrow black stripe at fin cap joint line and small whip antenna mounted on fin cap.

Markings Note

NASA numbers and civilan registrations give a clue to where a NASA aircraft is based. Numbers starting with 8 are from Dryden Flight Research Center at Edwards AFB, 9 are from Ellington Field in Houston, 7 are from Aimes Research Center at Moffett Field, California, and 5 are from Langley Research Center at Langley AFB, Virginia.

Note

Narrow black erosion boot on wing leading edge on these two paint schemes.



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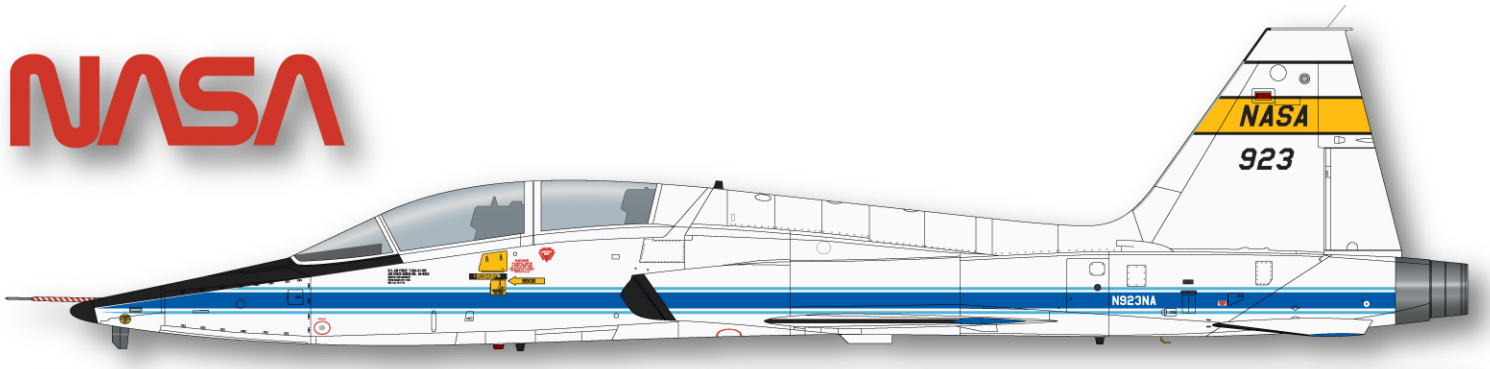
Northrop T-38A Talon
N923NA
Space Shuttle Training Aircraft
Ellington Field, Texas, 1977



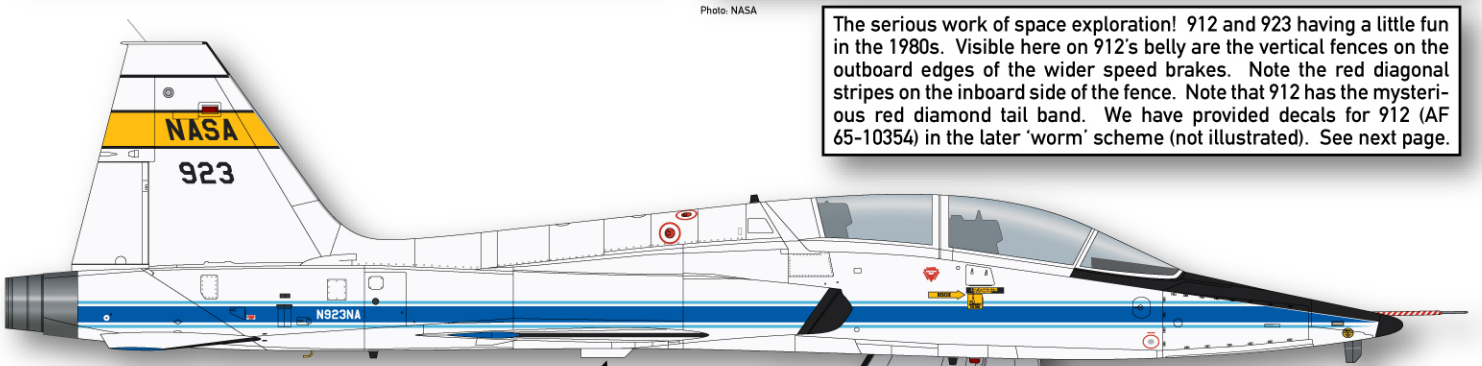
With the advent of the Space Shuttle program, NASA required an aircraft that could be used to train astronauts in the specialized approach procedures that the Shuttle required. The Shuttle flies a very steep approach compared to a normal aircraft, so the T-38 was modified to allow a much steeper approach angle by increasing the size of the speed brakes under the belly. These aircraft could be used on their own, and they were also frequently seen flying chase on NASA's dedicated Shuttle simulator Gulfstream II business jets.

The modified speed brakes were extended 4" on both sides, with the upper inboard corners clipped. There is also a fence on the outboard edge, whose forward edge is angled at 45 degrees. See drawings at right. Make these modified speed brakes from thin sheet styrene and glue to the surface of the kit speed brakes. These modified speed brakes had diagonal red stripes applied, which also extended to the inboard sides of the outboard fences. Interestingly, not all aircraft carried the fences on the outboard edge.

This aircraft had standard early 1970s markings, but with added dark blue (FS 15092) on the tip caps of the wings and on the vertical ends of the horizontal stabilizers. The wings and stabilizers both have the black erosion boot (swept back slightly at the tips), and the vertical fin has a natural metal leading edge.

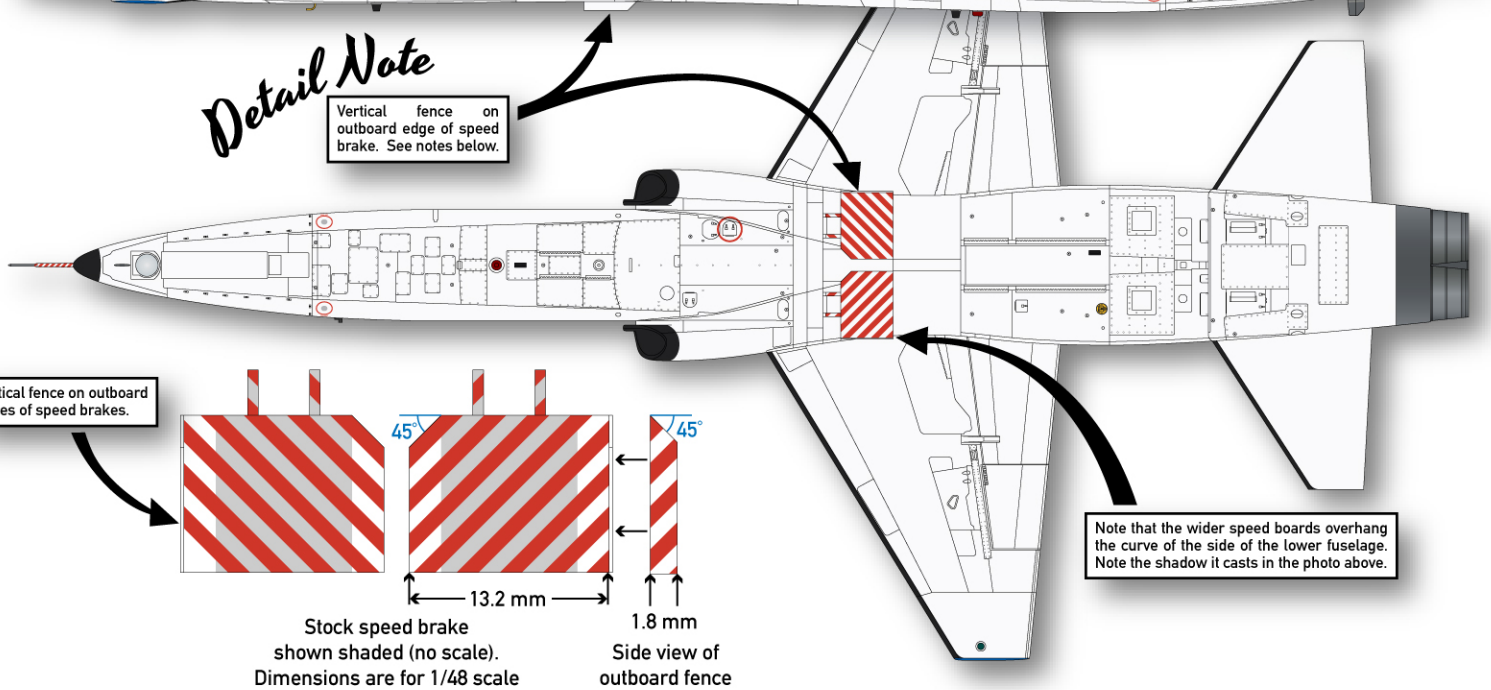
Photo: NASA

The serious work of space exploration! 912 and 923 having a little fun in the 1980s. Visible here on 912's belly are the vertical fences on the outboard edges of the wider speed brakes. Note the red diagonal stripes on the inboard side of the fence. Note that 912 has the mysterious red diamond tail band. We have provided decals for 912 (AF 65-10354) in the later 'worm' scheme (not illustrated). See next page.



Detail Note

Vertical fence on outboard edge of speed brake. See notes below.



Note that the wider speed boards overhang the curve of the side of the lower fuselage. Note the shadow it casts in the photo above.

Vertical fence on outboard edges of speed brakes.

Stock speed brake shown shaded (no scale). Dimensions are for 1/48 scale

Side view of outboard fence

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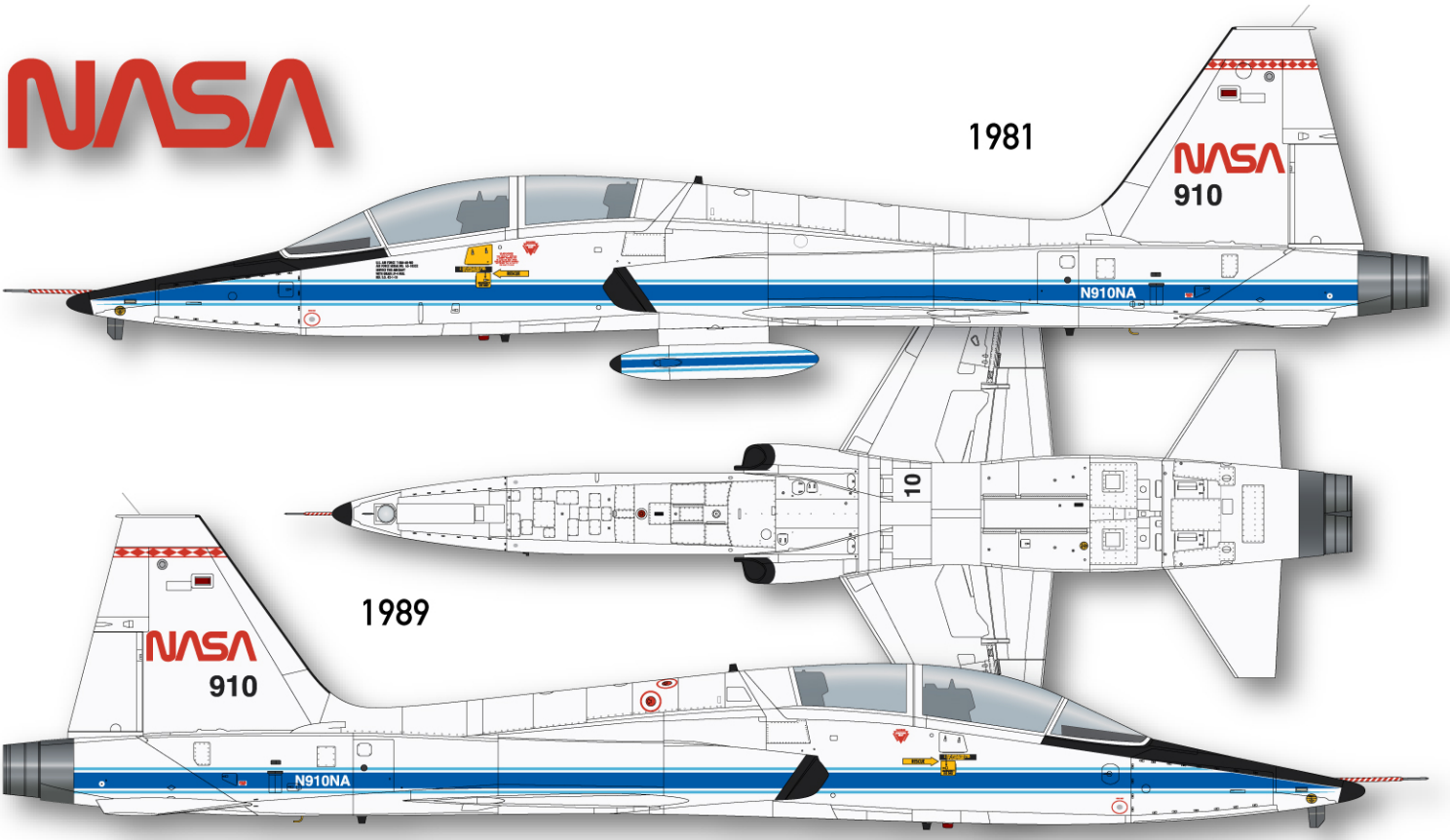
Northrop T-38A Talon

N910NA, N921NS, N955NA

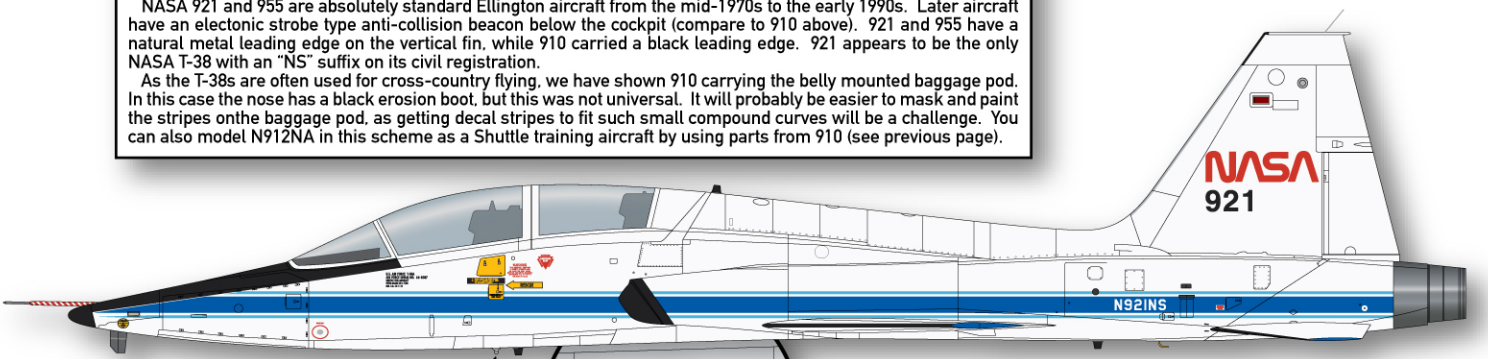
Ellington Field, Texas, 1980s-1990s



By the 1980s NASA T-38s carried very uniform, standardized markings. The 'worm' replaced the yellow tail band, and the 'meatball was retired'. The last two of the aircraft code was carried on the left hand speed brake (except on the Shuttle training aircraft, as on the previous page). Four exceptions to the uniformity were NASA 906, 907, 910, and 912. From 1966 to 1972, 910 was loaned back to the USAF and operated from Eglin AFB, Florida. For reasons unknown, it carried the Eglin red diamond tail band in NASA service for many years. Some photo captions state this was "left over" from her service at Eglin, but clearly it was intentionally retained, since by 1983 the diamond motif was changed from 11 to 7 diamonds. 907 and 912 also spent time at Eglin (1973-'78), and all three aircraft carried the red diamond tail band until at least the late 1980s. We have no explanation!

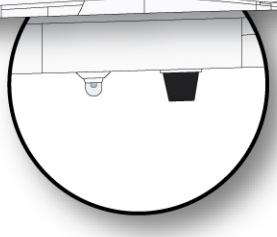
NASA 921 and 955 are absolutely standard Ellington aircraft from the mid-1970s to the early 1990s. Later aircraft have an electonic strobe type anti-collision beacon below the cockpit (compare to 910 above). 921 and 955 have a natural metal leading edge on the vertical fin, while 910 carried a black leading edge. 921 appears to be the only NASA T-38 with an "NS" suffix on its civil registration.

As the T-38s are often used for cross-country flying, we have shown 910 carrying the belly mounted baggage pod. In this case the nose has a black erosion boot, but this was not universal. It will probably be easier to mask and paint the stripes onthe baggage pod, as getting decal stripes to fit such small compound curves will be a challenge. You can also model N912NA in this scheme as a Shuttle training aircraft by using parts from 910 (see previous page).



Detail Note

In the late 1980s the older incandescent rotating red anti-collision beacon was replaced with an electronic strobe. The strobe was much smaller in diameter and was not visibly red.



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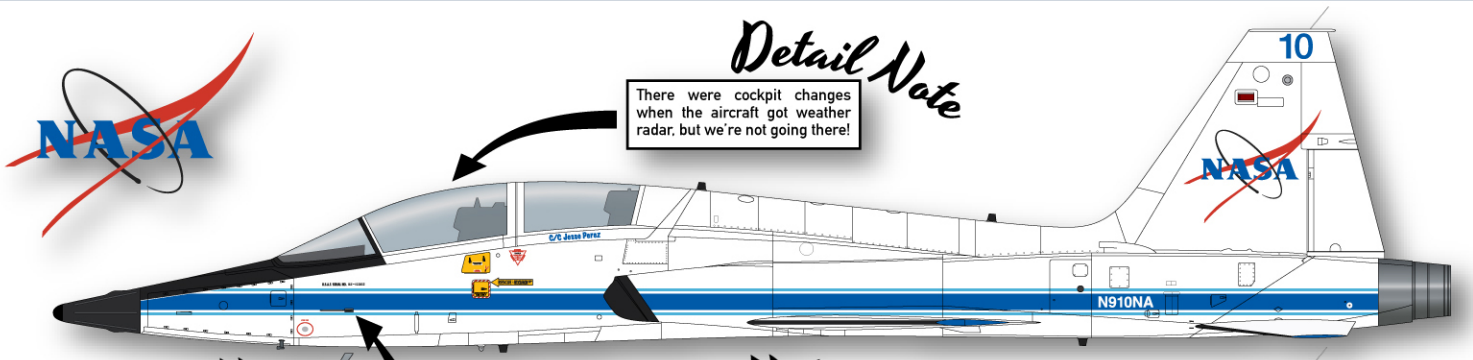
Northrop T-38A Talon

N910NA
Ellington Field, Texas, 2000
N864NA
Dryden Flight Research Center, California 2007



Detail Note

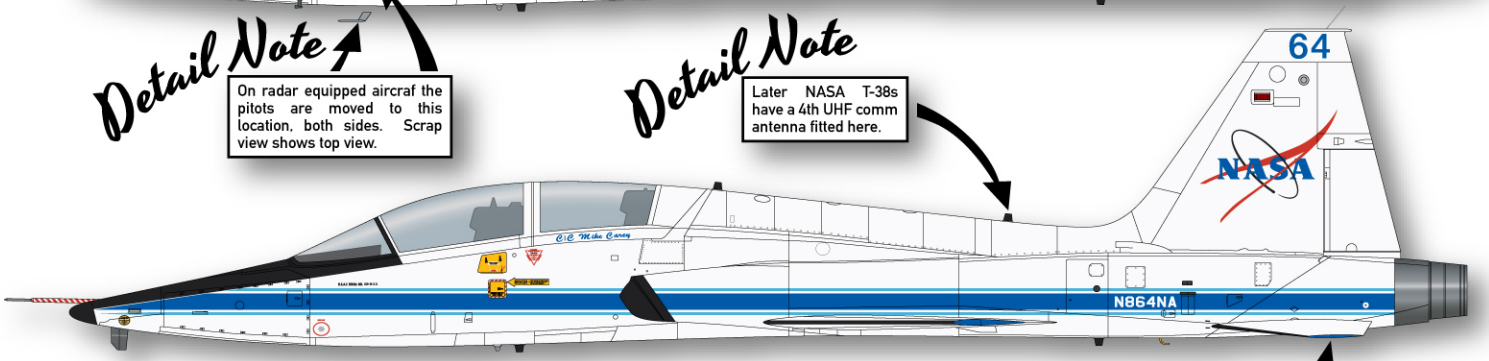
There were cockpit changes when the aircraft got weather radar, but we're not going there!

Detail Note

On radar equipped aircraf the pitots are moved to this location, both sides. Scrap view shows top view.

Detail Note

Later NASA T-38s have a 4th UHF comm antenna fitted here.

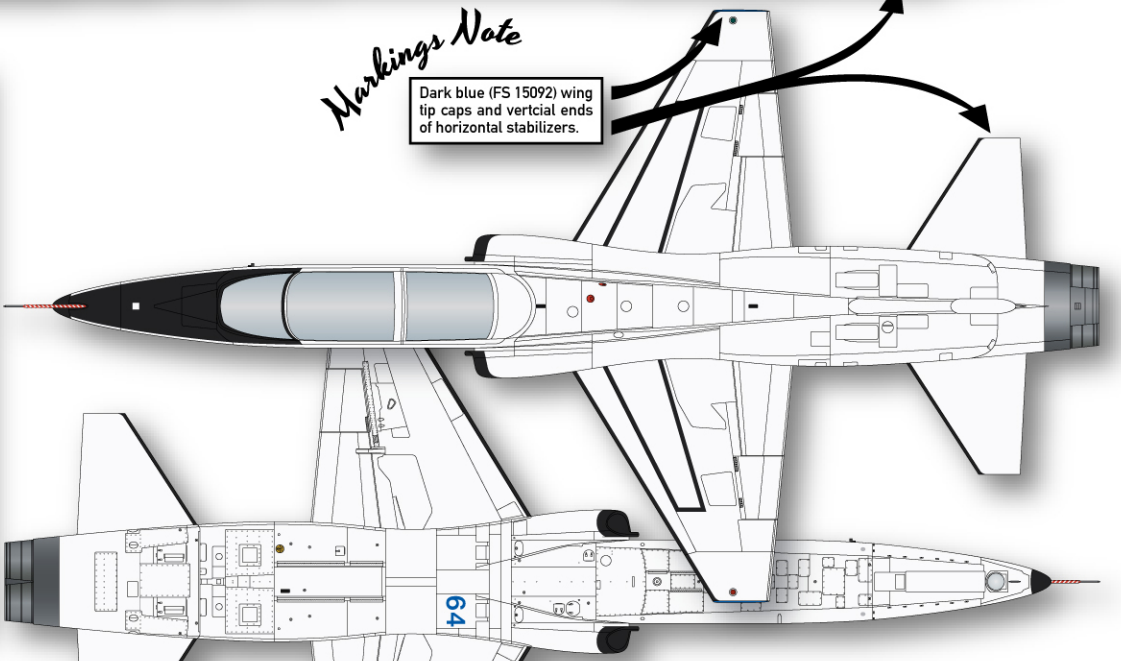


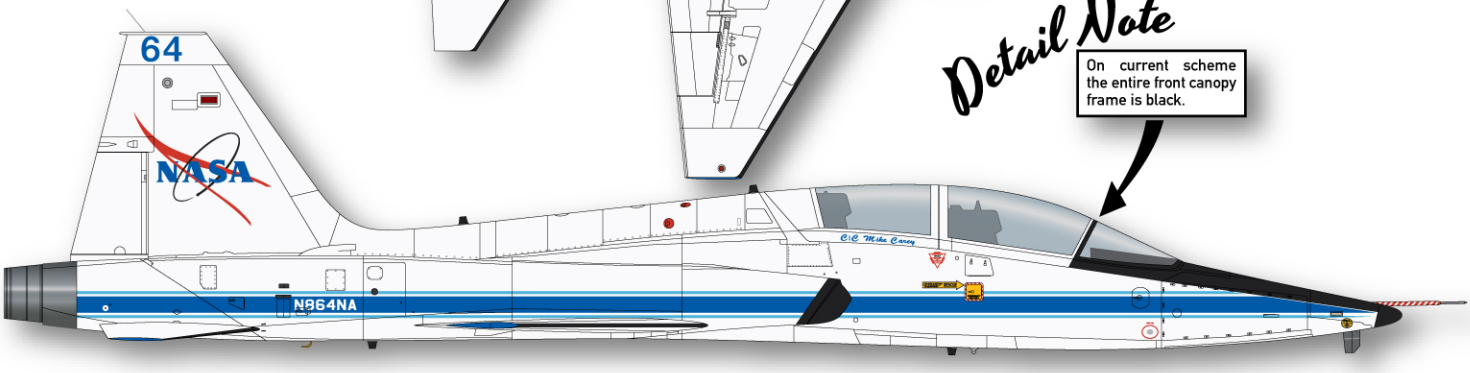
In 1992 the 'worm' word mark was retired. In its place a simplified emblem using the basic design elements of the 'meatball' was introduced for the tails of NASA aircraft. The overall color scheme remained the same, but now only the 'last two' of the NASA number were carried. This was now in dark blue and usually shifted slightly aft of center on the fin cap. The number was carried on the left hand speed brake as before, only now in dark blue. Some aircraft carried crew chief names on the canopy rails, and the Air Force serial number block was truncated. New escape safety markings were introduced with this scheme as well. Leading edges of wings and horizontal stabs were now uniformly black with the outboard tip sweep back, and vertical fins were now uniformly white with no natural metal or black on the leading edge.

From the late 1990s, NASA T-38s began to recieve a color weather radar, resulting in a new nose contour as shown on 910. There are small lumps top and bottom to provide clearance for the antenna. A full upgrade (sometimes called the T-38N) features radar, a glass cockpit, completely new and much larger intakes, and completely new exhaust nozzles. Markings for those are beyond the scope of our project.

Markings Note

Dark blue (FS 15092) wing tip caps and vertcial ends of horizontal stabilizers.





Detail Note

On current scheme the entire front canopy frame is black.

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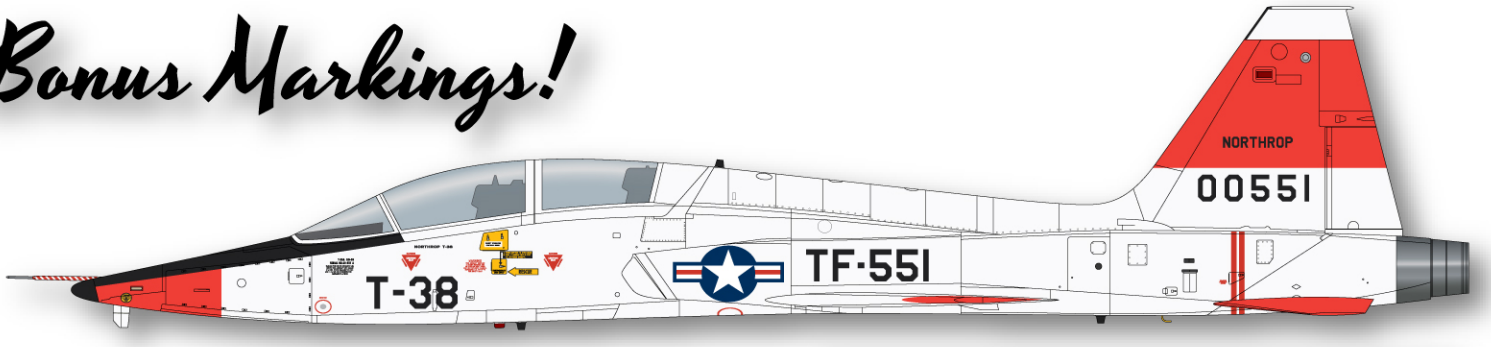
Northrop T-38A Talon

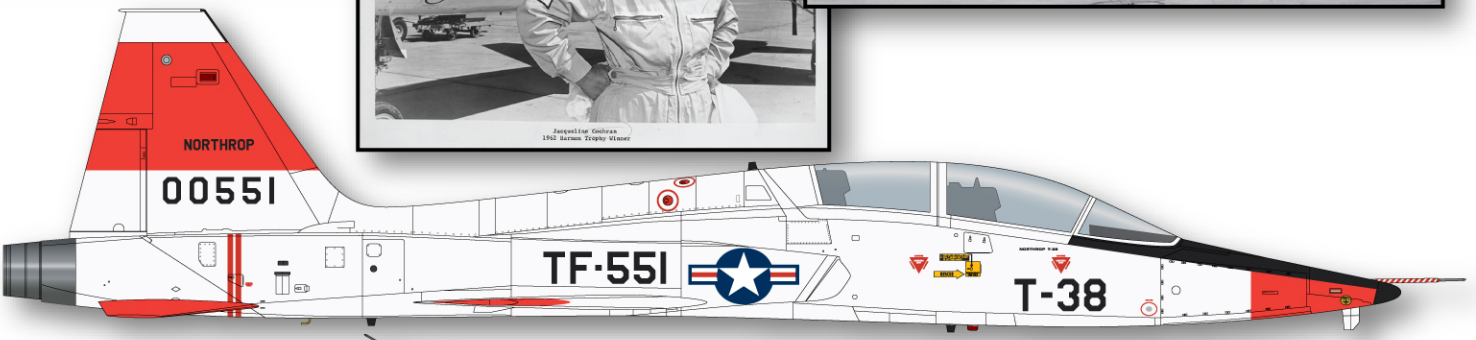
60-0551
Northrop Company Demonstrator
Edwards AFB, California
1961

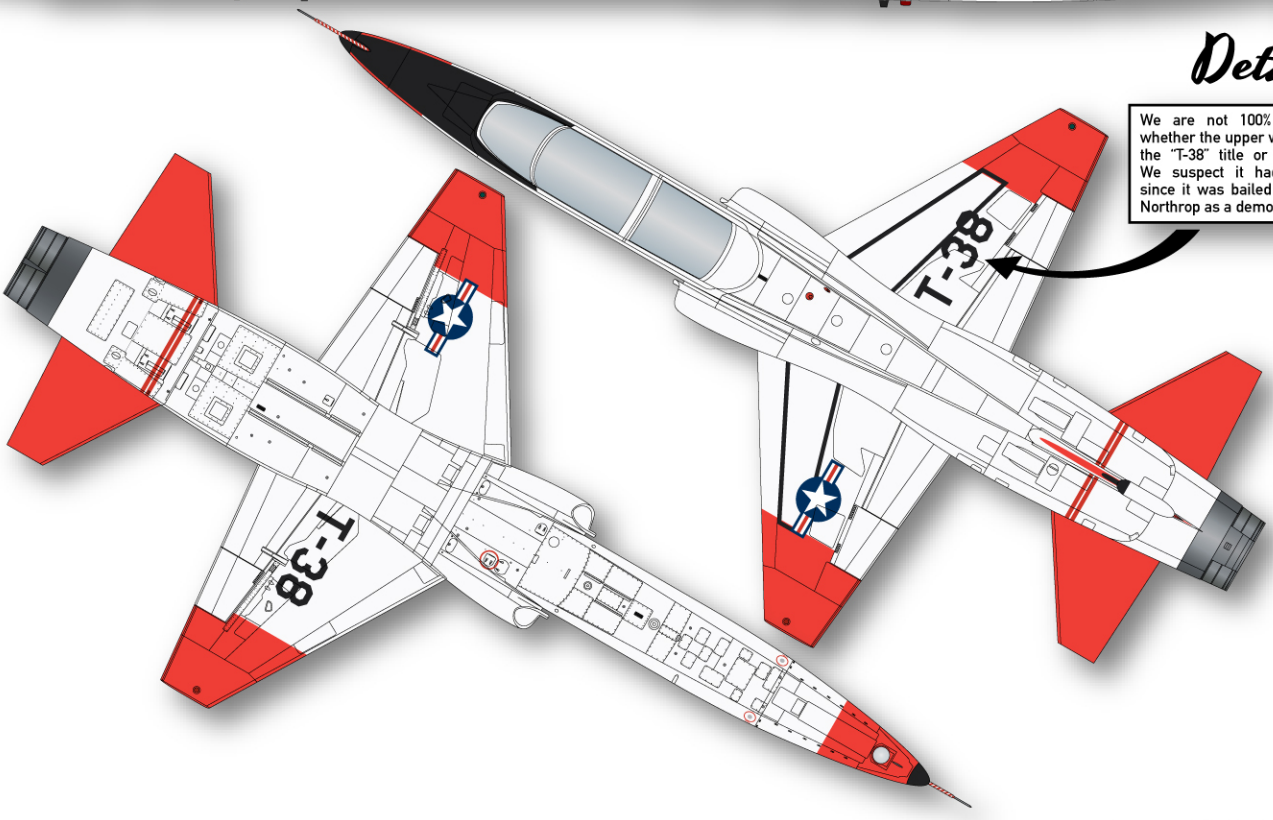
Bonus Markings!



Already world famous by the 1960s, aviator Jacqueline Cochran set several womens' world records while flying T-38A 60-0551. The aircraft had been retained by Northrop as a 'demonstrator', and it was made available for Cochran's record attempts at Edwards AFB in 1961. For her efforts, Cochran was awarded the Harmon Trophy in 1962.

The aircraft was in the standard USAF gloss white scheme with broad areas of day-glow fluorescent red-orange (FS 28915). Nose cap, upper fin leading edge, and anti-glare panel are black. Note the unusual white UHF comm antenna under the nose.





Detail Note

We are not 100% certain whether the upper wing has the "T-38" title or "USAF". We suspect it had "T-38" since it was bailed back to Northrop as a demonstrator.

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Northrop T-38A Talon

60-0551
Cape Canaveral
1962

Bonus Markings!!

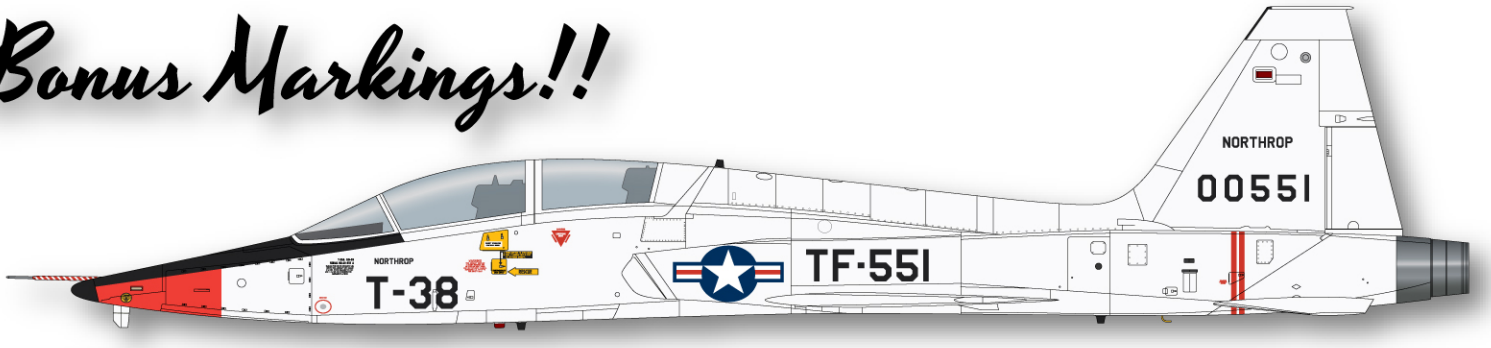
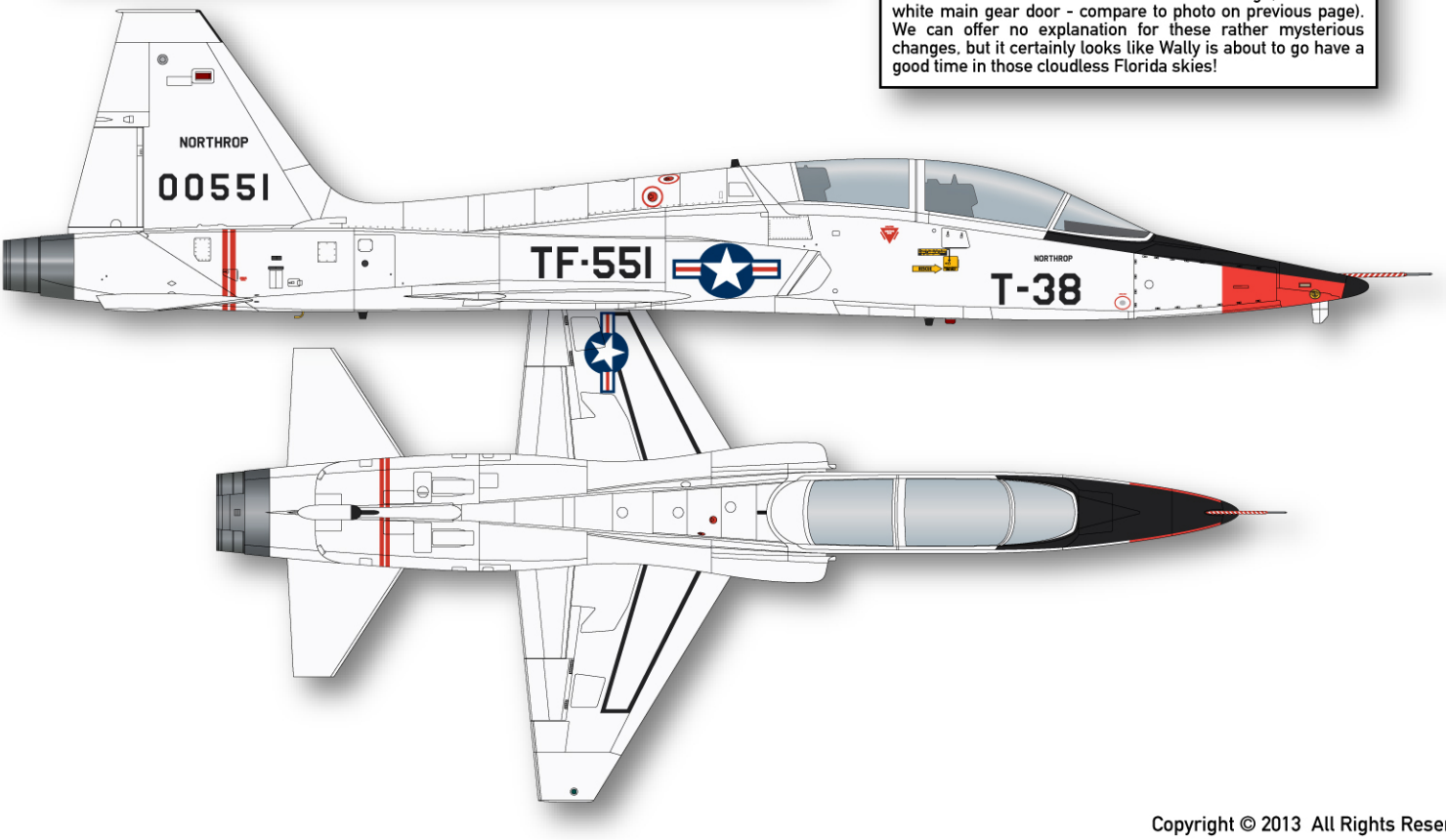


Photo: NASA

The photo at left was taken around the time of the Mercury 8 mission in October 1962. It shows astronaut Wally Schirra suited up for a flight in 60-0551. This was nearly a year and a half before NASA received its first T-38s, so we reckon it may possibly be the first T-38 that qualifies as a NASA ride. Deke Slayton was also photographed standing next to 0551 at about this same time, lending more evidence to this having been an astronaut ride.

Differences in the markings since Jackie Cochran's flight the year before are noteworthy. All of the day-glow except the nose appears to have been removed. The small "NORTHROP T-38" title under the forward cockpit has been replaced by just the word "NORTHROP" in larger letters in a different style. Ejection triangle markings have also changed. The large "T-38" titles have been removed from the wing (note the all white main gear door - compare to photo on previous page). We can offer no explanation for these rather mysterious changes, but it certainly looks like Wally is about to go have a good time in those cloudless Florida skies!



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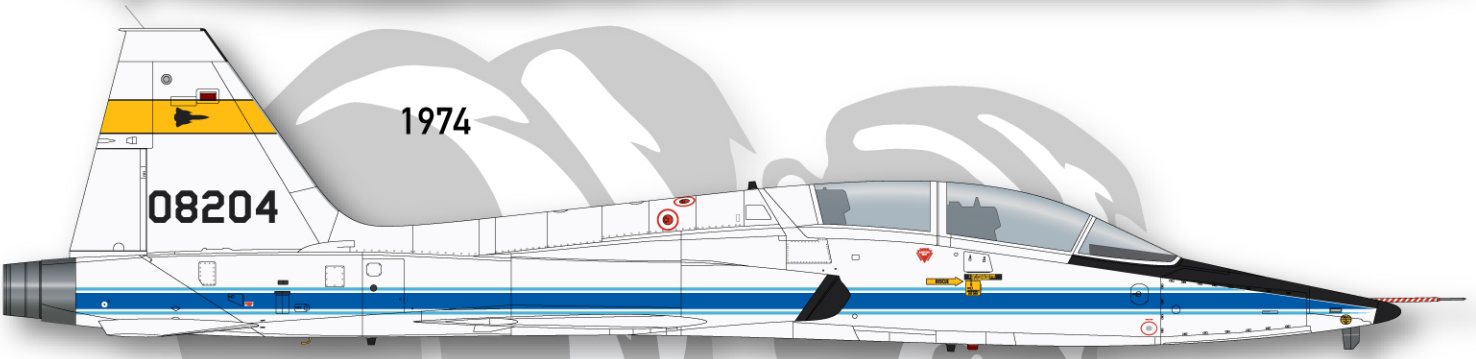
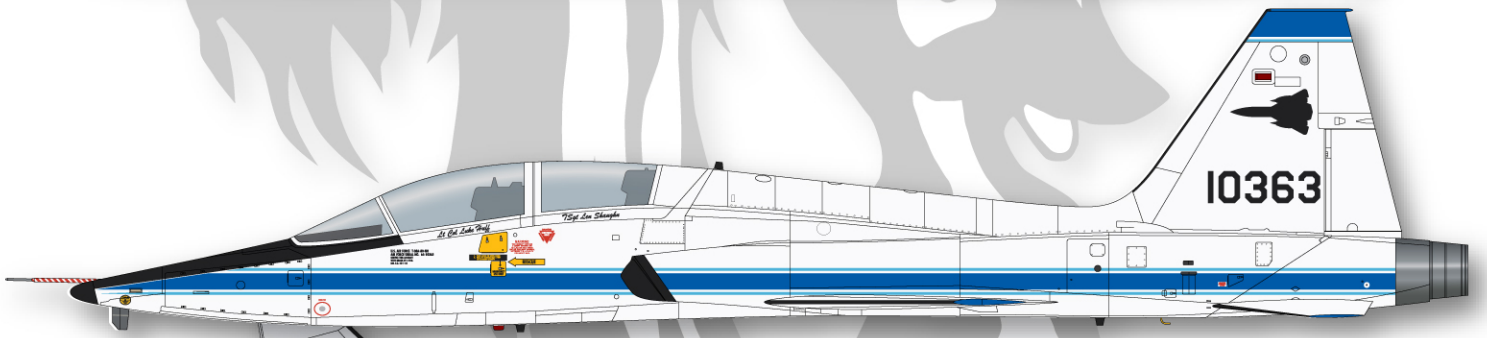
Northrop T-38A Talon

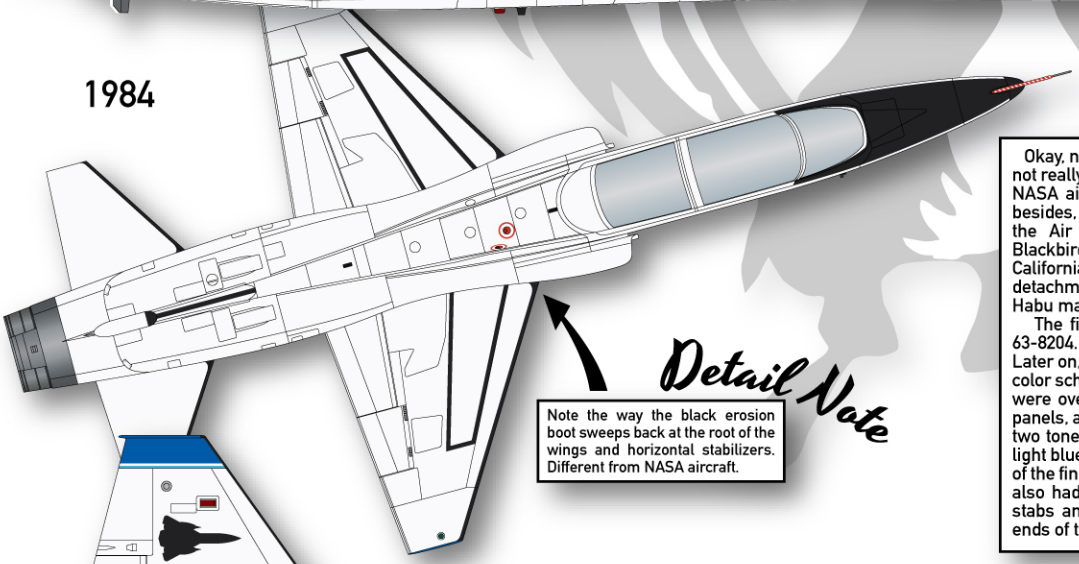
AF 63-8204, AF 65-10363
Air Force Plant 42
Palmdale, California

More Bonus Markings!!





1984

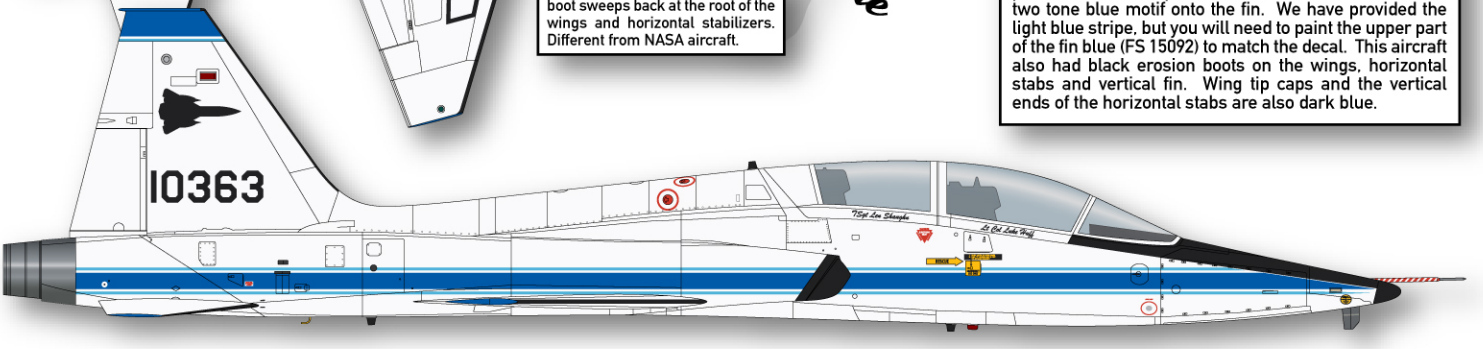


Detail Note

Note the way the black erosion boot sweeps back at the root of the wings and horizontal stabilizers. Different from NASA aircraft.

Okay, not strictly speaking NASA airplanes. Well, okay, not really even remotely NASA airplanes. But one was a NASA airplane and the other has NASA stripes. And besides, they're just too cool! During the 1970s and '80s, the Air Force maintained and modified the SR-71 Blackbird fleet at Air Force Plant 42 in Palmdale, California, home of the Skunk Works. The Air Force detachment there kept a T-38 on hand to fly chase on Habu maintenance test flights.

The first aircraft was formerly NASA's N904NA, AF 63-8204. It is shown as it appeared in around 1974. Later on, T-38A 65-10363 replaced it, wearing a modified color scheme with a large SR-71 on the fin. Both aircraft were overall basic white with black intakes, anti-glare panels, and nose caps. The later aircraft also carried the two tone blue motif onto the fin. We have provided the light blue stripe, but you will need to paint the upper part of the fin blue (FS 15092) to match the decal. This aircraft also had black erosion boots on the wings, horizontal stabs and vertical fin. Wing tip caps and the vertical ends of the horizontal stabs are also dark blue.



Northrop T-38A Talon
National Aeronautics & Space Administration
Photo Gallery

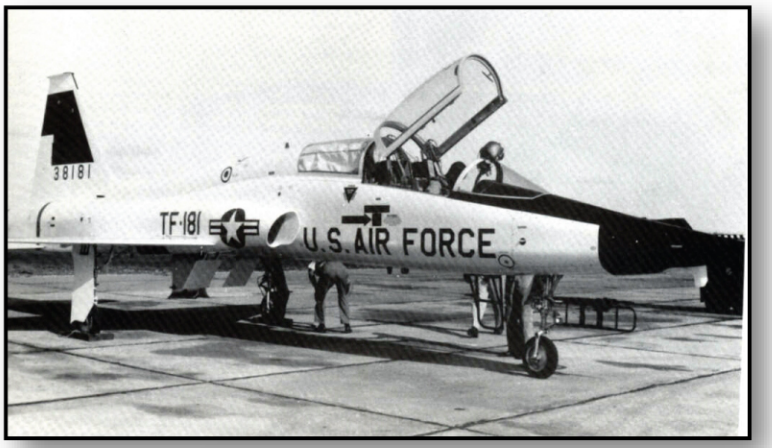
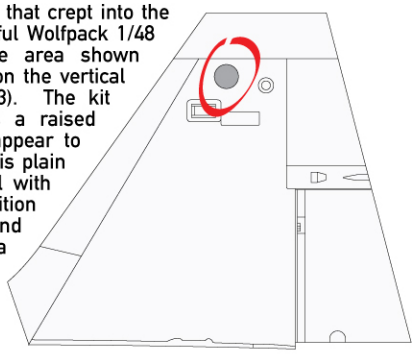


Photo: USAF

NASA's first T-38, 63-8181 as she appeared prior to transfer to the agency. This is the aircraft in which Gemini astronauts Elliott See and Charles Bassett were killed in 1966.

Correction Needed

Oops! One error that crept into the otherwise beautiful Wolfpack 1/48 T-38A kit is the area shown shaded at right on the vertical fin (part no. B13). The kit portrays this as a raised area, and they appear to have confused this plain flat access panel with the white position light directly behind it. Sand this area flat to match the surrounding surface.



Although not the best quality, this undated photo (probably from the late 1960s) none the less illustrates the standard early paint scheme applied to NASA's T-38 fleet. Note the last two of the code number on the left hand speed brake. We have been able to find surprisingly few photos of aircraft from the mid-1960s through early 1970s period.

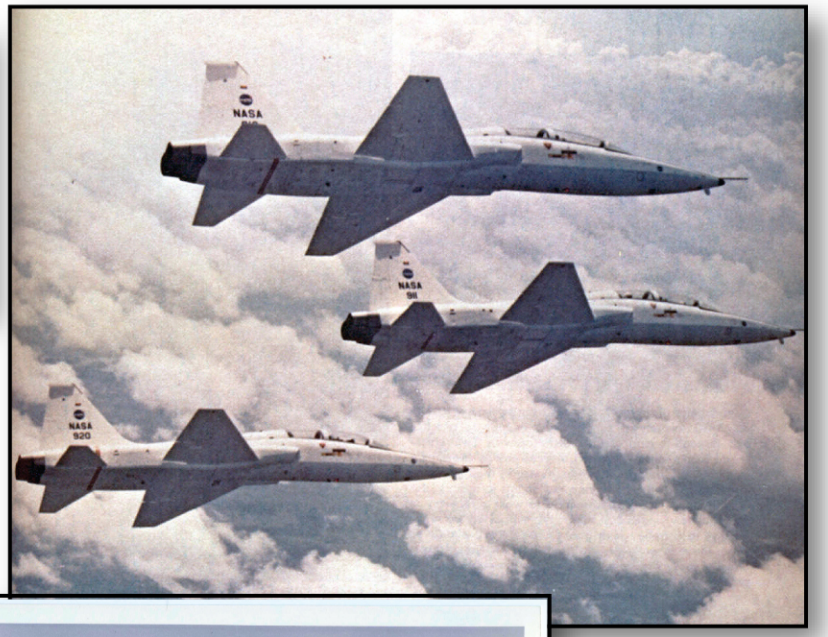


Photo: NASA

Photo: NASA

N821NA is pictured in formation with a pair of company F-104s in this December 1975 Dryden image. As far as we can ascertain, 821 was the only NASA T-38 to wear the dark blue and metallic gold cheat line.

Northrop T-38A Talon
National Aeronautics & Space Administration
Photo Gallery

Photo: NASA

Langley Research Center's 511 is shown carrying a test rig under the fuselage, about to enter the pattern at the Wallops Island facility. Photo is dated 1978.

Photo: Via Mike Idacavage

One of the last aircraft to wear the yellow tail band, we see N910NA parked on a busy ramp in 1983. Note the extended speed brakes fitted to 910 at this time. They were later removed (see profile). Also note the baggage pod with no black erosion boot at the nose.

Photo: NASA

The old and the new. Here we see Shuttle approach simulators in action. 923 on the right wears the old yellow tail band while sister ship 924 wears the new NASA word mark "the worm". You can bet their vertical speed indicators are pegged!

Northrop T-38A Talon
National Aeronautics & Space Administration
Photo Gallery

N921NS banks hard near Johnson Space Flight Center in Houston. This represents the standard scheme seen from the mid-1970s to the early 1990s. Note the blue tips on the wing and horizontal stab and the slight sweep back of the black erosion boot at the tips.

Photo: NASA

913 and 919 overfly Launch Complex 39 at the Cape. Both are Shuttle approach simulators. Note the white Shuttle main tank on the pad, dating this shot to either STS-1 or STS-2 in 1981.

Photo: NASA

T-38As N863NA and N864NA pictured near Edwards AFB, California, circa 2006. Note the dark blue wing tip caps and the vertical ends of the horizontal stabilizers as well as the black leading edges on the wings and stabs. The current scheme features a completely black front canopy frame. Also note the second small black UHF comm antenna on the aft spine of 864. You can also just make out a TCAS wart antenna on the upper nose of 863.

Photo: NASA

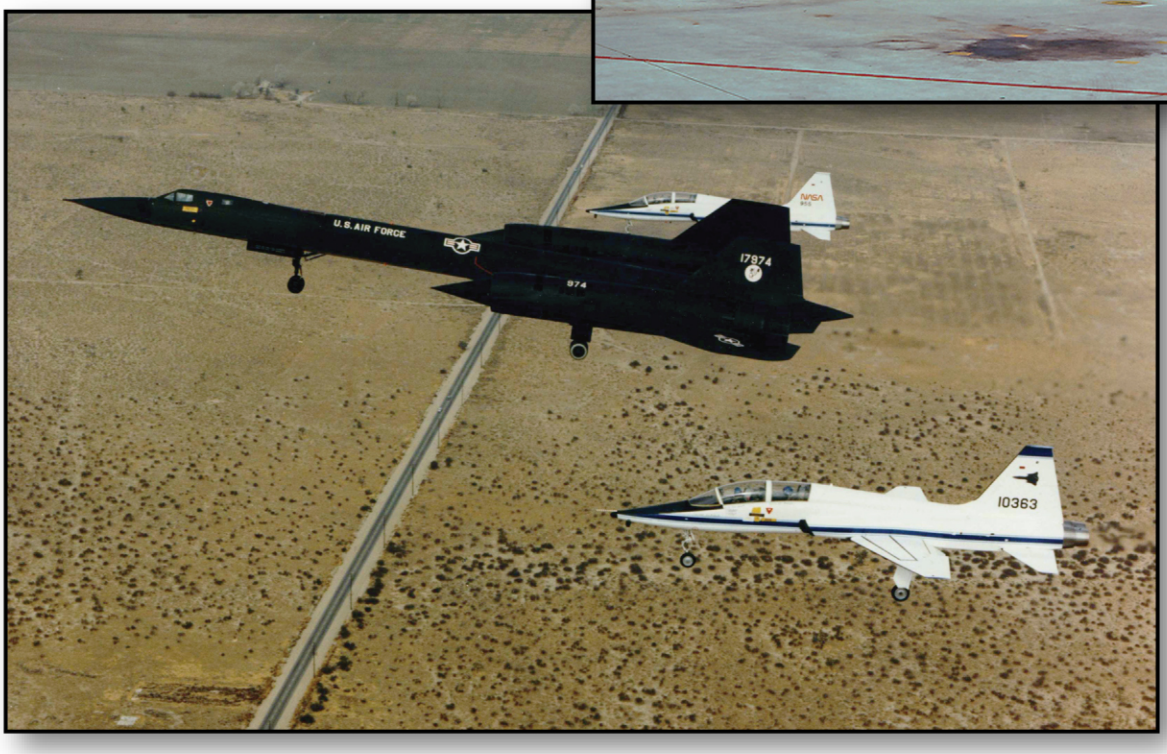
Northrop T-38A Talon
National Aeronautics & Space Administration
Photo Gallery

A pleasing in-flight shot of 907 doing its thing, and showing the mysterious red diamond tail band.

Photo: NASA

Langley's 514 (65-10328) shares the Langley ramp with some visiting Florida ANG F-106s in 1976. Note that the Langley T-38s do not carry civilian registrations.

Via Nicklas



Habu 974 on short final to Palmdale, escorted by NASA's 955 and Palmdale's dedicated chase bird 65-10363, circa 1981.

Photo: NASA

Thank you!

Hearty thanks to Brian Nicklas, Mike Idacavage, and Nick Kiriokos for their kind assistance on this project. Three steely-eyed missile men if ever there were any!

T-38N Upgrade Program

Photo: NASA

Beginning in the 1990s NASA's T-38 fleet was upgraded significantly. A glass cockpit and color weather radar were the first phase, resulting in a very different profile. The metal nose gave way to a radome. The small size of the T-38 nose mandated bulges above and below to accommodate the radar scanner. The intakes and exhausts remain as before.

By the mid-2000s the full upgrade again significantly modified the external appearance of these veteran steeds in parallel with the USAF T-38C program. They are either offically or unofficially (depending what you read) called T-38Ns. The full modification includes completely new and much larger intakes (unlike those fitted to any other member of the F-5 family), new exhaust nozzles, a shark fin comm antenna, and Martin-Baker Mk.16 ejection seats, along with other improvements. Due to the extensive nature of these changes we have not included markings for the T-38Ns.

Photo: NASA

Photo: NASA

Required Reading:

"Northrop's T-38 Talon" by Don Logan, Schiffer, 1995

"The NASA Northrop T-38, Photographic Art from an Astronaut Pilot" by Story Musgrave, Lannistoria, 2009

"Uncovering the Northrop T-38A/AT-38/T-38C" by Willy Peeters, DACO Publications, 2004