

\$1.50

THE UNITED STATES AIR FORCE AIR DEMONSTRATION SQUADRON

# THUNDERBIRDS

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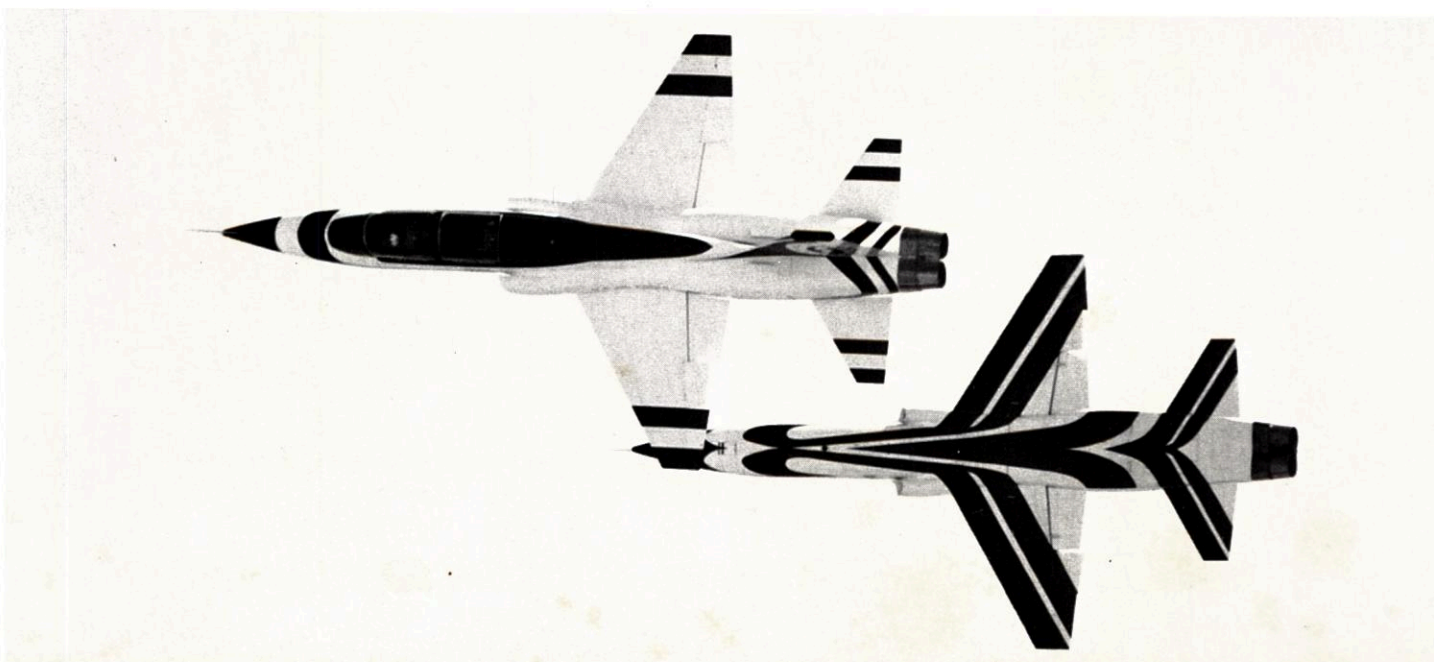
# THUNDERBIRDS OFFICER ALUMNI

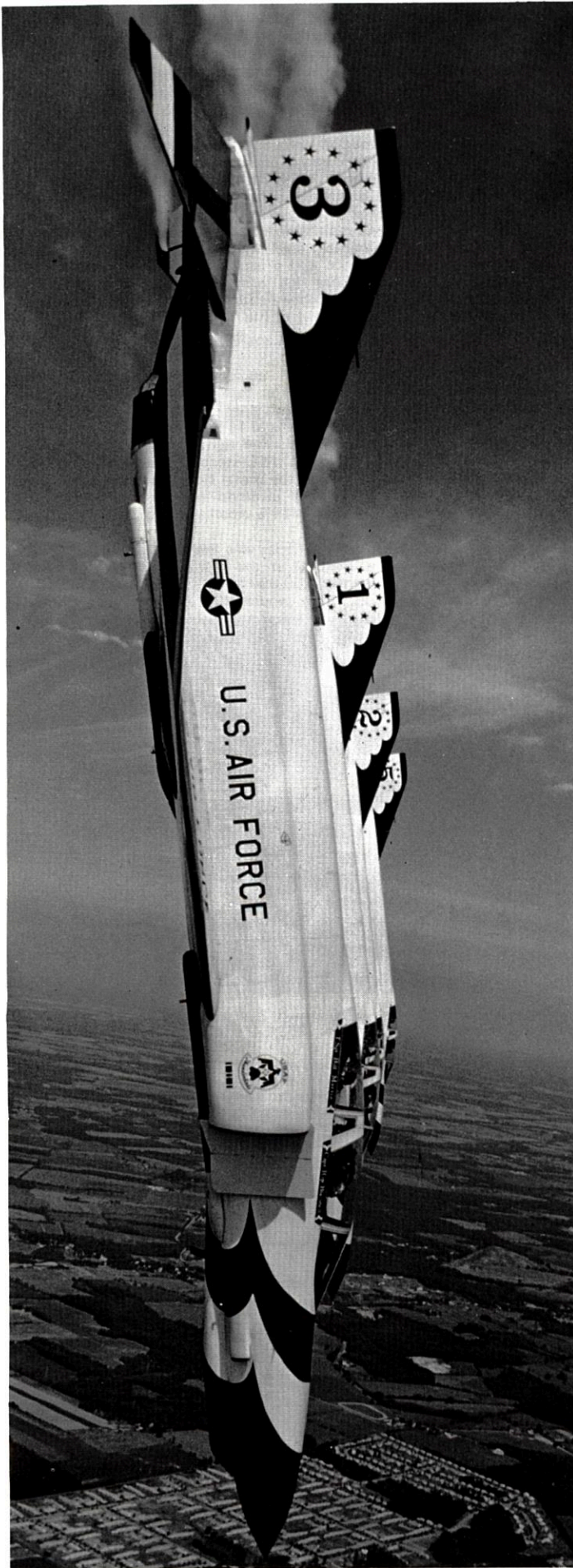


Maj Dick Catledge, Memphis, TN	Leader	5/53-10/54
Capt Buck Pattillo, Atlanta, GA	Wing	5/53-3/54
Capt Bill Pattillo, Atlanta, GA	Wing	5/53-3/54
Capt Bob Kanaga, Phoenix, AZ	Slot	5/53-3/54
1st Lt Bob McCormick, Oshkosh, WI	Solo/Slot	5/53-10/54
Capt Bill Brock, Phoenix, AZ	Narrator	6/53-5/54
Capt John Spalding, Downers Grove, IL	Wing	3/54-3/55
Capt Wilbur Creech, Emmetsburg, IA	Wing	3/54-10/55
1st Lt Aubrey Brown, Dyersburg, TN	Solo	3/54-10/55
Capt H. A. Davis, White Plains, NY	Narrator	5/54-9/55
Capt Jacksel Broughton, Rochester, NY	Leader	10/54-3/57
Capt Billy Ellis, DeQuincy, LA	Solo/Wing	5/55-2/57
Capt Paul Ross, Fournmile, KY	Spare/Solo	7/55-6/56
Capt Don Ferris, Tacoma, WA	Narrator	7/55-11/56
1st Lt Bob Anderson, Tulsa, OK	Solo/Wing	7/55-3/57
1st Lt Bill Pogue, Sand Springs, OK	Solo/Slot	10/55-9/57
Capt Bart Bartley, Apple Valley, CA	Solo	6/56-2/58
Capt Douglas Brenner, Falls City, NE	Spare/Wing	8/56-2/58
Capt Bill Scott, St. Petersburg, FL	Narrator	11/56-4/58
Capt Bob McIntosh, Hollywood, CA	Solo/Wing	3/57-8/58
Capt Sam Johnson, Dallas, TX	Slot	3/57-10/58
Maj Robby Robinson, Fort Wayne, IN	Leader	3/57-3/59
CWO Lloyd Pulley, Bartlesville, OK	Maint Off	6/57-10/58
Capt Bob Rutte	Slot	8/57-9/57
Capt Homer Whitlow, Kress, TX	Slot	12/57-5/59
Capt C. D. "Fish" Salmon, Port Jervis, NY	Solo/Slot	1/58-3/59
Capt Dick Crane, Salt Lake City, UT	Narrator	1/58-7/60
Capt Gayle Williams, Medford, OR	Left Wing	4/58-10/59
Capt Herman Griffin, Sumter, SC	Solo	8/58-9/60
Capt Chuck Mautsby, Norfolk, VA	Right Wing	10/58-8/60
Maj Bob Fitzgerald, New York, NY	Leader	3/59-4/61
Capt Robert Janca, Cleveland, OH	Left Wing	4/59-3/61
CWO Myron France, Lincoln, NE	Maint Off	5/59-6/61
Capt Robert Cass, Colorado Springs, CO	Right Wing	2/60-2/62
Capt Ronald Everett, Palm Springs, CA	Narrator	5/60-5/62
Capt Gerald Larson, Jamestown, NY	Solo	12/60-8/62
Capt William Hosmer, Dunseith, ND	Left Wing	2/61-3/63
Capt George Nial, Ft. Lauderdale, FL	Narrator	3/61-4/61
Capt Robert Bell, Houston, TX	Slot	3/61-11/62
Maj Ralph "Hoot" Gibson, Mt. Carmel, IL	Leader	4/61-3/63
Capt Cameron Husdale, Sheridan, WY	Maint Off	6/61-7/63
Capt Bobbie Gardiner, Tampa, FL	Narrator	7/61-7/62
Col John Groom, Rochester, NY	Commander	1/62-4/62
Capt Ralph Brooks, El Paso, TX	Ring Wing	2/62-11/62
Capt Robert Moore, Miami, FL	Solo	3/62-9/63
Lt Col W. Alden, Ellenon, FL	Commander	4/62-4/64

Capt Leonard Czarnecki, Chicago, IL	Narrator	4/62-4/64
Capt Ron Catton, Waukegan, IL	Solo	8/62-12/64
Maj Paul Kauttu, Ilwaco, WA	Slot/Cmdr/Ldr	9/62-2/66
Capt Bill Higginbotham, Baton Rouge, LA	Right Wing	1/63-12/64
Maj Edwin Palmgren, Winston-Salem, NC	Solo	10/54-9/56
Capt Paul Ross, Fournmile, KY	Cmdr/Ldr	3/63-1/64
1st Lt Stanley Sasaki, Honolulu, HI	Admin Off	3/63-2/65
Capt Jerry Shockley, Lafayette, LA	Left Wing/Slot	4/63-12/64
Capt Alan Schreiber, Orange, NJ	Info Off	4/63-5/66
Maj Lloyd Reder, Broadus, MT	Maint Off	8/63-8/65
Capt Clarence Langerud, Lake Bay, WA	Solo	8/63-2/66
Capt Gene Devlin, San Diego, CA	Left Wing	2/64-5/64
Capt Russell Goodman, Salt Lake City, UT	Narrator	3/64-12/65
Capt Charlie Hamm, Little Rock, AR	Left Wing	4/64-2/66
Capt Robert Morgan, Pendleton, SC	Solo	1/65-10/66
Capt Hank Canterbury, Huntsville, AL	Slot	1/65-2/67
Capt Buster McGee, La Jolla, CA	Right Wing	1/65-2/67
Capt Glen Scoggins, Atlanta, GA	Admin Off	3/65-7/67
Lt Col Ralph Maglione, Akron, OH	Cmdr/Ldr	7/65-7/67
Maj Robert Haney, Champaign, IL	Maint Off	8/65-1/68
Maj Frank Liethen, Appleton, WI	Exec Off	11/65-10/66
Capt Hal Dortch, Nashville, TN	Narrator	11/65-12/66
Capt Bob Becker, Walla Walla, WA	Solo	12/65-12/67
Capt Steve Murata, Mountain View, CA	Info Off	3/66-4/69
Maj Mike Miller, Columbia, SC	Solo	11/66-1/69
Maj Tony McPeak, Grants Pass, OR	Solo	12/66-12/68
Capt Jack Dicke, Minneapolis, MN	Slot	12/66-1/69
Maj Stan Musser, Gettysburg, PA	Right Wing/Slot	12/66-12/69
Maj Neil Eddins, Afton, WY	Slot	4/59-3/61
Capt Clyde Label, San Francisco, CA	Admin Off	6/57-4/70
Maj Mack Angel, Harrison, AR	Left Wing	11/67-12/69
Maj Hal Shelton, Wichita, KS	Mat Off	11/67-1/70
Maj Doyle Ruff, Orlando, FL	Right Wing	1/68-1/71
Lt Col Joe Moore, Spartanburg, SC	Cmdr/Ldr	5/68-7/70
Capt Jack Thurman, Altus, OK	Solo	11/68-1/69
Capt Tom Gibbs, Loveland, CO	Narrator/Slot	11/68-7/72
Maj Mike Kerby, New York, NY	Solo	1/69-1/71
Capt Dennis Weddle, Coon Rapids, IA	Info Off	2/69-12/71
Maj Bill Elander, Atlanta, GA	Mat Off	11/69-1/72
Maj Bob Jackson, Tacoma, WA	Left Wing	11/69-1/72
Capt Art Ivins, Leo, IN	Narrator	1/70-1/71
Capt Gary Younglove, Dayton, OH	Admin Off	4/70-5/72
Lt Col Tom Swalm, San Diego, CA	Cmdr/Ldr	5/70-1/73
Maj Joe Howard, Aoshkie, NC	Right Wing	10/70-6/72
Maj Steve Dwellie, Visalia, CA	Solo	11/70-1/73

Capt Jerry Bolt, Lubbock, TX	Narrator/Slot	1/71-12/72
Capt Bill Gregory, Stockton, CA	Info Officer	10/71-12/73
Maj Rip Blaisdell, Topeka, KA	Narr/Right Wing	11/71-1/74
Maj Neils Running, Frenchtown, MT	Left Wing	11/71-1/74
Capt Tim Rols, Crystal Lake, IL	Slot	12/71-12/74
Capt Jorge Reinoso, Quito, Ecuador, SA	Admin Officer	4/72-7/74
Lt Col Roger Parrish, Carbondale, IL	Cmdr/Ldr	7/72-1/75
Maj Al McArtor, Webster Groves, MO	Narrator	11/72-2/74
Capt Kirk Brimmer, Marshalltown, IA	Solo	11/72-12/74
Capt Jim Bash, Dallas, TX	Maintenance	5/72-3/76
Capt Gil Mook, Charlestown, RI	Left Wing	10/73-2/76
Capt Doug Roach, Romulus, MI	Logistics/Rt Wg/Slot	1/73-2/76
Maj Ray White, Dallas, TX	Logistics	11/73-12/75
Maj Chris Patterakis, Modesto, CA	Left Wing	12/65-12/67
Capt Steve Mish, Fisherville, VA	Leader	9/74-1/77
Capt Jim Simons, Grass Range, MT	Right Wing	3/74-3/77
Capt Bob Gore, Fairmont, WV	Information	10/74-10/76
Capt John Lapointe, South Pasadena, CA	Left Wing	11/75-1/78
Capt Lloyd Newton, Ridgeland, SC	Narrator/Slot	11/74-1/78
Capt Lacy Veach, Honolulu, HI	Right Wing/Narr	6/78-11/78
Capt Matt Mattingley, Tulsa, OK	Solo	12/75-1/78
Capt Joe Prater, Atlanta, GA	Exec Off	5/74-6/77
Capt Mike Thomas, Ft Collins, CO	Logistics	11/75-2/78
Capt Charlie Carter, San Antonio, TX	Maintenance	7/76-3/78
Capt Rudy Miller, Hope, IN	Narrator	12/76-7/77
Maj Walt Parker, Orlando, FL	Information	11/76-12/78
Lt Col Dan Cherry, Marietta, GA	Narr/Right Wing	11/75-1/79
Maj Steve Hyle, Lancaster, OH	Cmdr/Ldr	9/76-4/79
Capt Day McCoy, Lake City, SC	Exec Off	7/77-6/79
Lt Col Dan Taylor, Toledo, OH	Slot	10/77-2/78
Capt Ron Manness, Carthage, NC	Exec Off	10/78-12/78
Maj Fred Erickson, Albany, GA	Left Wing	11/77-present
Capt Jim Coziar, Orion, IL	Narrator	11/77-present
Capt Gail "Scar" Scarbrough, Grover Hill, OH	Slot	11/77-present
Capt Gary Ball, Rochester, NY	Lead Solo	8/77-present
Capt Bob Biehl, Marion, IN	Logistics	7/79-present
Capt Jim Janette, Mentor, OH	Ch Maint	6/78-present
Capt R D Evans, Osceola, AR	Public Affairs	12/78-present
Capt Jim Jiggins, Northville, MI	Solo	10/78-present
Capt Jim Latham, Shawnee Mission, KS	Narrator	10/78-present
Maj D L Smith, Rossville, GA	Right Wing	10/78-present
Capt Jim Epting, High Point, NC	Cmdr/Ldr	3/78-present
	Exec Off	6/79-present





This shot of their F-4s completing a loop in the line abreast formation epitomizes the Thunderbird spirit of power, grace and precision. USAF

# UNITED STATES AIR FORCE THUNDERBIRDS A CAPSULE HISTORY

BY LARRY DAVIS AND  
CAPT "MATT" MATTINGLEY  
*Thunderbird Executive Officer*

*We would like to thank the following for their contributions to this article: the USAF Thunderbirds, Charles Mayer, Dave Menard, Jay Miller, Capt. Steven Miller, Bob Pickett, and Frank Strnad.*

As anyone in business knows, if you have a good product, you show it off. You show it at its best and by the best operators that you have. So it was, in May 1953, that the USAF took its best pilots and first line jet fighters, and created a demonstration team to show the public what first line jet aircraft were and how 'routinely' trained men of the USAF could fly them.

The 3600th Air Demonstration Team was declared operational on June 1, 1953, although the team itself had been together and practicing for about 6 weeks prior. At this time the team had no name. There already were the 'Sky-Blazers', 'Blue Angels', 'Acrojets', and now the 3600th Air Demonstration Team?? This just wouldn't do. During June 1953, a contest was held at Luke AFB, home of the 3600th, to pick a name for the new team. The name chosen was 'Thunderbirds'.

The selection of the name 'Thunderbirds' was influenced in part, by the strong, regional Indian culture and folklore of the southwestern United States, where Luke AFB is located. The Thunderbird is widely mentioned in Indian folklore, from Mexico to as far north as Alaska. The Algonquins, Sioux, Cheyenne, Commanche, Kiowa, and Arapaho, all know of the Thunderbird. Indian legend has it that thunder and lightning were caused by these great birds, thunder by the flapping of their giant wings, and lightning by the opening and closing of the birds eyes. Thunder storms were said to be battles between great birds and predatory monsters. Thus in the Indian mind was developed the idea that this 'good' diety was battling evil, or the traditional conflict of 'light over darkness'.

The appearance of the bird is somewhat hazy and usually different from each tribe. But most illustrations of it show it to be either a huge Hawk or Eagle. Further research will generally picture it in red, white, and blue colors. Sound familiar? Most Indian nations credited the Thunderbird with the power to grant success in war, and with a long, honorable life. Still more reasons for the name Thunderbirds.

A more appropriate name couldn't have been applied to the man-made birds, soaring, diving, rolling over the earthbound inhabitants below. Sun flashing off wings, thunder roaring over the horizon, fire belching from their tails, etching a white trail thru the blue sky, representative of the awesome power of the world's mightiest nation, sworn to protect the free peoples of the world against all enemies--'the triumph of good over evil'. 'Thunderbirds', it has proven to be an extremely fortuitous decision for the team, for the name is distinctly and undeniable American.

The name 'Thunderbirds' also was influenced to no small degree, by the very paint job the team applied to its F-84G Thunderjets. The red, white, and blue scallops seemingly were born from the name. Actually, the converse is true. The F-84Gs were painted in the Thunderbird scheme long before the name was chosen. (*One wonders if the fact that they were flying the Thunderjets had anything to do with the name selection? And who were the Stardusters? Editor*)

The original Thunderbird aircraft were used, four for the show and one spare. They had red, white, and blue scallops on the nose and wingtip tanks. Vertical and horizontal stabilizers (stabs) were painted white with red scallops and blue stars, 13 stars of varying sizes on the vertical surface and 9 stars of varying size on the horizontal. The Air Training Command emblem, with the word LUKE stenciled above it, was carried on both sides of the fuselage, beneath the canopy. The aircraft carried all standard USAF regulation size national insignia, stenciling and lettering. All lettering being in black and the anti-glare panel in olive drab.

The F-84Gs were virtually 'off the ramp' birds, with only the removal of the guns and insertion of nose gun deck ballast to shift the center of gravity. Gun ports were normally left unplugged although there are photos which definitely show them to be plugged. During the first year also, the main gear wheel hub centers were painted white with a blue star. All aircraft carried the inboard, external stores pylons.

The first Thunderbirds team was handpicked from the cadre at Luke AFB, home of the Air Force Advanced Flight Training School, the jet fighter school. Major Dick Catledge was chosen as the team leader. Capts Bill and Buck Patillo, twins, would fly Left and Right Wing, respectively. They were ideal choices as both had been with the SkyBlazers, a USAF/Europe demonstration team. The Slotman would be Capt Bob Kanaga, an instructor at Luke. The Spare and Solo pilot when it was added later, he would be 1Lt Bob 'Mac' McCormick, who had flown with the 'Sabre Dancers' and had 100 missions to his credit over Korea. Lt AD Brown would serve as maintenance officer for the team. The first Thunderbird Line Chief was MSgt Earl Young. Aircraft maintenance is of the utmost importance as the Thunderbirds have never aborted a show due to a maintenance problem. It was also this first team of Thunderbirds that designed the team emblem. All these things were done within a few months after inception.

The first show was put on one month after the beginning of training on June 8, 1953 at Luke AFB. The fourth official show was put on for the graduating class of pilots and the last official act of General Hoyt Vandenberg, then Air Force Chief of Staff. The debut at a civil affair was during Frontier Days at Cheyenne, Wyoming. By August, 1953, less than 90 days after inception, the team had flown 26 shows. The first show before a really big audience was Sept 5-7, 1953, at the Dayton Aircraft Show, where 400,000 people were in the audience. By the end of their first season, the Thunderbirds had flown 50 shows.

The original demonstration sequence, as conceived and implemented by the 1953-54 team, consisted of a series of precision formation aerobic maneuvers lasting 15 minutes. The takeoff comprised a three ship flight of the Leader and the two Wing aircraft, followed down the runway at minimum interval by the Slot pilot who quickly joined with them to form the diamond. Originally the 'spare' took off a few minutes in advance of the diamond to run a weather check, advise of any encroaching traffic and reiterate the location of any obstructions. The sole purpose of the spare was to fill in for aborted aircraft in the diamond, with no thought of a solo sequence. As the season progressed, it became obvious that the likelihood of an abort was remote due to the outstanding maintenance performed on the aircraft. The opportunity to utilize the spare as part of the airshow was seized upon. The spare now took off after the diamond and warmed up the crowd with a preliminary series of solo maneuvers lasting 6-8 minutes. During this time the diamond was out of sight of the crowd, burning off fuel. It was standard practice to use up several hundred pounds of fuel from the nose tank or the aircraft would be nose-heavy, bad for aerobatics. The leader carefully timed his entry into the area with the exit of the solo pilot. With attention of the crowd on the departing solo, the four aircraft of the

diamond roared low over the crowd, from behind, in the trail formation. Needless to say, this entry was an attention getter. They then pulled into a loop, changing from trail to diamond on the way up, and doing a 1/4 Cuban 8 (cloverleaf turn) down the backside to come out paralleling the crowd.

Once the formation formed the diamond, the rest of the show was flown this way. The entire sequence was flown in front of the crowd, the aircraft never leaving the demonstration area. The repertoire consisted of rolls, loops, cloverleaf turns, formation split S, a continuous 4G, 360 degree vertically banked formation turn, and of course, the most famous maneuver associated with the team, the bomb burst with its subsequent crossover and rejoin. The maneuvers were flown one right after the other, without interval, forming what was, in effect, one giant 15 minute maneuver. Constant back pressure on the stick was maintained throughout the entire show, with no negative Gs and only momentary level flight. The constant strain, coupled with limited elevator up trim and a lack of boosted controls, understandably resulted in a lot of sore right arms. Physical fitness was a prerequisite and, particularly for the lightweights working out with weights to strengthen the right arm became a way of life.

The 1954 team, Maj Catledge/Leader, Capt Bill Creech/Right Wing, Capt Bert Spalding/Left Wing, 'Mac' McCormick in the Slot, and 1Lt AD Brown flying Solo, began its second year with an eleven nation tour of South America in Jan/Feb of 1954. It was after this tour that the Air Training Command emblem was removed from both sides of the fuselage. In its place on the left fuselage appeared the flags of the 11 nations visited on the tour. The US flag was added for symmetry. The right fuselage bore the new Thunderbird emblem with the word LUKE stenciled above it. The flags were originally painted directly onto the metal finish, but by 1954, they had been placed in a white panel, later outlined in blue. The aircraft were individually numbered at this time with a small white digit on the small forward nose gear door.

The tour of the South American countries was the highlight of 1954 with huge crowds at every show—300,000 at the Mexico City Airport with 1,200,000 on the surrounding hills; 250,000 at Santiago, Chile; 250,000 at Montevideo, Uruguay; and 500,000 at, would you believe, Havana, Cuba.



The Trail Opener from behind the crowd. Every available "seat" is taken at this demonstration flown by the 1953/54 edition of the Thunderbirds.

The straight wing—84 in Thunderbird markings. This shot of 51-16719 was taken in 1954. Of particular interest is the flag panel on natural metal background, serial number on the tail, olive drab anti-glare panel, and "UNITED STATES AIR FORCE" in solid, single stroke Gothic letters. Previous to October 1953 the letters had been in a Gothic stencil style. Balogh via Menard



All standard Air Force stenciling was applied

Air Training Command insignia—both sides (1953 season only) **LUKE**

Original crew block on port canopy rail  
Name block—black letters on white rectangle

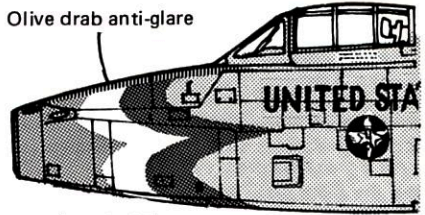
By 1954 each aircraft carried its own number in white on the small, forward facing nose gear door.

PILOT - CAPT. C. A. PATTILLO  
C/C - S/SGT. T. H. NELLIST



Gun ports normally unplugged

Olive drab anti-glare



F-84G-26-RE (51-16720)  
November 1953  
Capt. C.A. Patillo/Right Wing

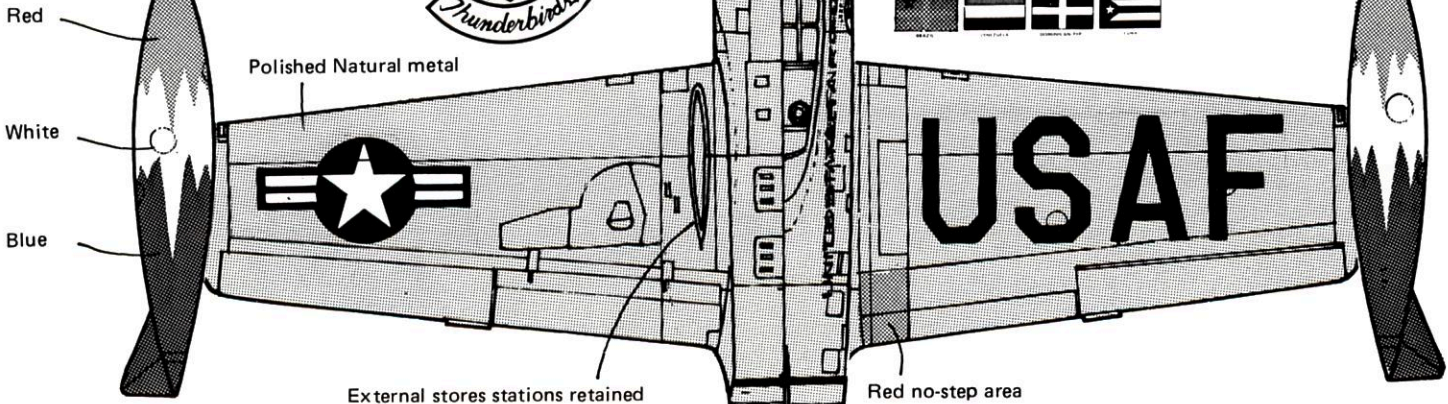
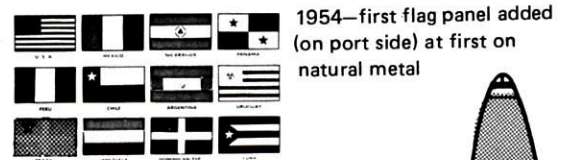
# F-84G (1953-1955)

## F-84G SERIAL NUMBERS

- 51-16714 \* These are the aircraft that usually comprised the diamond. Serial number of the other spare aircraft is not known, although unconfirmed
- 51-16719 \* sources indicate it may have been 51-16715.
- 51-16720 \*
- 51-16722 \*
- 51-16723 \*

Thunderbird insignia—always carried on right (starboard) side of *demonstration* aircraft.

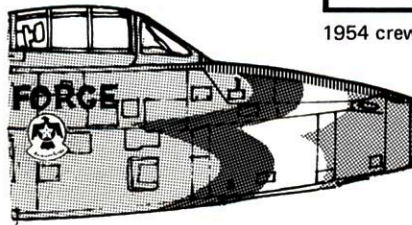
Blue bird, red circle with white star, yellow beak, blue aircraft; white disc outlined blue.



Name block—white with blue border, blue lettering

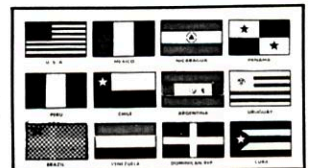


1954 crew blocks; pilot on left

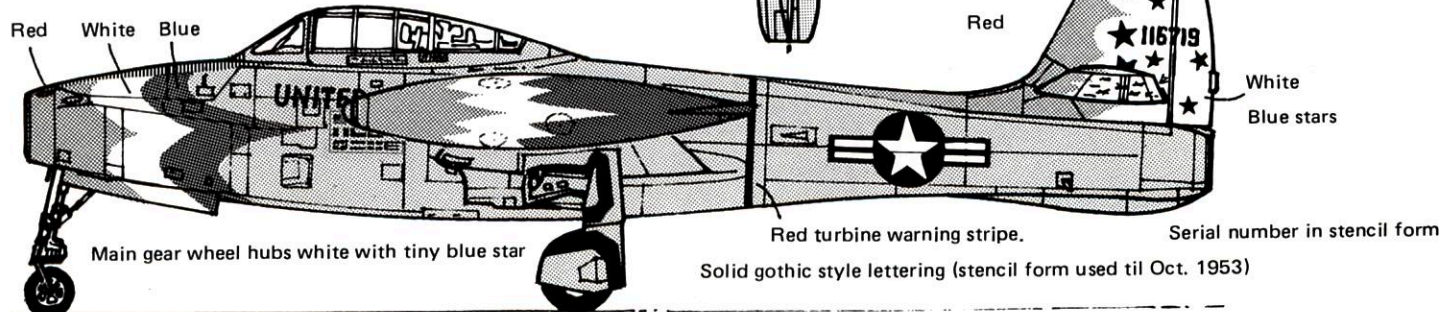


F-84G-26-RE (51-16719)  
January 1955  
Capt. Jack Broughton/Leader

Oct. 1954—flag panel on white panel outlined blue



Vertical stab of slot aircraft kept clean.



The Thunderbirds returned home and got ready for the Armed Forces Day show at Bolling Field in the nations capitol. They made their entrance over the crowd of 300,000 'on the deck' at about 600 mph. To say the crowd was stunned is an understatement. Everyone 'hit the dirt'.

Highlights of the 1954 season included the USAF Worldwide Gunnery Meet, dedication of San Francisco International Airport, the National Aircraft Show at Dayton, and the Air Force Association convention, where the Thunderbirds were presented the 'Citation of Honor' for public service.

October, 1954, saw a new team leader come to the Thunderbirds—Capt Jack Broughton. He would later fly more than 100 missions over North Vietnam in an F-105 Thunderchief and write a book entitled 'Thud Ridge'. Teaming up with Capt Broughton was Capt Bill Creech on Left Wing, 1Lt Billy Ellis/Right Wing, Capt Ed 'Lucky' Palmgren in the Slot, and Capt Bob McCutchen flying Solo. This team flew 20 performances in the winter of 1954 including a trip to Central America. On February 7, 1955, at Webb AFB, Texas, the last of 132 official shows in the F-84G was performed. The swept wing era was about to begin.

During this time span, 1953-55, the Thunderbirds acquired some support aircraft, a Lockheed T-33A (in 1954) and a pair of Fairchild C-119F Flying Boxcars (in 1955). The T-33A played a very important and valuable role with the team. Accompanying the team around the country, the T-33 was used to take VIPs and press people on orientation flights. It was very effective public relations tool and created goodwill and favorable publicity for the Air Force wherever it went.

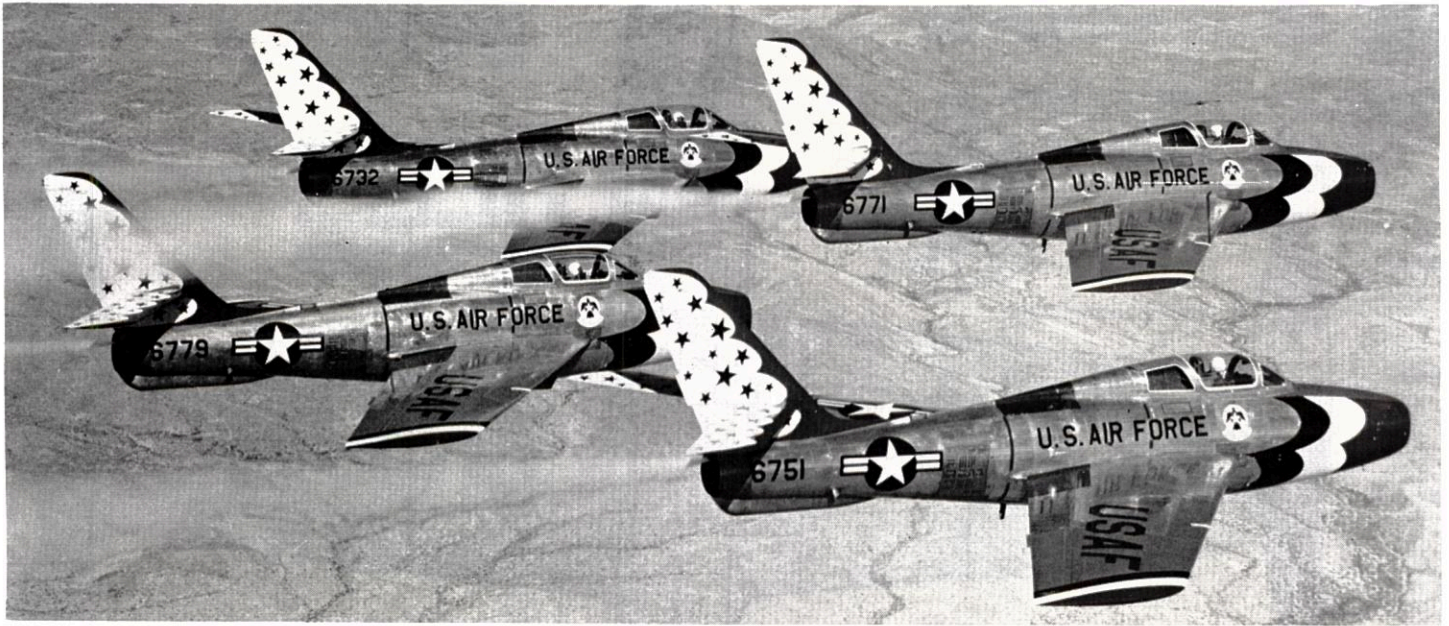
When the team was flying the F-84Gs, the T-33 was painted almost identi-

cal. Red, white, and blue scallops adorned the nose and wingtip tanks of the T-33. The horizontal and vertical stabs being painted white with red scallops and blue stars ala the F-84s. All normal stenciling and national markings were carried, along with an olive drab anti-glare panel, with one exception. The starboard fuselage side carried the logo 'United States Air Force' in the same style as on the F-84Gs. The port fuselage, however, carried the logo 'Thunderbirds' written in script style, curved over the wing. Later in 1954, a 'comet tail' was added under the script, preceded by a small, silhouette diamond of F-84Gs in a white star. Markings on the T-33 changed with the markings on the show aircraft.

The Thunderbirds acquired first one and then a second Fairchild F-119F Flying Boxcars in 1955, for transport of maintenance equipment and personnel. Prior to this, these duties were performed by a C-47 or other home base aircraft. C-119F 51-8146 was the only one of the C-119s to be painted up in the Thunderbird style. The other C-119F was left in natural metal with standard USAF regulation markings. 51-8146 went through many different schemes before being retired in favor of C-123s.

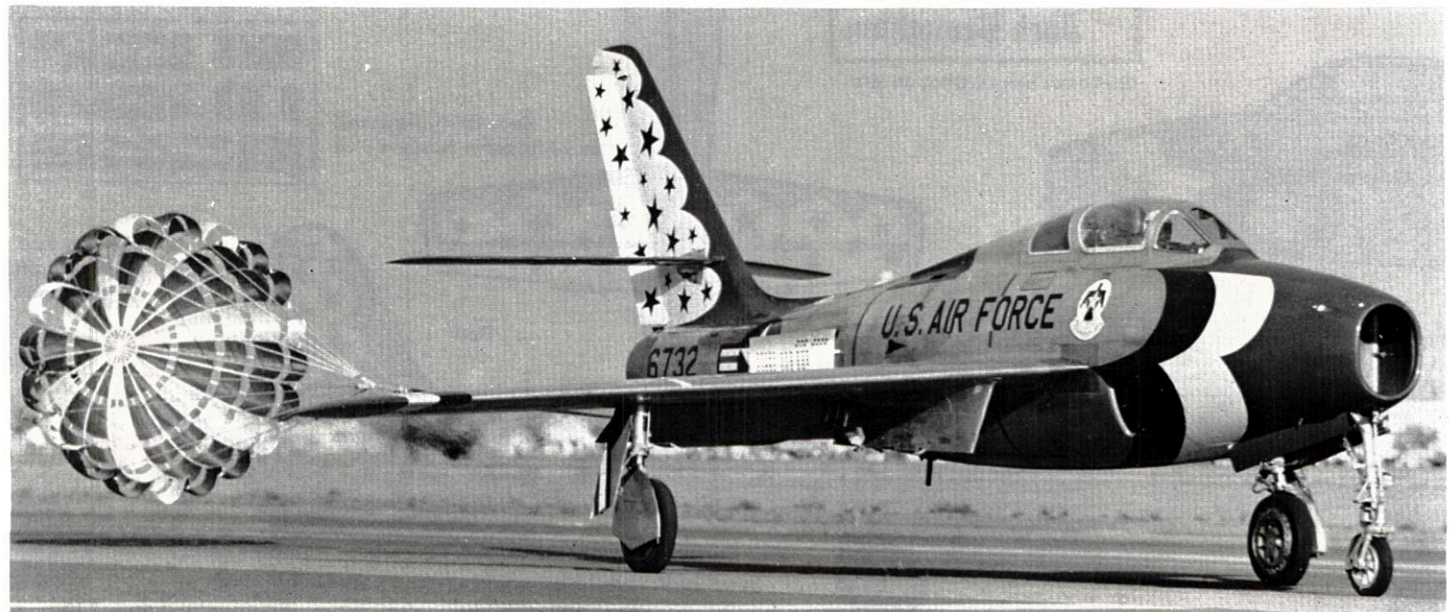
Overall natural metal, the C-119 carried all standard USAF regulation markings for this period. The Thunderbird insignia and flag panel were carried on *both* sides of the fuselage. Both outlined in red rather than blue and the Thunderbird on the emblem had rounded shoulders instead of square.

The wingtips were striped red, white, and blue. Engine cowls were painted red, ending in white, blue, white scallops. The remainder of the nacelle was *blue*, including the gear doors. The *blue* followed the nacelle fillet over the top of the wing ending in a point on top of the boom aft of the wing trailing edge.



F-84Fs in an oft-published photograph (but still a good one) of the Diamond. Details of special note are the red areas of the flaps, the red "guideline" on the leaders wing, and the very different quality of scalloping from the F-84G. USAF

Another overused shot of a Thunderbird F-84F on landing rollout. Note the red, white and blue drag chute, utilized by all Thunderbird demonstration aircraft except the F-84G and T-38A. "LUKE" is just barely visible above the unit badge. USAF



# F-84F (1955-1956)

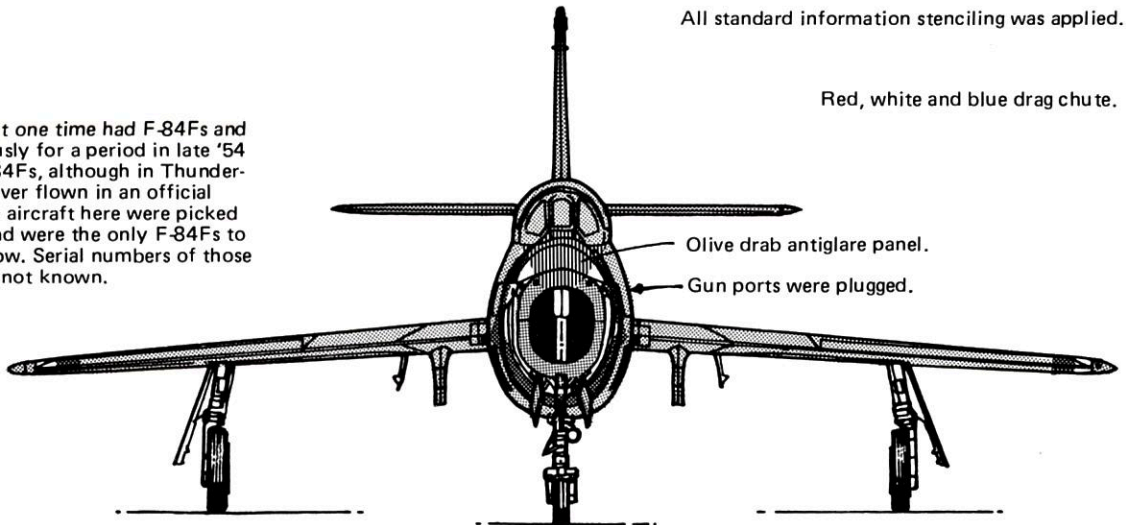
## F-84F SERIAL NUMBERS

52-732  
52-735  
52-751  
52-770  
52-771  
52-779  
52-853

The Thunderbirds at one time had F-84Fs and F-84Gs simultaneously for a period in late '54 early '55. These F-84Fs, although in Thunderbird colors, were never flown in an official demonstration. The aircraft here were picked up at the factory and were the only F-84Fs to fly an official airshow. Serial numbers of those original aircraft are not known.

All standard information stenciling was applied.

Red, white and blue drag chute.



Olive drab antiglare panel.  
Gun ports were plugged.

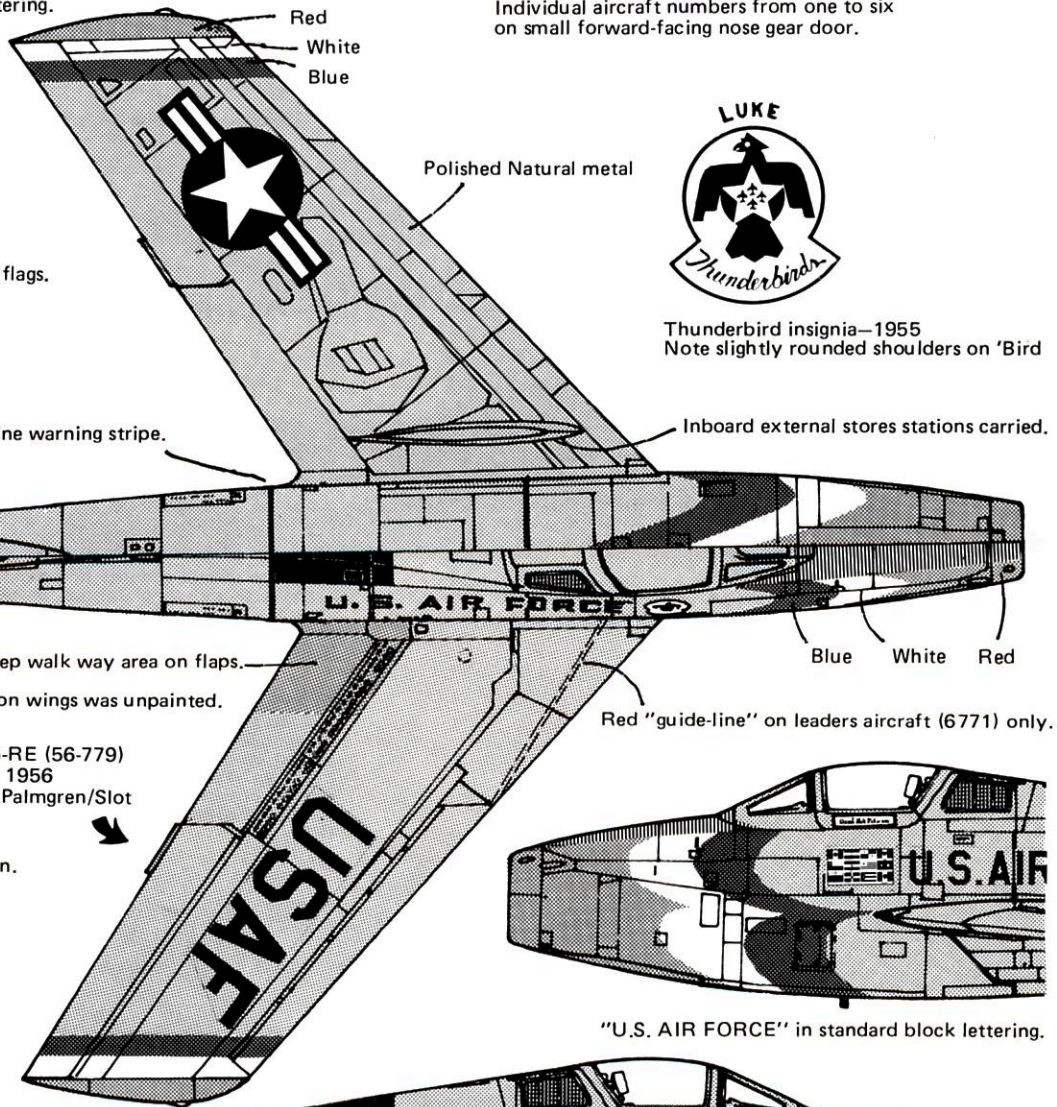
**Capt. Ed Palmgren**

Blue-bordered white panel with Blue lettering.



Note deletion of U.S. flag and reduction in size of the white area of the flag box, plus some rearranging and redesigning of flags.

Individual aircraft numbers from one to six on small forward-facing nose gear door.



Red  
White  
Blue

Polished Natural metal



Thunderbird insignia—1955  
Note slightly rounded shoulders on 'Bird'

Red turbine warning stripe.

Inboard external stores stations carried.

White

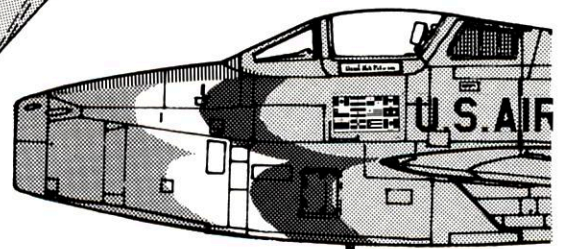
Red no step walk way area on flaps.  
Walkway on wings was unpainted.

Blue White Red

Red "guide-line" on leaders aircraft (6771) only.

F-84F-45-RE (56-779)  
February 1956  
Capt. Ed Palmgren/Slot

Vertical stabilizer of slot aircraft kept clean.



"U.S. AIR FORCE" in standard block lettering.

Red

Blue stars

Smoke probe

6779

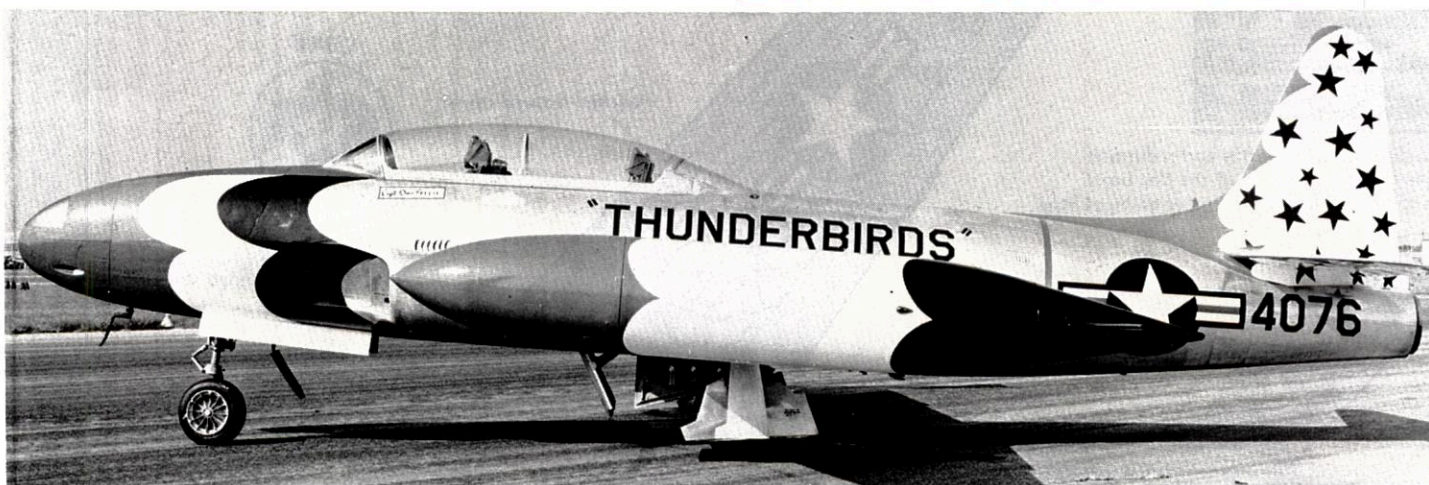
U.S. AIR FORCE

"Buzz" number added to rear fuselage.

there is no photographic evidence to indicate that a crew block was carried on the right fuselage rail.



As with most of the support aircraft used by the team, markings were reflective of these on the demonstration aircraft. This shot of 52-9221 reveals that it was with the team when they were flying the F-84G. Later a stylized comet was added under the script logo. Crew name block was a red-bordered white rectangle with black letters. "U.S. AIR FORCE" appeared on the starboard side of the fuselage. *Balogh via Menard*



There are several changes to the designs on this T-33 (51-4076), particularly the nose and wing scallops, placement of "Buzz" number and Block letter logo. These were the markings when the team was flying the F-84F, but no flag panel was carried. A red-bordered T-bird was on right side. *Shipp via Lawson.*

In 1956, with the change to the F-100C, the script style logo returned to the left side, with "U.S. AIR FORCE" on the right. The Thunderbird insignia was added on the left or port side, and the flag panel (outlined red) was placed on the starboard side . . . a reversal of the demonstration aircraft markings. Tail and tip tank scallops reverted to earlier style (almost). This photo shot in 1957, show the final scheme with its flat black anti-glare panel and rather strange flag panel. Note that gun port is faired over. *F. T. Guthrie.*





# T-33A

(1953-1960)

## T-33A SERIAL NUMBERS

- 51-4076 \*Original aircraft.
- 52-9221 \*
- 53-5547
- 53-6089

Blue Angel insignias applied in late 1956 or early 1957 and carried for a time.



**Capt Bill Scott**

Red-bordered white block with black letters

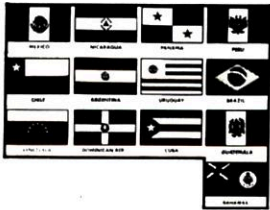
In 1954 a "comet tail" was added under script lettering preceded by an F-84G Diamond in a white star.

*"Thunderbirds"*  
1953

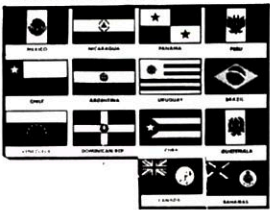
**"THUNDERBIRDS"**  
1955

*"thunderbirds"*  
Script style returned in 1956

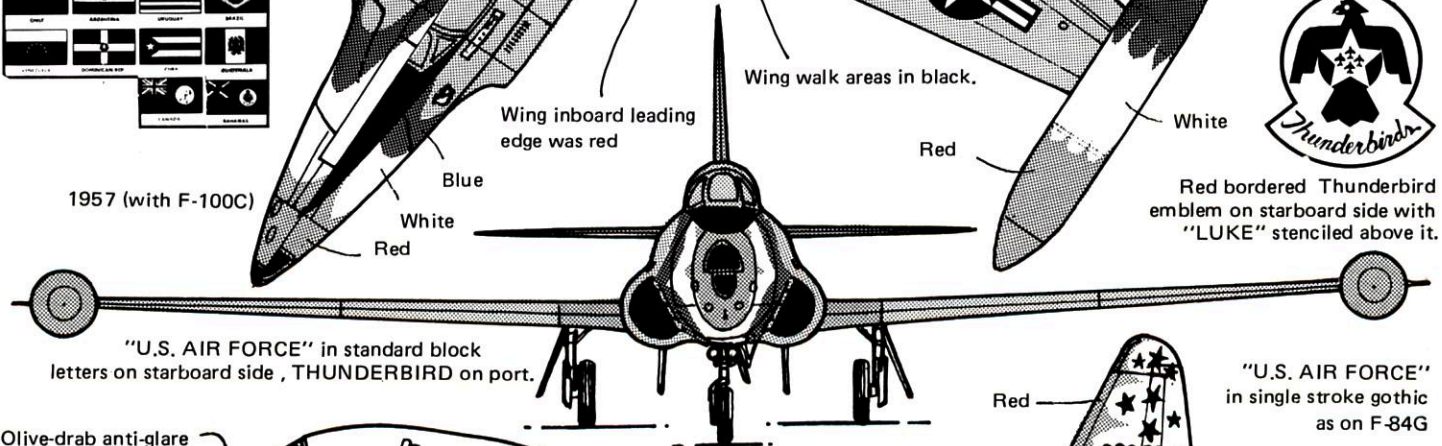
Standard national and USAF insignia and stencil markings.



Flag panel (out-lined red) on starboard side



1957 (with F-100C)



Olive-drab anti-glare

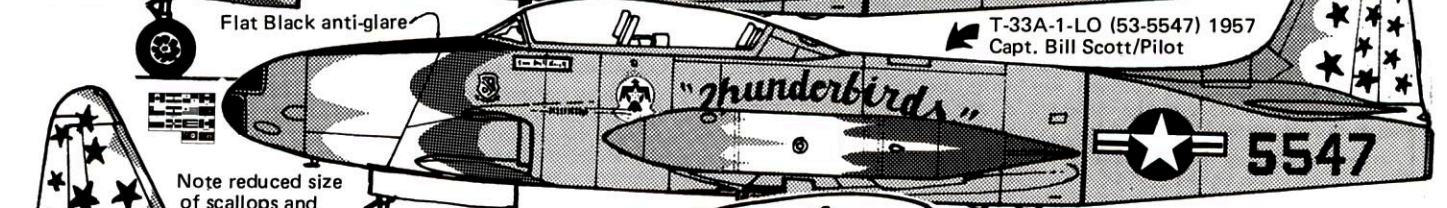


T-33A-1-LO (52-9221) 1953 (with F-84G)

No flag panel

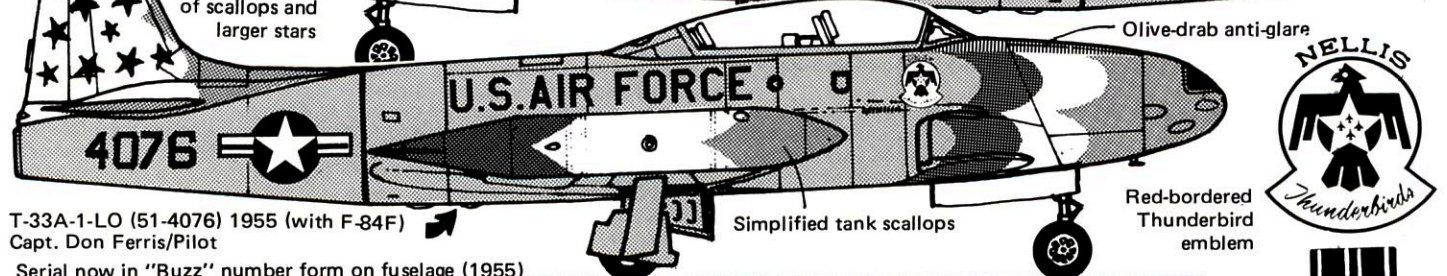
Flat Black anti-glare

T-33A-1-LO (53-5547) 1957  
Capt. Bill Scott/Pilot



Note reduced size of scallops and larger stars

Olive-drab anti-glare



T-33A-1-LO (51-4076) 1955 (with F-84F)  
Capt. Don Ferris/Pilot

Serial now in "Buzz" number form on fuselage (1955)

Simplified tank scallops

Red-bordered Thunderbird emblem



With the vertical empennage and entire horizontal stabilizer done in the familiar 'stardust' motif of red scallops over white with blue stars, the C-119F was indeed, a pretty bird. The prop blades were silver with red, white, and blue tips. It would be good to note here that all paints were given special federal standard numbers and were referred to as Thunderbird Red, White, or Blue.

Early in 1955, the Thunderbirds decided to switch from their trusty F-84Gs to a more modern, first line aircraft. This was in keeping with official Air Force policy to demonstrate the capabilities of our front line fighters to the public and the world. After consulting with Air Force officials, it was decided to go to the swept wing Republic F-84F Thunderstreak.

Wasting no time, The Air Force allocated 6 brand new F-84Fs from Republic's Farmingdale, N.Y., factory. In April, 1955, the Thunderbirds inspected their newly painted aircraft at the factory. One week later, they flew their first show in the F-84F at Luke AFB, Arizona. These were not the first F-84F flown by the Thunderbirds. In late '54/early '55, a batch of F-84Fs were assigned to them, but never flew a demonstration.

F-84F markings were quite similar to those on the F-84Gs. The several differences between them included a new flag panel, block style lettering, movement of the serial number onto the aft fuselage. Having no tip tanks, the wingtips were striped red, white, and blue. Small numbers, 1 thru 6, were added to the small forward facing nose door and the gun ports were plugged. Again, all standard stenciling was carried and the aircraft had olive drab anti-glare panels. The Thunderbird insignia was carried on the starboard fuselage with 'LUKE' above it. The F-84F was the first aircraft to use the red, white, and blue drag chute. All Thunderbird demonstration aircraft have used it except the F-84G and T-38.

Thunderbird F-84F aircraft remained fairly stock. Modifications included conversion of the liquid oxygen system, vertical stab antenna moved to the underside of the fuselage, modified spoilers to improve roll characteristics, and the F-84F was the first to use a smoke system. The smoke is caused by injecting a very light oil into the exhaust. The oil is vaporized, *not burnt*, in the 1500 degree heat, causing the white smoke. Again, as on the F-84G, the F-84F retained their inboard weapon pylons.

With the F-84F, the show was expanded to about 19 minutes. The increase in power and the faster roll rate of the F-84F resulted in the diamond formation being 'broken' for the first time. Some maneuvers were now flown in the trail formation. The '3 and 1' takeoff being replaced with the 'finger four' with the Slot on the far right and moving into the slot immediately after the takeoff. There are later pictures of this move being done while still having one wheel on the runway. In the fighter pilot's vernacular, this is an 'aggressive' pilot.

It was in this period that the Thunderbirds picked up one more back-up craft. The narrator would fly the T-33. The greater turning radius of the F-84F resulted in 40 second turnaround times between maneuvers. To fill these dead spots in the show, the Solo pilots' maneuvers were now freely interspersed into the diamond routine. A Thunderbird would always be in front of the crowd.

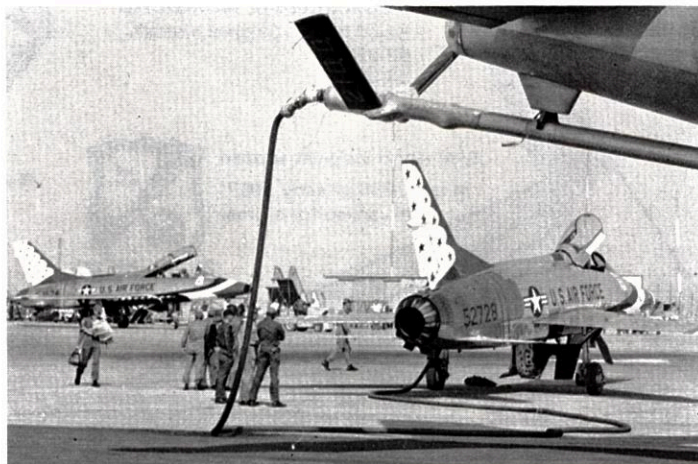
A typical F-84F show opened with a Solo Cuban 8 followed by the traditional behind the crowd pass. The solo routine now included 4 point and 8 point rolls, inverted passes, and vertical rolls. The diamond added the trail roll, cloverleaf turns, and the changeover roll (trail to diamond). The traditional pitchup and landing terminated the performance. Of course, the bomb burst was the most spectacular, all 4 aircraft closing on each other at 1250 mph.

Thunderbird support aircraft changed with the times. The T-33 markings changed to conform with those of the F-84Fs. The serial number was removed from the vertical stab and added, 'buzz number style', to the rear fuselage. The 'Thunderbirds' logo on the port fuselage was changed to block style legend, in quotes. A *red-bordered* Thunderbird emblem was on the starboard fuselage. No flag panel was on the port fuselage. Tail scallops were reduced in size and wingtip scallops simplified. These changes are only on the T-33 as flown in 1955 as in 1956 all was reverted back except that the flag panel and Thunderbird emblem were on reverse sides of the fuselage; flags on starboard — Bird emblem on port.

The C-119F markings were also changed at this time. The top half of the fuselage was painted white with a narrow blue 'cheat line'. This extended back over the wing fillets onto the cargo doors. It was in 1956 that the red, white, and blue scallops were added to the nose. The fuselage bottom was painted blue and prop spinners striped, red, white, and blue. Ventral fins were added to the aircraft on the underside of the booms and they were painted in the starduster motif.

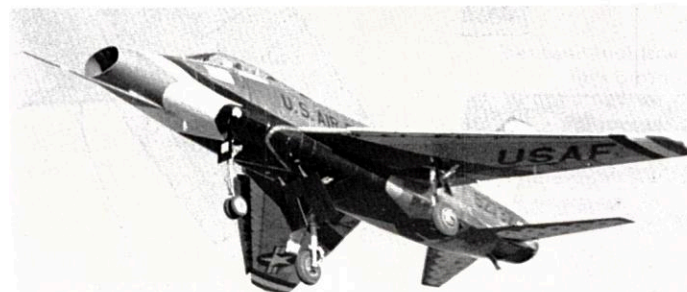
The Armed Forces Day show at Bolling Field, D.C., on 19 May 1956, was the 91st and last show done in F-84F. The transition to the F-100C opened a new era in the air show business; The Worlds First Supersonic Air Demonstration Team. Transitioning into the F-100Cs meant many new things: supersonic capabilities, new maneuvers, and a move to Nellis AFB, Nevada. The move to Nellis was made to simplify logistics and maintenance support of the team.

The original F-100Cs assigned to the Thunderbirds had many changes between them and combat-ready F-100s. The autopilot function of the automatic flight control system was inactivated, but the pitch and yaw dampers remained. Slot aircraft had stab antennae moved to the underside of the nose and the stab leading edge was replaced with one in stainless steel. A VHF radio system was added. The armament system was modified thusly; A-4 Gunsight removed, radar-ranging system removed and nose radome covered with a steel plate, and the gun camera removed. The aft fuselage fuel tank would carry the smoke oil at shows or carry fuel on long hops. The smoke



F-100C in South America. Problems with contaminated fuel were solved by simply ground-refueling from KC-97s. Note the F-100F in C paint scheme at rear. USAF

This shot of an F-100C, taken in 1959, shows the original undersurface Thunderbird motif natural metal rather than white outline. No refueling boom at this time. *F.T. Guthrie*



oil was compatible with JP-4.

The F-100C paint scheme was very similar to the previous F-84F style scheme. Red, white, and blue scallops on the nose, striped wing tips, and 'star duster' motif on vertical and horizontal tail surfaces. The serial number was located, 'buzz number style', on the rear fuselage. The gun ports were faired over and the pitot boom painted red with a *single* white band about midway thru its length. The Thunderbird insignia was on the starboard fuselage with NELLIS, not LUKE, stenciled above it. The word NELLIS was now included in the emblem instead of being separate from it. The flag panel was the same as on the F-84F and carried on the port fuselage, under the canopy.

The supersonic Thunderbirds of 1956 were as follows; Maj. Jack Broughton/Lead, Lt Bob Anderson/Left Wing, Lt Bill Ellis/Right Wing, Capt Ed 'Lucky' Palmgren/Slot, Lt Bill Pogue/Solo, and Capt Paul Ross/Solo-Spare. This team changed the entire show to suit the capabilities of the F-100Cs. The effect on the demonstration sequence itself was dramatic.

Gone now was the graceful Cuban 8 opener, replaced by the spectacular maximum performance takeoff and high speed Solo pass. The pass would include cutting in and out of the afterburner, a practice originating after the Solo did same to clear a flock of birds from the show line. A great crowd pleaser, it soon became a regular part of the show. Inevitably, the next step was the supersonic pass. Although never a routine part of the Thunderbird show, the Solo would go supersonic if the show sponsor so desired. Eventually the Federal Aviation Authority banned all supersonic flight at air shows and today's sequence is entirely subsonic.

The traditional behind-the-crowd entry was now made in diamond formation, rather than in trail, immediately after the Solo pass. A touch of the 'burner over the crowd' insured their full attention. The new show also featured an inverted diamond pass and closed with a formation victory roll. One maneuver, the 360 turn, was performed at a constant 5Gs.

An interesting markings oddity occurred during this time period. During a deployment to Eglin AFB, Florida, the first week in October, 1956, the T-33 suffered a breakdown at, wouldn't you know, Pensacola Naval Air Station, home of the Blue Angels. The Blues graciously offered their hanger to the T-33 and enthusiastically pitched in to help the Thunderbird maintenance crew, which had arrived in the C-119, repair the aircraft. After completion of repairs, the T-33 was towed from the hanger, with great fanfare and obvious delight on the part of the Blues, by a 1910 Hupmobile. Adorning the fuselage sides of both the T-33 and the C-119 was the emblem of the Blue Angels. A large emblem was applied to both sides of the fuselage under the windscreens and a smaller one on both sides above the Thunderbird emblem and flag panel on the T-33. The large type emblem was located on the C-119 midway between the Thunderbird insignia and the flag panel on both fuselage sides. The emblems were allowed to remain on the aircraft

USAF



for several months, but had been removed by the end of the season.

In 1957, the team - Maj Robby Robinson/Leader, Capts Bill Bartley and Doug Brenner on the wings, Lt Bill Pogue/Slot, Capt Bob McIntosh/ Spare, and Capt Sam Johnson/Solo, visited Bermuda and Canada for the first time. These two countries started a fourth row of flags which was completed with the reinstatement of the US flag and addition of Puerto Rico. 1957 saw the implementation of the 'low show bomb burst', flown when weather precluded the normal vertical bomb burst. The solo routine now included a behind the crowd pass, known later as the 'Sneaky Pete Pass'.

The team for 1958 - Maj Robinson, Capts. Bob McIntosh and Homer Whitlow on Wing, Capt Sam Johnson/Slot, and Capt C.D. 'Fish' Salmon/Solo, would add two significant markings to the aircraft. First, the team was awarded the Air Force Outstanding Unit Award (OUA) and this ribbon was placed on the starboard side directly under the Thunderbird emblem. And second, late in the year, the now famous stylized Thunderbird was added to the underside of the aircraft. Originally outlined in natural metal only, in 1960 it was outlined in white. Capt Gayle Williams, flying Wing was added later in the year.

Also in 1958, the team turned in their venerable old C-119Fs and acquired 2 Fairchild C-123B Providers. Their original paint scheme was overall natural metal with the red, white, and blue nose scallops. The appropriate flag panel was carried on the port fuselage, above the first main cabin window. The Thunderbird emblem was on the starboard fuselage, but forward of the window and without the home base, NELLIS, stenciled above. The logo 'Thunderbirds' was curved on the rear fuselage, both sides, in script form, ala the T-33. The standard Starduster motif covered the empennage, the red scallop descending straight to the fuselage and following the dorsal strake. Engine cowls and wing tanks also were scalloped. Wingtips and prop tips were striped red, white, and blue.

In 1959, the team - Maj Bob Fitzgerald was now the leader, Capt Gayle Williams/Left Wing, Capt Chuck Maultsby/Right Wing, Capt Neil Eddins/Slot, and Capt Herman Griffin/Solo - made its first deployment to the Far East. As the teams F-100Cs did not possess inflight refueling capabilities, the team was airlifted to Okinawa by C-97 - minus aircraft. An advanced party had prepared some F-100Ds that were assigned to the 18th TFW.

The Diamond as flown in the F-100C before the application of the 'Bird motif. Note how alternating afterburner eyelids are polished.

These aircraft were partially modified to Thunderbird specs and painted much the same as the teams C models. The only differences being that the large drop tanks were painted all white with the script 'Thunderbirds' logo curved on the nose of the tanks, and a slight unconformity of the lower tail scallop.

The Far East tour included Okinawa, the Phillipines, Taiwan, Korea, Japan, and Hawaii. In each country, an appropriate ceremony was held to place that country's flag on the aircraft. Rather than begin a fifth row of four, vertical columns were added. These aircraft had the early F-100 straight refueling boom which was left unpainted. Capt. Robt Janca was added to the team later in 1959.

For several years, beginning in 1959, the Thunderbirds utilized a Douglas C-54 Skymaster as a public relations instrument by providing orientation flights for local dignitaries, the press, and air show spectators. It had an airliner interior and accompanied the team on all deployments. It was overall natural metal with red, white, and blue scallops on the forward fuselage. The bottom of the fuselage was grey. The fuselage top being white with a blue 'cheat line', narrowing down to the tail. The flag panel was on the port fuselage between the scallops and the first window, the Thunderbird insignia with OUA ribbon in this position on the starboard side. The Thunderbirds logo, in script, was carried over the wing, on the white area of top fuselage. The empennage was done in the Starduster motif. Wing tips and prop tips were striped red, white, and blue. The C-54D was christened 'City of Las Vegas' served until April, 1963, when she was relegated to base support duties.

The team for the 1960 season was Maj Fitzgerald, Capt Janca, Capt Eddins, Capt Griffin, and moving in on Right Wing - Capt Robt Cass. The teams

Overwater flight of F-100Cs with natural metal wing tanks—right one seems to have a red tip. "NELLIS" has been changed to "USAF" on the patch, red and white striped refueling probe and white-outlined 'Bird motif are typical of the late scheme, probably 1962. Note that dive brake is out so the C-54 (as photo plane) can keep up. USAF



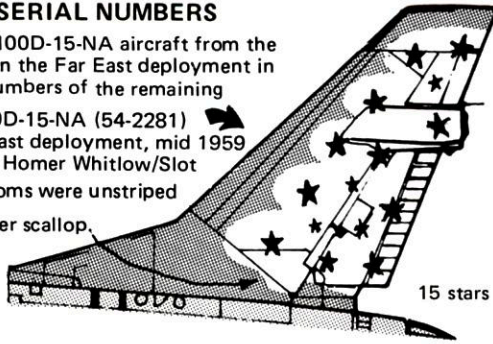
**F-100D (FAR EAST) SERIAL NUMBERS**

54-2281 These were F-100D-15-NA aircraft from the  
 54-2285 18TFW used on the Far East deployment in  
 54-2287 1959. Serial numbers of the remaining  
 54-2292 aircraft F-100D-15-NA (54-2281) →  
 54-2295 not Far East deployment, mid 1959  
 54-2299 known. Capt. Homer Whitlow/Slot

1959 Straight refueling booms were unstriped

Note unconformity of lower scallop.

"Buzz" number serials



15 stars



Thunderbird insignia on right with "NELLIS" above.  
 A.F. Outstanding Unit Award added in 1958 to right side  
 under Thunderbird.

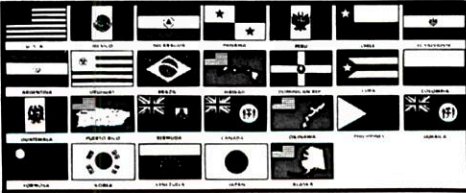
Red  
 White  
 Blue

1959 F-100C name block

**Maj. Bob Fitzgerald**

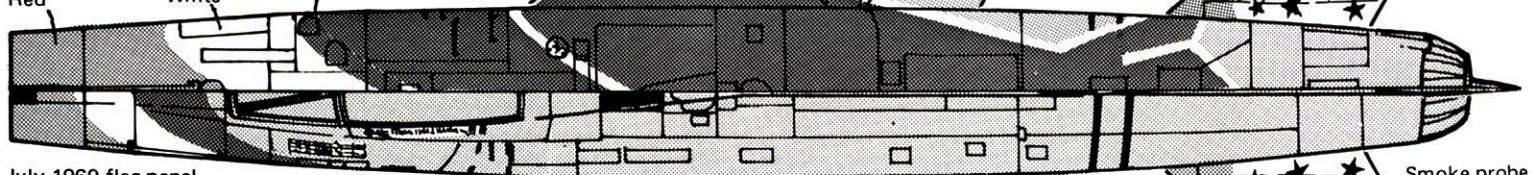
1956 Blue-outlined white crew blocks  
 with blue Old English lettering; pilot  
 on left, crew chief on right.

1961 flag panel



Stylized Thunderbird motif  
 added to bottom of aircraft  
 in late 1958; originally  
 outlined in natural  
 metal, then white  
 in 1960 when  
 shape of wing  
 feathers was  
 changed.

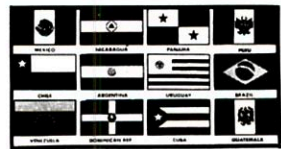
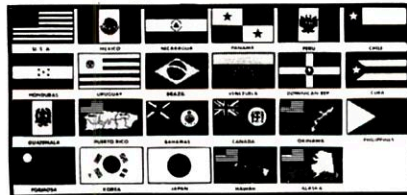
Red White Blue



Polished Natural metal

Red

July 1960 flag panel



1956  
 flag panel

(1956-1963)  
**F-100C**

**SERIAL NUMBERS**

- |           |           |
|-----------|-----------|
| 53-1718   | 55-2725 * |
| 53-1740   | 55-2727 * |
| 54-1860   | 55-2728 * |
| 54-1882   | 55-2729   |
| 54-1969   | 55-2730   |
| 55-2717   | 55-2732   |
| 55-2723 * | 55-2733   |
| 55-2724 * | 55-5729 * |

\*These are the original  
 six aircraft; 55-2724  
 was the first aircraft  
 received.

F-100Cs modified for air refueling during  
 their 1959 Far East deployment (in Ds).  
 Straight red and white striped booms.

Name panels changed  
 in 1963 with addition of red, white and blue scallops  
 at each end. Lettering changed to a thick and thin Roman style.

**Maj. Lucky Palmgren**

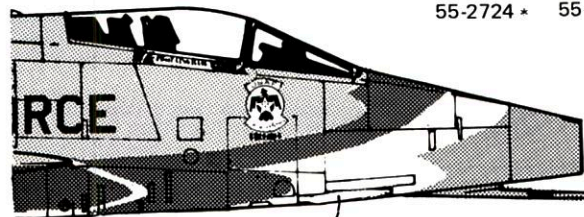
- 1957 flag panel—  
 14 flags  
 Nov., 1957 flag panel—  
 16 flags  
 1959 flag panel—22 flags  
 1960 flag panel—22 flags  
 early 1962 flag panel—  
 32 flags (blue border deleted)  
 1963 flag panel—31 flags

**Capt. Bob Gardner**

1959 F-100F name block

Alternate afterburner eyelids polished.

Blue stars



Faired over gun ports

Red inside intake 12"



Smoke probe

F-100C-10-NH (55-2728) 1963  
 Major Ed "Lucky" Palmgren/Leader

**Capt. Russ Goodman**

By mid 1960 it had become common practice to allow Slot aircraft  
 fin to blacken down to fin/fuselage juncture.

**F-100F**

F-100F-15-NA (56-3924)  
 Capt. Russ Goodman/  
 Pilot 1967

(1960-1968)  
**SERIAL NUMBERS**

- 56-3875  
 56-3924  
 56-3927



Red pitot boom with one white stripe

Lengthened nose scallops—otherwise markings reflect those of the demonstration aircraft

Block style lettering

# F-100D

(May 1964-1968)

## F-100D SERIAL NUMBERS

- 55-3506
- 55-3507
- 55-3520
- 55-3560
- 55-3561
- 55-3582
- 55-3606\*
- 55-3708
- 55-3737\*
- 55-3754
- 55-3776
- 55-3779\*
- 55-3791\*

\* These aircraft were assigned after the markings change which eliminated serial numbers; they never appeared with these numbers on the aircraft exterior.

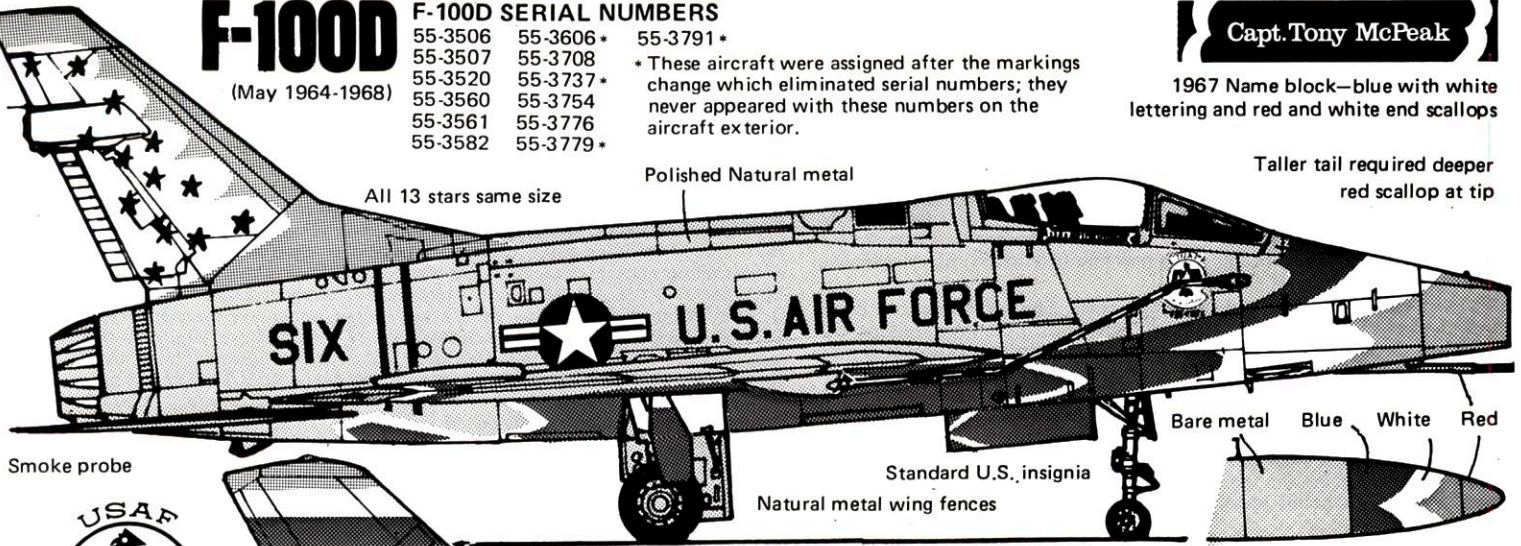
Capt. Tony McPeak

1967 Name block—blue with white lettering and red and white end scallops

Taller tail required deeper red scallop at tip

All 13 stars same size

Polished Natural metal



Smoke probe

Standard U.S. insignia

Natural metal wing fences

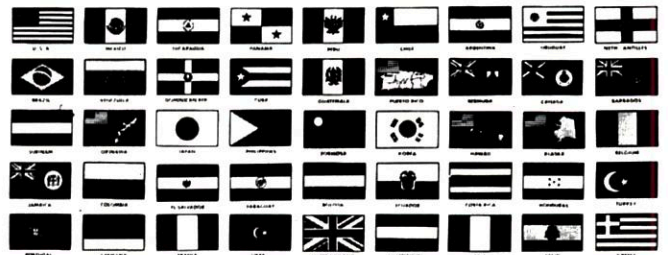
Bare metal Blue White Red



"NELLIS" changed to "USAF" in 1963

OUA ribbon reinstated late in 1964

late 1965—serials deleted, individual aircraft numbers in word form took their place



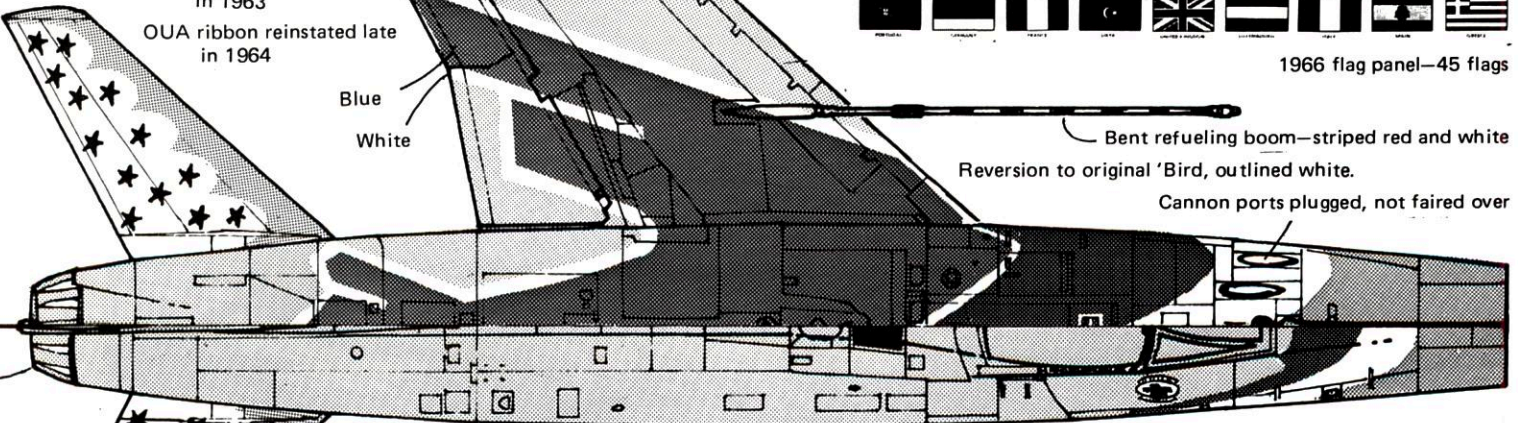
1966 flag panel—45 flags

Blue White

Bent refueling boom—striped red and white

Reversion to original 'Bird, outlined white.

Cannon ports plugged, not faired over



Leading edges unpainted.

Polished Natural metal Red

F-100D-NA (SIX) 1967  
Capt. Tony McPeak/Solo



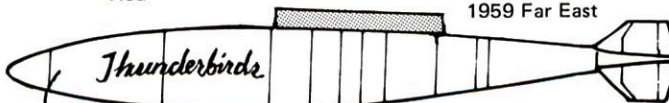
Oak leaf cluster added to OUA ribbon, late 1963.

Second oak leaf cluster added 1967

Blue White Red

Individual aircraft numbers on nose wheel door

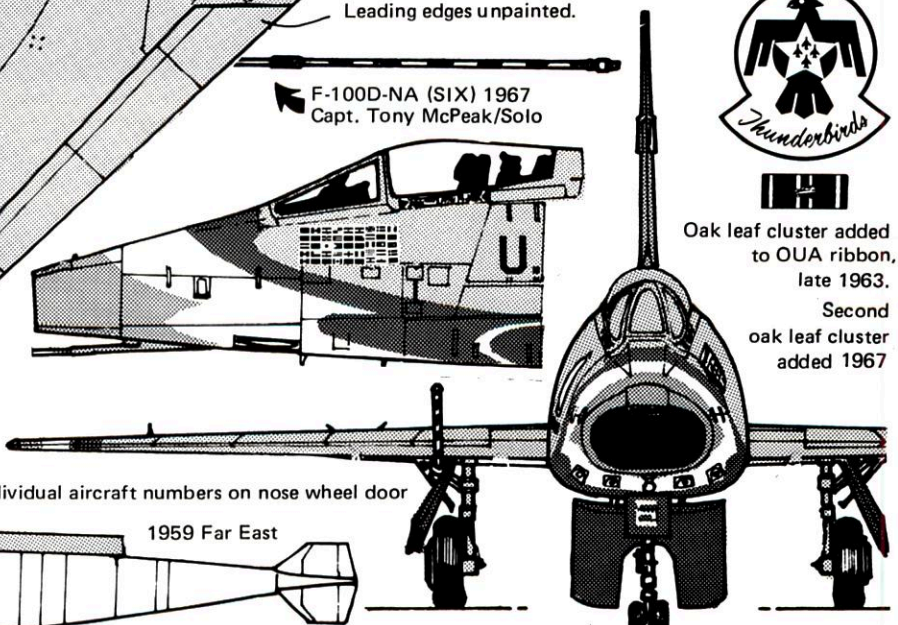
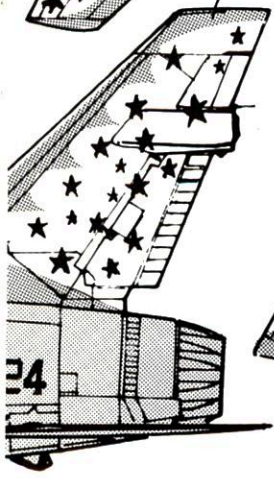
1959 Far East



White

Blue Lettering

Serial "Buzz" number style



F-100Cs had undergone IRAN (Inspect and Repair As Necessary) and were modified for inflight refueling. A straight boom, striped red and white, was added to the starboard wing leading edge. The flag panel was re-arranged at this time into 3 rows of six and 1 of four.

In July, 1960, the team deployed to Alaska for the first time, this flag being added to the row of four. By now, it had become common practice to allow the vertical stabilizer of the Slot aircraft to blacken from the leaders exhaust. The fuselage was carefully cleaned up to the fin/fuselage juncture and gave widespread belief that the fin was *painted* black, it never was.

A marking oddity occurs in some 1960 photos of the Slot aircraft. The name 'Old Sabre', in Old English Script, appears on the port fuselage, under the windscreen. It is unexplained. In late 1960, another Latin American deployment took place and three new countries were visited; Jamaica, Columbia, and El Salvador.

1960 also saw a change in the C-123 markings. The Air Force logo being moved forward on the fuselage, partially overlapping the nose scallops, the overlapping letters being in white. The red scallop on the vertical stab now encompassed the entire dorsal strake. The T-33A was traded in on an F-100F two seat Super Sabre. The F-100Fs were all marked identical to the other F-100 show aircraft.

The 1961 team; Maj 'Hoot' Gibson/Leader, Capt Wm Hosmer/Left Wing, Capt Robt Bell/Slot, and Capt Gerald Larson/Solo, joined leftover Capt Robt Cass/Right Wing for the new season. Another South American tour netted 6 new flags to the panel which ended 1961 with 4 rows of 8 flags each.

The arrowhead formation was added to the show which now lasted 23 minutes. The entry for the arrowhead loop, combined with the Solos' exit from the reverse 1/2 Cuban 8, produced what remains today as the biggest gasp-getter from the crowds viewpoint: the Collision Effect. The Solo, traditionally the high performance showman, now demonstrated low speed characteristics with the 'wing-walk and roll'. 1961 also saw the end of one of the team's most famous aerobatic maneuvers, the vertical bank - 360 degree turn. The FAA banned any aerobatic maneuver that pointed the nose of the aircraft at the crowd.

1961 was the year that the C-123 paint scheme was significantly altered. The fuselage top was painted white with the blue 'cheat line'. The white covered the entire wing fillet, top and bottom, unlike the C-119 scheme.

Nose scalloping was altered, completely covering the last vestiges of the anti-glare panel, and curving gradually back to the bottom of the fuselage under the wing. The Thunderbird emblem on the starboard side of the nose was moved over the first cabin window, matching the flag panel on the port side. The serial number was moved down onto the rear fuselage in 'buzz number style'.

The engine cowls now had natural metal leading edges as did the outer wing in the area of the stripes, and the stripes did not cover the ailerons. Wing tank scallops now covered only the nose of the tanks. A bird motif was added to the underside of the fuselage. A white line separated the 'bird' from the nose scallops. The bird was all blue, outlines in white. The bird's tail feathers extended up the cargo ramp door. The wing of the bird came out from the white wing fillet, crossed the nacelles, then angled back to the wing trailing edge just short of the ailerons. 1961 was the last season for the colorful C-123s. In 1962, airlift responsibilities were assumed by MATS C-130s. None of the C-130s were ever painted up in the manner of the C-119/C-123s; however, on one occasion, the Thunderbirds requested the reassignment of a crew with which they had a special rapport. The aircraft was marked with the Thunderbird emblem and the number 14. These markings were reportedly removed as soon as the crew and aircraft rejoined their unit. The C-54 also contributed to 'airlift' in 1962, but it was reassigned in 1963.

1962 will always be regarded as one of the landmark milestones in the team's history. 1962 had LtCol W. Alden as the Thunderbird commander, Maj 'Hoot' Gibson/Leader, with Capt Hosmer, Bell, and Larson remaining from 1961. New members included Capt Ralph Brooks on Right Wing, and Capt Robt Moore as the second Solo pilot. Dual Solos! The Dual Solo concept provided the most spectacular and exciting show the public had yet seen. The decision to go to dual solos came about in July, 1961, and the new pilot and aircraft were assigned by November 1961.

Following the diamond takeoff, the dual solos took off line abreast and, once the gear was up, at minimum altitude and wingtip to wingtip, they rolled simultaneously in opposite directions. They followed this with an opposing afterburner pass followed immediately by the diamond entry over the crowd. An attention getter like you wouldn't believe! Other new maneuvers included the opposing slow roll, opposing 1/2 Cuban 8s, opposing loops, opposing aileron rolls. It was a new height in air show spectaculars. In 1962 the flag panel grew from 26 to 32 flags and contained for the first and only



As the T-33 markings had changed with the demonstration aircraft markings, so did the F-100F markings. The main difference was that the nose scallops were more drawn out. Compare this photo of 63924 with the one below. The vertical stabilizer tip is the main identifying difference. This aircraft carries highly polished natural metal drop tanks with "Thunderbirds" in script, a single name block on each side, single oak leaf on Outstanding

Unit Award ribbon, and "Buzz" number style serial.

F-100F 56-3927 carries, instead of serial or "buzz" number, the identification "EIGHT" on rear fuselage. Vertical stabilizer tip red area is wider than 63924 indication the team is flying the F-100D. Other miniscule details show that there are two oak leaves on the OUA ribbon. *Norm Taylor*



time, the flag of the United Nations. The blue border around the flag was removed in 1962.

1963 saw an almost entirely new team, only LtCol Alden/Commander, and Capt Robt Moore/Solo were 1962 holdovers. 1963 marked the return of the 1955-56 Slotman Ed 'Lucky' Palmgren, this time as a Major and Leader of the Thunderbirds. Capts Jerry Shockley and Bill Higgenbotham flew Left and Right Wing, Major Paul Kauttu/Slot and Capt Ron Catton as the second Solo.

May of 1963 saw the teams first European deployment. It was 'Operation Grand Play' and 9 new countries were visited. Portugal, Libya, France, England, Luxembourg, Germany, Italy, Spain, and Surinam were all shown the hows and whys of the 'Worlds Best Aerobatic Team'. Again and again, air refueling was used in the rapid movements from country to country, show site to show site.

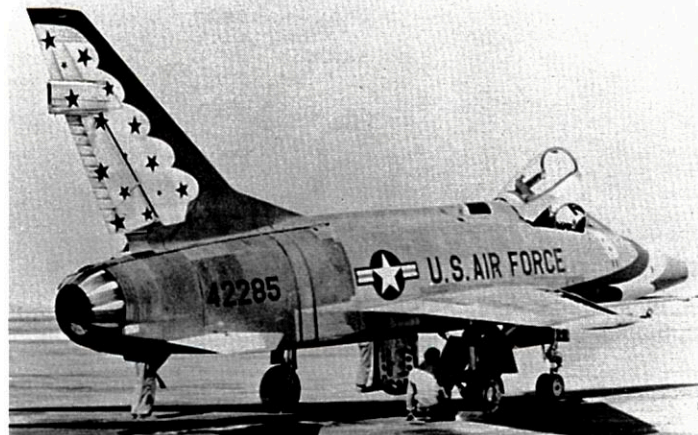
On 17 December 1963, the 690th and last F-100C show was performed. 1964 would bring transition into the F-105B ThunderChief. Aircraft markings changes for the year 1963 included the 'NELLIS' on the Thunderbird insignia changed to 'USAF', pilot and crew chief name panels now had red, white, and blue scallops on each end. By late 1963, a new 40 flag panel adorned the F-100Cs along with an Oak Leaf Cluster to their Outstanding Unit Award ribbon.

1964 brought a new team along with a new aircraft. The new team was Major Paul Kauttu/Leader/Commander, Capt Bill Higgenbotham/Right Wing, Capt Charlie Hamm/Left Wing, Capt Jerry Shockley in the Slot, and Capts Ron Catton and Clarence Langerud flying Solo. This teams' transition into the big F-105Bs went off smooth as glass.

First the aircraft, Republic F-105B-15-REs, had to be modified to the demonstration role. All the modifications needed to do this reflected the complexity of the aircraft. The M-61 Gatling gun and Doppler navigation equipment were removed and replaced with ballast. The flap system was modified to give the Thunderbird aircraft a 'maneuvering flap' capability. Normal F-105s contained a safety feature which allowed aerodynamic forces to retract the flaps when approximately 280 KIAS was exceeded to prevent flap and airframe damage. This was modified to allow flap operation at up to 500 KIAS, with a limiter installed to restrict flap deflection to a maximum of 4 degrees.

The main landing gear was modified to F-105D specs. A 'show system' control panel was installed on the instrument panel to group controls and caution lights peculiar to the demonstration role. The rudder system was modified to allow the pilot to obtain full rudder authority for the knife edge pass. The stick grip and throttle controlled all the smoke controls. Two 50 gallon smoke oil tanks were installed with 2 smoke probes. This allowed different colored smoke to be used, red and blue. 'Fast turnaround' capabilities were enhanced by carrying a spare drag chute in the gun compartment. Two Slot aircraft had the usual vertical fin mods and a VHF radio system was added. The fuel system was modified for extended inverted flight. A VOR radio receiver was installed and the TACAN antenna modified. Stowage provision for limited pilot baggage was made and a cockpit entry ladder installed.

The paint scheme on the F-105s followed the theme of previous Thunderbird aircraft. Originally, the paint scheme had the fuselage spine aft of the cockpit painted blue with a natural metal canopy frame. All lettering and serials were as on the F-100s. Vertical and horizontal tail surfaces were done in the traditional starduster motif but with natural metal leading edges. Wingtips were striped red, white, and blue, again with natural metal leading edges. The blue Thunderbird on the underside of the fuselage terminated on the ventral fin just forward of the tailhook. The nose scallops were rather short, the rearmost blue scallop running in a continuous curve from in front of the windscreen, dipping below the mid-fuselage line, and sweeping back up to join the white outline of the bird at the center of the intake. This 'dip' of the scallop was eliminated before the show season began, now going back to the bottom of the intake in a straight line.



A rather rare photograph of the F-100Ds borrowed by the team when they deployed to the Far East in 1959. Their C models were not equipped for aerial refueling and had to be left behind. An advance party flew over and applied the markings. Several indentifying marks separate these aircraft from the team's later Ds: "Buzz" number serials, rather than spelled out numbers; the serials themselves; and the unconformity in the lower scallop of the tail. *Menard*

The scheme changed again before the training season was over with the nose scallops being inclined at a sharper angle and with a deeper, more streamlined appearance. The outline of the bird was now gracefully curved to the bottom of the intakes. The blue spine was outlined in white on this final scheme. The 40 flag panel was applied to the port fuselage, the Thunderbird insignia on the starboard. The outstanding Unit Award ribbon was omitted.

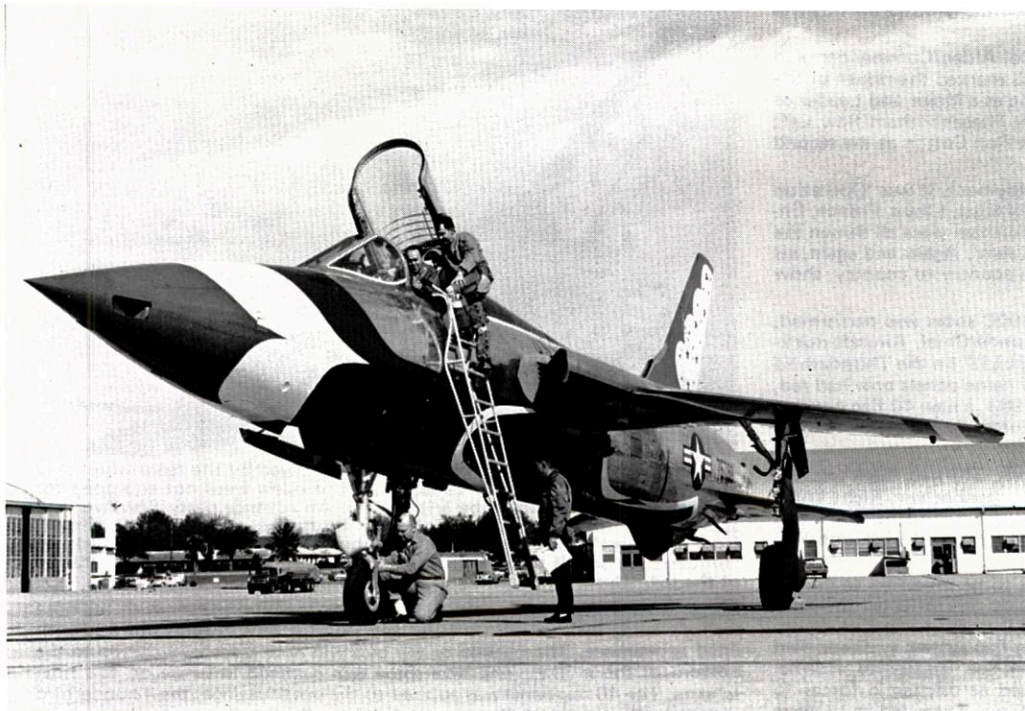
The F-105s selection to the team raised more than a few eyebrows. The F-100C had been heavy, but the 105 was even heavier. Designed as a nuclear strike fighter, it was nearly 4 tons heavier than the F-100C, this being nearly double the weight of the Blue Angels' F-11A Grumman Tigers. However, this was offset to great degree, by the extra 6,000 pounds thrust that the J-75 offered over the J-57s from the 'Huns'. In fact, a thrust to weight ratio of .805 to 1, versus the F-100Cs .60 to 1, was achieved. Roll rate of the Thud was somewhat slower than the F-100 but no problems were encountered. However, the looping maneuvers did require an additional 800 feet of altitude over the top.

Six official airshows were flown in the F-105s before an unfortunate accident, in May 1964, grounded the team. It was determined that additional modifications, to the aircraft would be necessary. Rather than cancel the remainder of the show season to do these modifications, General WC Sweeney, Jr, Commander of the Tactical Air Command, made the decision to transition immediately into the F-100D. It was originally intended to revert back to the F-105s for the 1965 season, but the work involved, coupled with the changing military climate, brought an end to the Thunderbird F-105s.

The Thunderbirds transitioned to the F-100D in the late Spring of 1964. Modifications to the basic F-100D were the same as those done to the F-100Cs. The auto-pilot was inactivated, gun sight removed, radar ranging system removed, VHF radios installed, etc. One thing they didn't have to do was retrofit for inflight refueling, the F-100D already had that capability.

Though often photographed it seems that few photos are available of the F-105Bs in their final show markings . . . this is one of them. "Buzz" number serial treatment are still in evidence, as are the white-outlined 'Bird' motif, the ever-growing flag panel, and the red and white striped pitot boom on the left wing tip. *USAF*





This is the final F-105 scheme before the application of the flag and name panels. *Republic*

Relatively rare shot of F-105Bs in a six ship formation. Note the blackened tail of the slot aircraft. *USAF*

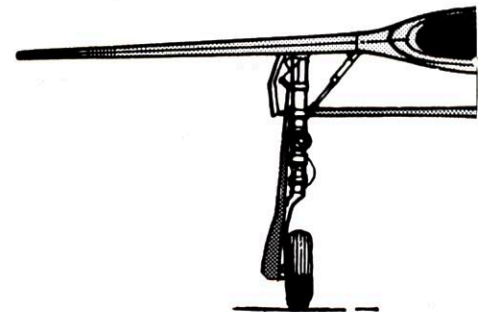


# F-105B (1964)

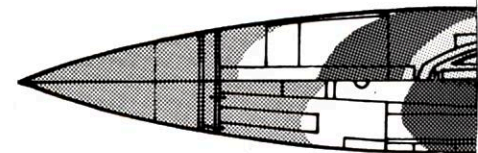
## SERIAL NUMBERS

57-5782 57-5793 57-5801  
 57-5787 57-5797 57-5802  
 57-5790 57-5798 57-5814

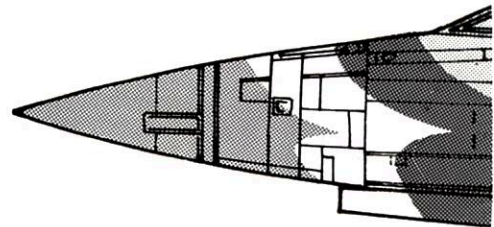
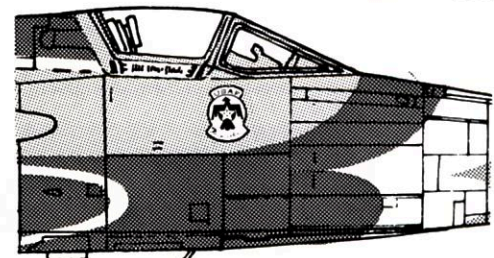
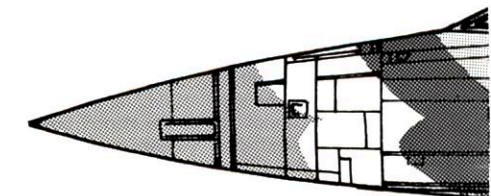
These were the only F-105Bs assigned to the team.



F-105B-15-RE (57-5814) 1964  
 Maj. Paul Kauttu/Leader

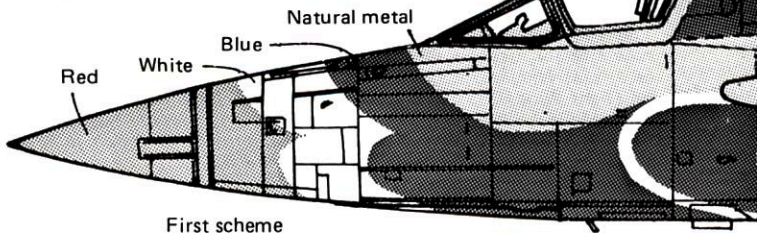


No flag panel insignia or name blocks until late in training season.

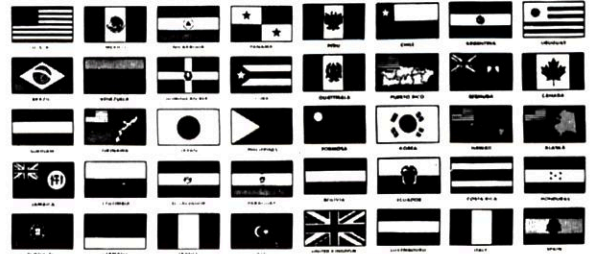




Spine blue with natural metal canopy frame



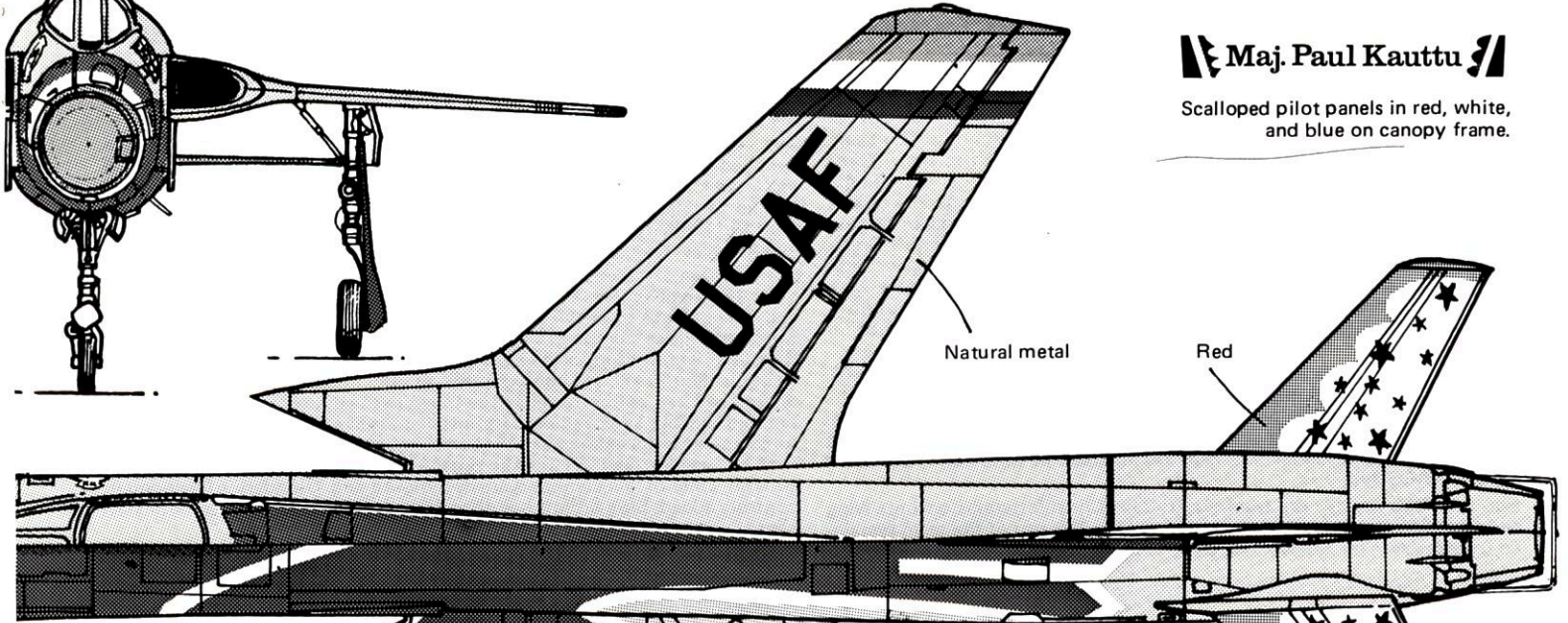
First scheme



1964 flag panel—40 flags

**Maj. Paul Kauttu**

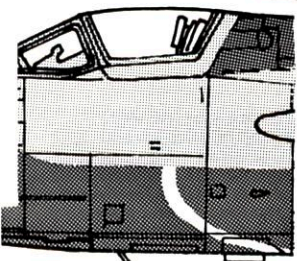
Scalloped pilot panels in red, white, and blue on canopy frame.



USAF

Natural metal

Red



Interim scheme

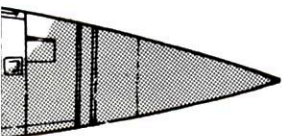
Blue  
White

Leading edges—natural metal



Thunderbird insignia without OUA ribbon.

Dual smoke probe



Final scheme

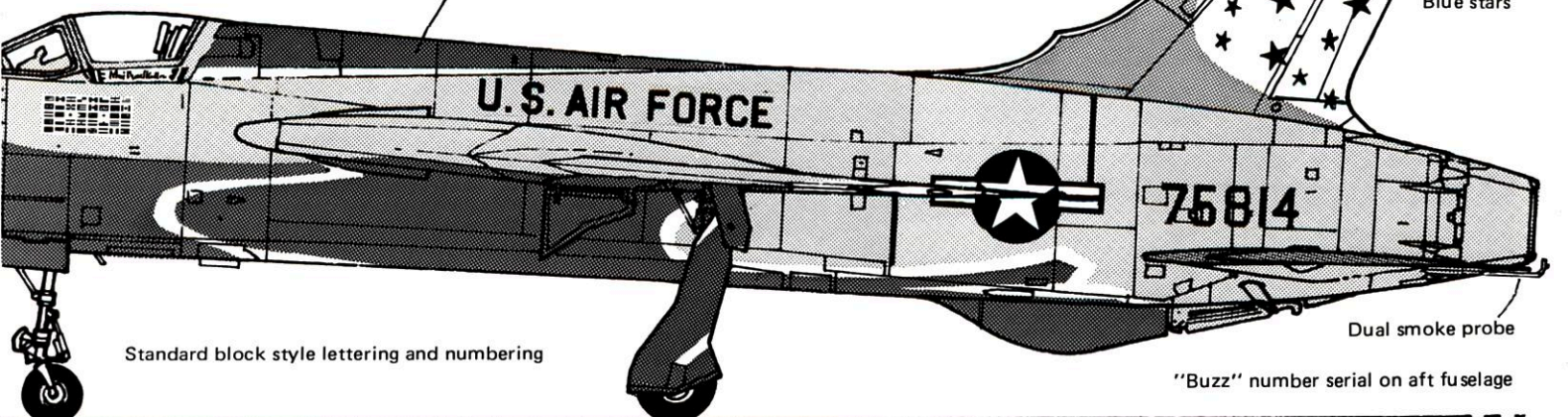
Spine blue, outlined white with natural metal canopy

Pitot boom on port wing striped red and white.

Blue  
White  
Red

Red

White  
Blue stars



Standard block style lettering and numbering

Dual smoke probe

"Buzz" number serial on aft fuselage

ty. The aircraft all had undergone Project High Wire, an extensive refurbishing of selected F-100C, D, and F models to update and standardize the fleet.

At first glance, the paint scheme was identical to the F-100C. A closer look revealed several significant changes. The characteristic 'cranked' refueling boom of the D being noticed right away. At first the Outstanding Unit Award ribbon was omitted but reinstated later in the year. Individual aircraft numbers were added to the nose wheel doors. Alternate 'eyelids' of the afterburner were polished to give a distinctive 'candy stripe' effect. This had been done in the past but not on any regular basis, now it was standard.

The taller tail of the D model was obvious by the greater depth of the red scallop at the tip. The difference that escaped most observers, however, is that the stars on the tail surfaces were all now identical in size and 13 on each surface. The cannon ports were plugged but not faired over. One other significant markings change was that the 'feathers' of the underside bird reverted back to the original style although still outlined in white.

The 1965 team was composed of LtCol Ralph Maglione-Commander/Leader, Capt Hamm on Left Wing and newcomer Capt Buster McGee on Right Wing, Capt Hank Canterbury took over the Slot, with Capt Robt Morgan joining Capt Langerud as Solo pilots. 1965 saw the team tour the Carribean, visiting Barbados and the Netherlands Antilles for the first time. These countries' flags were not added to the flag panel at this time. Later in the year, Operation Big Wing took the Thunderbirds to Europe for the second time. 22 demonstrations and 27 days later, the team had added Turkey, Belgium, and Greece to the countries that had now seen the 'World's Greatest Aerobatic Team'. Operation Easy Road took the team back to Latin America for an 'easy' 16 day deployment. Altogether, 23 countries were visited during the 121 show schedule. Over 7 million people cheered them on. The teams 1000th demonstration was flown at Waukegan, Illinois in 1965.

Although all the tours were completed by June, 1965, a new flag panel was not devised until after the '65 season was complete. The 1966 seasons' aircraft carried this new flag panel. In late 1965, a significant markings change took place. The 'buzz number style' serial numbers on the aft fuselage were changed over to the individual aircraft numbers in word form, i.e. ONE, TWO, THREE, etc.

For the 1966 season, the team added Capt Chris Patterakis on Left Wing and Capt Bob Beckel as one of the Solo pilots. The rest of the team remained unchanged. The new 45 flag panel was instituted by adding a ninth col-

umn. A second Oak Leaf Cluster was added to the Outstanding Unit Award ribbon.

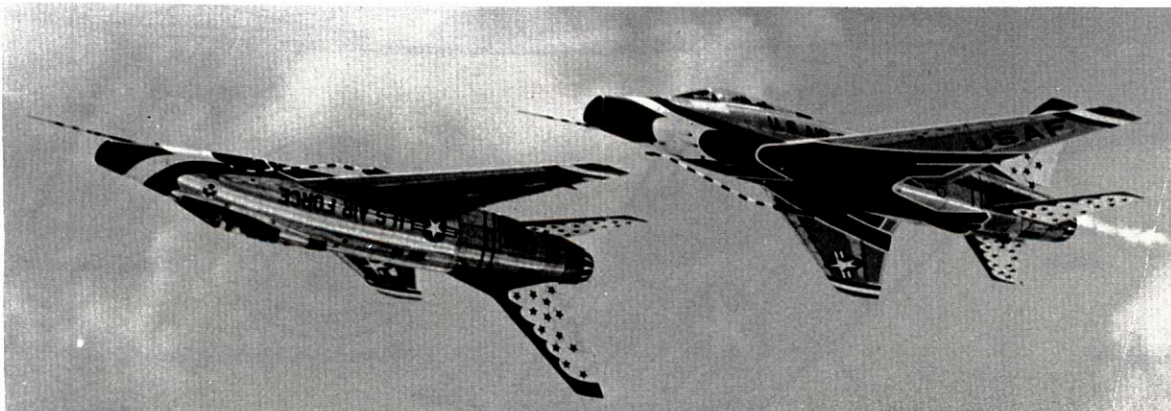
The 1967 team saw another Thunderbird 'letterman' return. Neil Eddins, now a Major, became the new Commander/Leader. Capt Patterakis returned at Left Wing and Capt Beckel at Solo. New faces were Major Stan Musser on Right Wing, Capt Jack Dickey in the Slot, and Majors Mike Miller and Tony McPeak flew Solo. 'Operation Big Wing II' was the teams third trip to the European continent, where they performed 15 shows in 5 different countries. To meet a show deadline at the Air Force Academy, the team flew non-stop from Paris to Colorado Springs, a trip of some 7,000 miles. It took 13 hours, 40 minutes, and 7 refuelings to do it.

1968 saw Major Eddins' team change at only one position, Major Mack Angel now flew Left Wing. This year the team flew to the Bahamas, Alaska, and Hawaii with the flag of the Bahamas being added to the 1969 flag panel. This was 'the year of travel' as the team covered an estimated 175,000 air miles. On the 30th of November, 1968, at Nellis AFB for the annual Boy Scout Day, the team flew the 1,111th and last show in the F-100 Super Sabre (640 shows in the 'C', 471 in the 'D'). 1969 would see a switch to the monstrous McDonnell Douglas F-4E Phantom II.

The team started the 1969 training season still in the F-100Ds but soon switched over to the F-4s. Also at this time an unfortunate accident caused the loss of a Solo pilot and rather than train 2 new solo pilots while converting to a new aircraft, Air Force officials decided to delete the second Solo for 1969. It was to be reinstated in 1970, but economics and the war in South East Asia, and later the energy crisis, combined to prevent this.

In the Spring of 1969, the Thunderbirds received 8 new McDonnell Douglas F-4E Phantom IIs. The F-4Es had to be modified even more than the F-105s had been. Some of the fire control radars were removed along with the weapons release computer. The computing gun sight, M-61-A-1 Gatling Gun, and ammo drum also left. A negative G lap belt was added to both cockpits. Smoke oil was housed in the dummy missiles, with the entire system pressurized to insure reliability in all inverted or negative G situations. The old reliable VHF radios were installed. Ballast was added to the nose to compensate for equipment that was removed. The trigger switch on the stick became the UHF/VHF radio button. Instrument panels were rearranged with some of the combat systems removed and Thunderbird equipment controls added. Slot aircraft had their fiberglass fin caps replaced with steel caps.

Perhaps the most significant modification was a system allowing afterburn-



The dual solos (five and six) executing the calypso pass ... convenient for showing upper and lower surface markings in one shot. USAF

F-100D number SEVEN (the spare) shows several details to good advantage particularly the polished afterburner eyelids, identical size stars on tail, smoke probe, general high polish, 45 flag panel, and the pilot name panel adopted in 1967. Taylor





The first F-4E takes off for Nellis. Note the absence of underwing tip striping, and crew name blocks. Notice also the factory applied nose scallops which were quickly altered to give a more rakish, streamlined appearance.

GANN

In-trail taxi in 1971 markings.



er selection at the 89% power point. Normally, the throttles must be advanced through full military power before engaging the 'burner'. The modification system allowed the pilot to select afterburner by simply moving the outboard throttle outboard, without going to mil power first. This simple movement activated both 'burners' and was the key to Thunderbird F-4Es' outstanding throttle response. In addition, the INS and NAV panels were moved to the front cockpit and the aft control stick was removed.

1969s team was as follows: LtCol Joe Moore-Commander /Leader, Majors Angel and Doyle Ruff on the Wings, Capt Tom Gibbs moved into the Slot, with Capt Jack Thurman and Major Mike Kirby flying Solo. The team began training in the F-100Ds then transitioned into standard F-4E 'Lizards', so called because of their camouflage paint jobs. The 'Lizards' carried individual aircraft numbers in black on white circles on both intakes, and had the fin tips scalloped red, white and blue. These 'Lizards' were utilized in each training season as the demonstration aircraft went through IRAN.

The F-4E paint scheme was totally different from any other Thunderbird aircraft. Due to the different types of metal used in the F-4E, a natural metal finish was ruled out. If you've ever seen the F-15 'Streak Eagle' you'll know why... there are no 'silver' panels anywhere. For this reason, the aircraft were given a 'pure white' polyurethane paint job. Two other 'firsts' in markings came with the new white scheme; all standard information stenciling was deleted, rescue information and all. Nothing was applied that would mar or detract from the finish. Additionally, no national insignia or USAF was applied to the wing surfaces.

The actual paint scheme was similar to the natural metal Thunderbird: scalloped nose and vertical stabilizer in red, white, and blue. The upper wing, outer halves, were striped red, white, and blue, as were the outer halves of both sides of the stabilizers. The 13 stars were now applied in a circle on the vertical stab with the aircraft number in the center, in Gothic style lettering. A small aircraft number, in white, was carried on the front of the gun fairing. The 'bird' was applied to the aircraft's bottom, again in blue but now with a red border to the bird's wings. The Thunderbird insignia was applied to the right intake with the O.U.A. ribbon below it. The flag panel was applied to the left intake, still with 45 flags but re-arranged into rows of 5. The wings and stabilator leading edges were natural metal as was the exhaust area.

The F-4E airshow with only one solo, resulted in some changes in the show sequence. Six ship wedge maneuvers became 5 ship maneuvers. The 'roll back to arrowhead', usually a 'low show' maneuver, became a permanent fixture. Some other 'low show' maneuvers were added to the regular show sequence due to crowd popularity, like the 'roll back' and Solo 'wing-walk and roll'. The hi-lo overtake of the landing diamond by the Solo became one of the team's most popular maneuvers. Perhaps more than any other maneuver, the 'missing man formation' will always be associated with the F-4. This was flown in honor of the Vietnam POW/MIAs.

The F-4E will be remembered as the team's most impressive aircraft. The F-4 was immense compared with its predecessors. It was big. It was heavy. It was powerful. And it was America's first line fighter. It personified brute strength, yet exemplified grace and beauty in the precision maneuvers of the air demonstration. The earth shaking roar of those 8 J-79s has to be heard to be believed. Surely no demonstration aircraft accomplished the Thunderbird mission of representing American airpower more impressively than the Phantom.

On June 1, 1969, the first F-4E exhibition was flown for the graduating seniors at the Air Force Academy. Among the guests were the Secretary of the Air Force, the Air Force Chief of Staff, and newly inaugurated President of the United States - Richard Nixon. ABC Television also sent the entire show out to millions of TV viewers across the nation. The 'Ambassadors In Blue' also appeared on 'The Ed Sullivan Show' and a Frank Sinatra, Jr. Special in 1969. This meant that about 30 million people viewed the Thunderbirds at each of these three TV shows. But the other end of the scale was also reached in 1969 as the team performed before its smallest crowds ever, 30 people saw the show at two different, remote sites in Alaska, Tathena AFS, and Clear AFS.

A new team was introduced in 1970 as LtCol Tom Swalm took over as Commander/Leader, Majors Bob Jackson and Doyle Ruff flew Left and Right Wing respectively, Capt Tom Gibbs in the Slot, and Maj Mike Kirby as Solo. The team deployed again to South America, Canada, and the Caribbean with 1,400,000 jamming Francisco de Maranda Air Field for a 2 day show. 1970 was the year that the 'missing man formation' was added to the show.

1971 saw Major Joe Howard take over the Right Wing and Capt Steve Dwelle

# F-4E 1968-1973

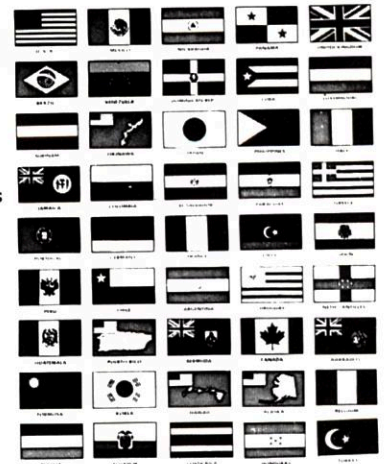
## SERIAL NUMBERS

- 66-0286    66-0302
- 66-0289 \*    66-0315 \*
- 66-0290 \*    66-0319 \*
- 66-0291 \*    66-0321 \*
- 66-0294 \*    66-0329 \*
- 66-0296 \*    66-377

\*These were the original eight aircraft.

# 12345678

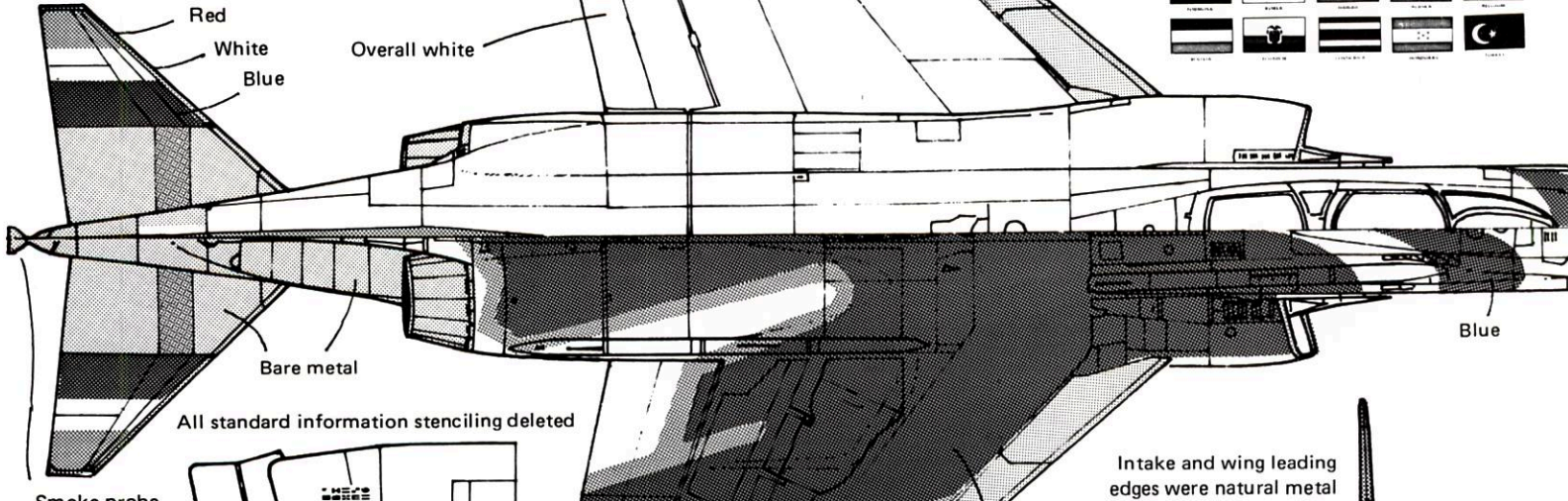
Gothic style numerals.



1969 flag panel—45 flags

No national insignia or "USAF" on wing surfaces

Individual aircraft numbers in a circle of 13 stars on tail and on front of ventral nose fairing



Standard F-4E "lizards" in camouflage were used during training season while white demonstration aircraft underwent IRAN or semi-annual inspection.

Blue White Red

GREEN 34102

Blue  
White  
Red

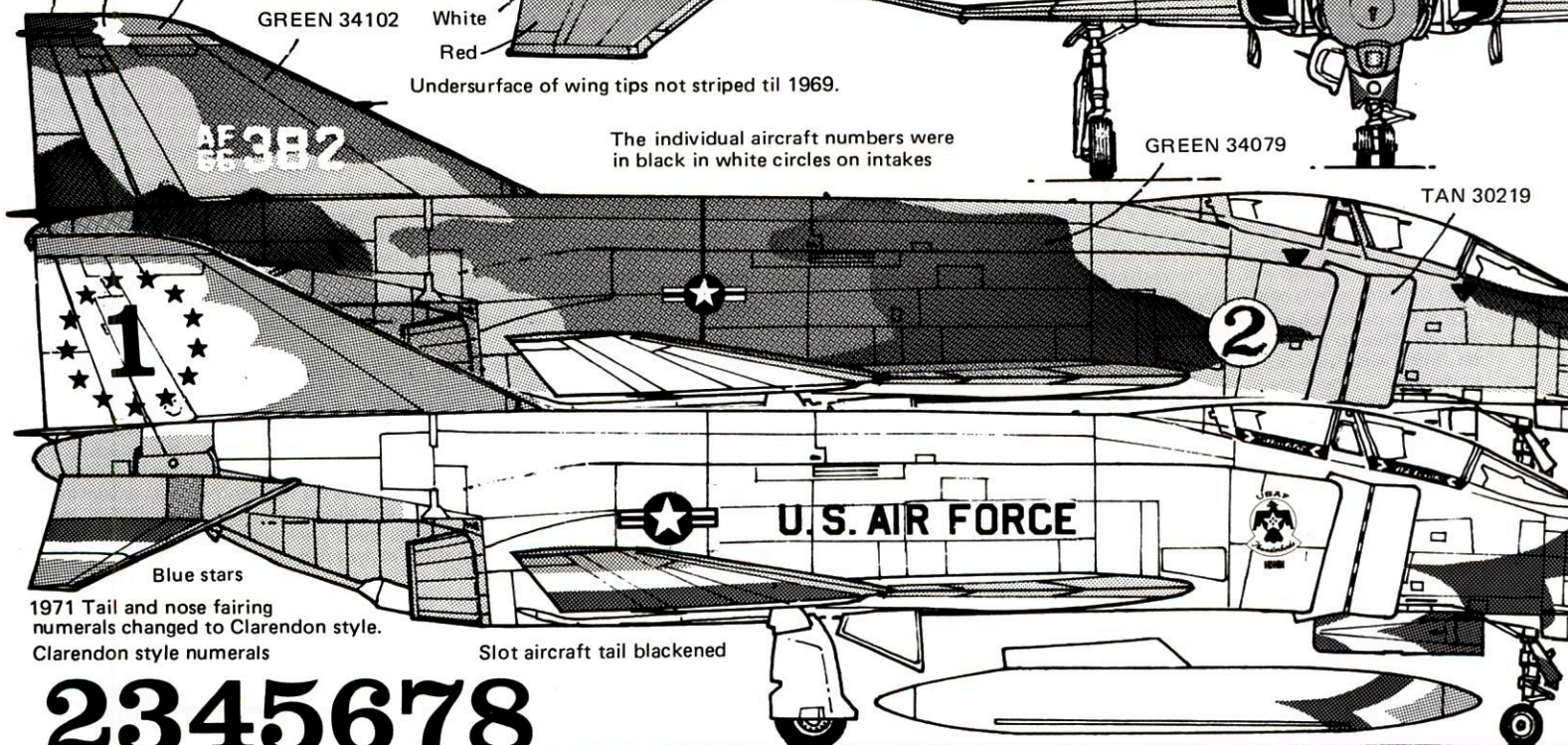
Undersurface of wing tips not striped til 1969.

\*Bird motif was blue outlined red.

The individual aircraft numbers were in black in white circles on intakes

GREEN 34079

TAN 30219



1971 Tail and nose fairing numerals changed to Clarendon style.

Clarendon style numerals

# 2345678