DEVELOPMENT OF NATIONAL AIRCRAFT INSIGNIA FOR THE U.S.A.A.F. AND U.S.A.F.

1915 TO 1956

by

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From the purchase of the first government aircraft for the Army Signal Corps in 1909, until 1916, military aircraft were unmarked by official insignia of any design.

In 1916, when two squadrons of Curtiss R-2's were sent into service in the Mexican Campaign, a red five-pointed star was placed on the upper portion of both sides of the rudders. This particular marking was conspicuous in that it was not applied to any other area of the aircraft. The red star was retained until May 19, 1917.

The well-known white star was introduced on May 19, 1917. This design consisted of a white five-pointed star superimposed on a blue disc with the perimeter of the disc meeting each of the five outer points of the star. A red disc was inscribed within, and touching, the inner points of the star. Proportions of the discs were determined by the geometric construction of the star. The new insigne was located on the upper surface of the top wing and bottom surface of the lower wings, inboard of the ailerons. Overall dimensions of the design were limited only by the chord of the wing.

Rudder stripes were also introduced on the above date. Vertical stripes were added to each side of the rudder; blue at the rudder post, white in the middle and red at the trailing edge. Although this marking was not incorporated on planes in combat, it was used on some training planes sent to France in 1917.

January 11, 1918 saw the approval of the concentric circle insigne by the JANTAB and Secretaries of War and Navy. The board resolved that, "all airplanes manufactured in the United States for the Army and Navy be marked as follows:

Wings - Red circle with diameter approximately equal to chord, inner blue circle with diameter two-thirds of the chord, center white circle with diameter one-third of the chord.

Rudder - Verticle red, white and blue stripes starting at the rudder post." (1)

The concentric circles were located on upper and lower wings, similar to location of the earlier star design, however, the discs were placed inboard of the ailerons on all U.S. produced aircraft, but on wing tips of all British and French produced planes. This insigne also appeared on fuselage sides if British insignia were painted over. Most French Nieuports had this design on the under side of the top wing also. By the end of World War I, concentric circles had been applied to the wing tips of all U.S. aircraft. Planes produced by France had other rudder stripes. The front stripe was white, center stripe was blue, with red at the trailing edge.

On July 15, 1918 concentric circles were approved by GHQ, AEF, for marking captive balloons of the Air Service AEF. These were to consist of discs forty inches in overall diameter, located on each side of the balloon. Although the concentric circle had been given official approval, the star remained in use in the U.S. during 1918. Some training planes had both star and discs on the same wing due to replacement of parts. Planes whose stars had been changed to discs often had the old tail stripes (red, white, blue) left on. After the Armistice, size was determined by the leading edge of the wing and the aileron, not to exceed sixty inches in diameter. This size limitation remained until June 1942, when it was abandoned.

On April 30, 1919 the old red centered star insigne was ordered for all aircraft delivered after this date in accordance with an agreement between the Secretary of War and the Secretary of the Navy. According to AGO instructions of April 30, 1919 to the Director of Air Service, "the design shall be a red circle inside of a white five-pointed star, inside a blue circumscribed circle.... These insignia shall be placed on the upper and lower surfaces, respectively, of the upper and lower planes of each wing.... The insignia for the rudder shall be three equally wide bands, red, white and blue, on both sides....rear of rudder post shall be striped parallel to its vertical axis.... The blue band shall be nearest the rudder post." "Aircraft already bearing the circle will continue to carry it." (2)

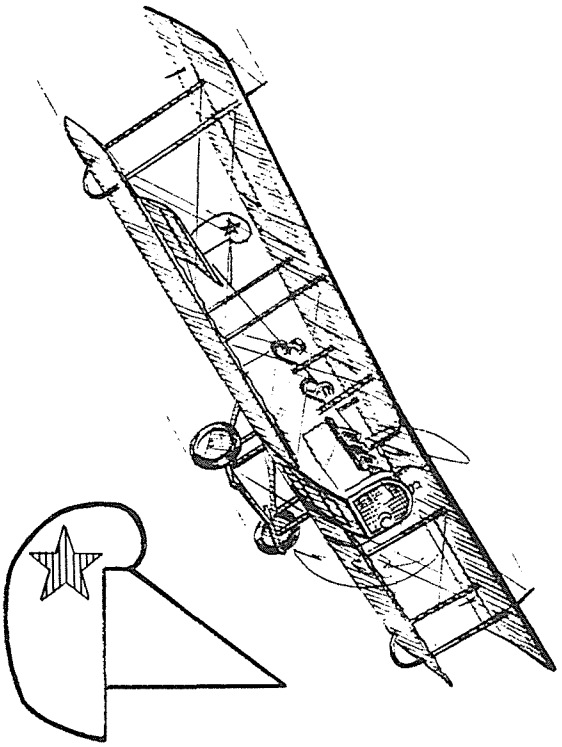
In November 1926 the vertical rudder stripes were replaced with a new rudder design. A blue vertical bar was placed at the rudder post. The rear portion of the rudder contained seven red stripes alternated with six white stripes. Width of these stripes was governed by thirteen equal divisions on the height of the rudder. Rudder insignia were eliminated from all camouflaged aircraft in February 1941 and on all aircraft in June 1942. The same design was revived as optional in the Spring of 1946.

United States aircraft entered World War II bearing the red centered star insigne. This design was also found on the sides of some aircraft, located between the wing trailing edge and empennage leading edges. Pilots in the European theater complained of confusion with other national insignia. An official change was requested and for expediency, a yellow circle was placed around the existing design.

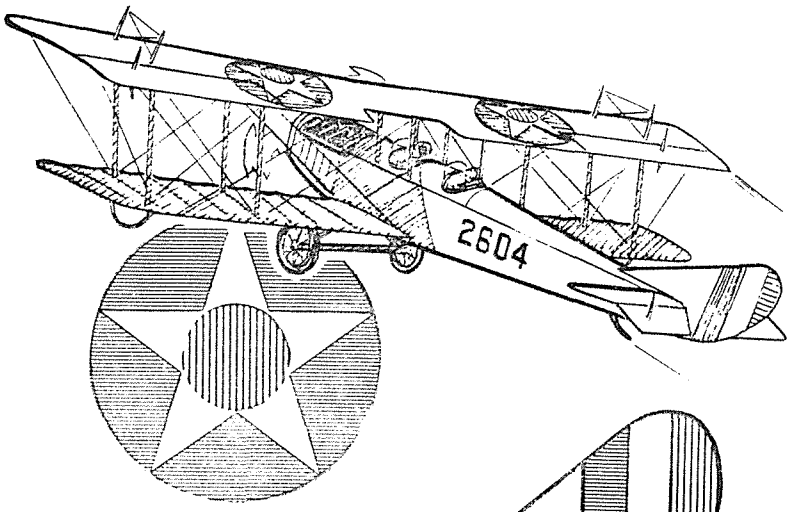
June 1942 brought the first alteration in the white star insigne. As previously mentioned, the inclusion of the red disc had resulted in confusion with insignia of other foreign powers. From this date the red disc was eliminated from all U.S. aircraft insignia, leaving a white five-pointed star on a circumscribed blue field. Several squadrons operating with the Royal Air Force and in the African Invasion in late 1942 added a yellow ring around this design to aid in recognition.

The new two-color insigne appeared in the same locations as the old red-centered star, and on fuselage sides, however, within several months wing marking locations were modified. Possibly as a deterant to visual tracking, the insigne was removed from the upper right wing tip and the underneath side of the left wing tip. This arrangement was retained throughout the war and remains the current system of locating markings.

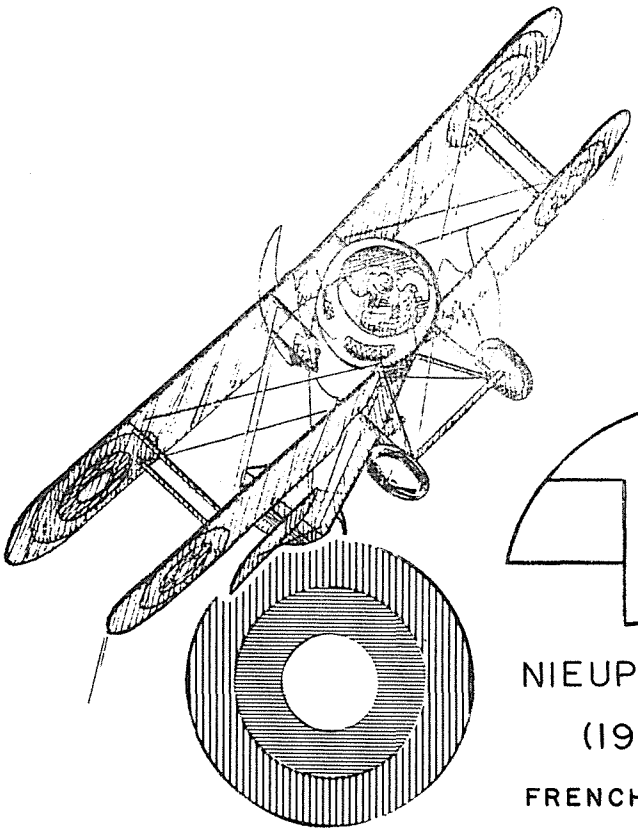
The second major change to be incorporated in the white star design came on June 29, 1943, with a series of experimental designs that were tested at Eglin Field, Florida by the AAF Proving Ground Command. Early among these proposals was



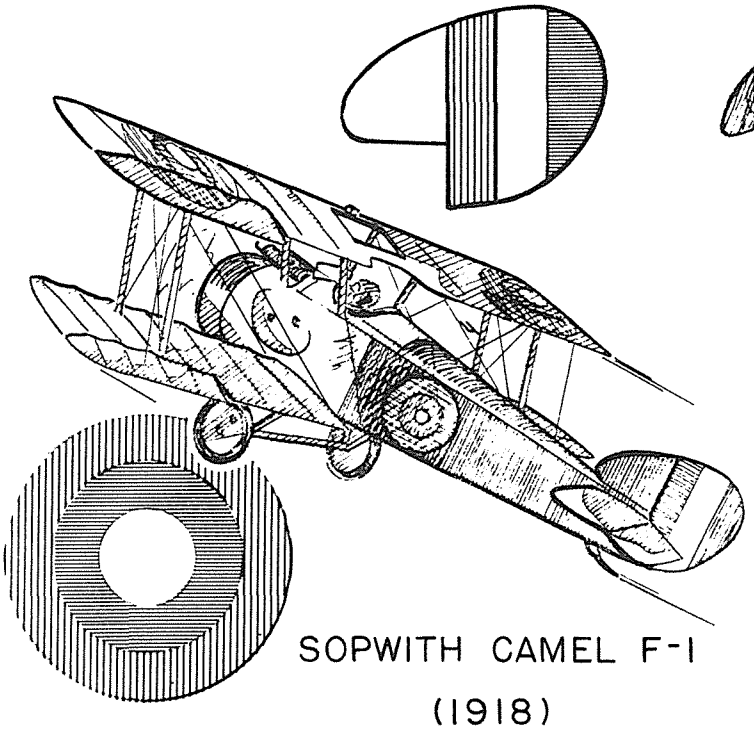
CURTISS R-2
(1916)



CURTISS JN-4D
(1917)



NIEUPORT 28
(1918)
FRENCH SUPPLIED

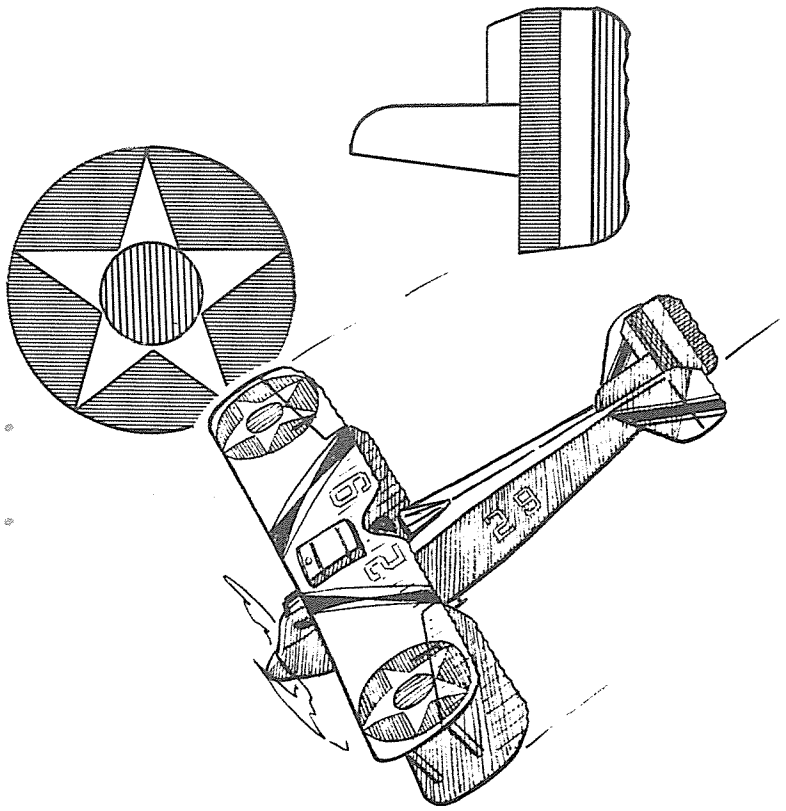


SOPWITH CAMEL F-1
(1918)
ENGLISH SUPPLIED

PRE-WORLD WAR I AND WORLD WAR I MARKINGS

PLATE NO. 1

DURAND 6/56

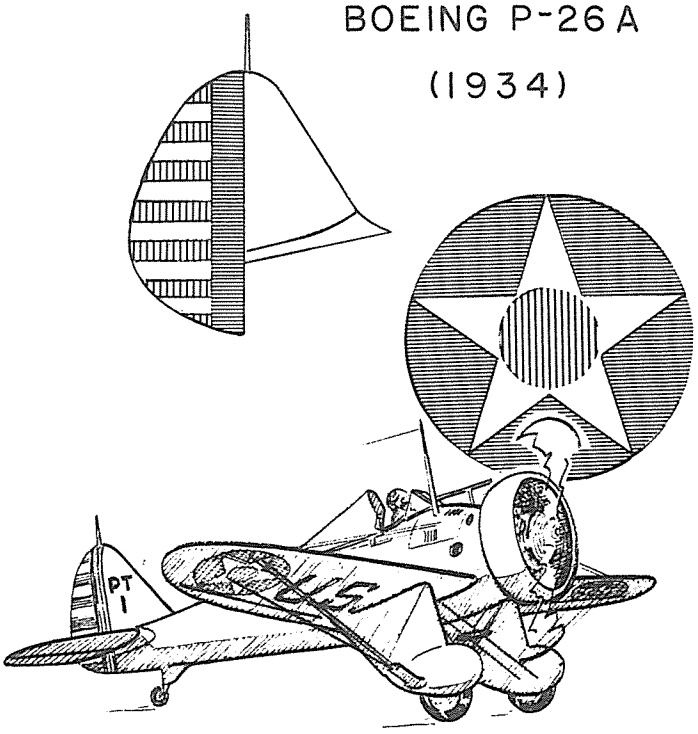


THOMAS-MORSE MB-3A

(1922)

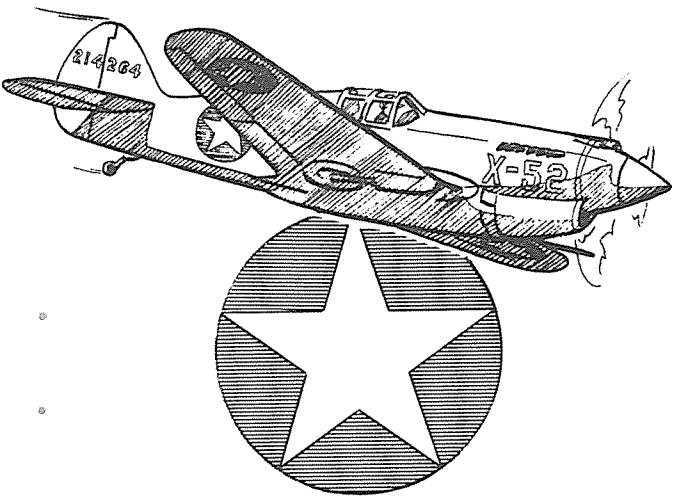
BOEING P-26A

(1934)



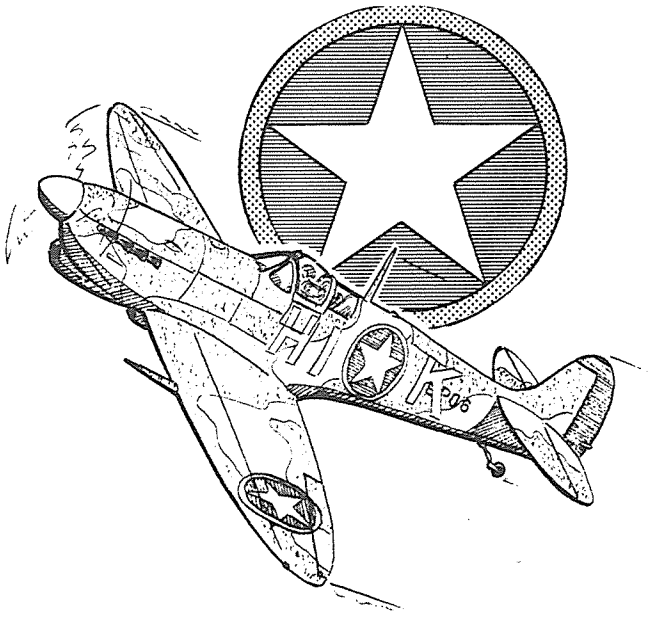
SUPERMARINE SPITFIRE VC

(1942)



CURTISS P-40C

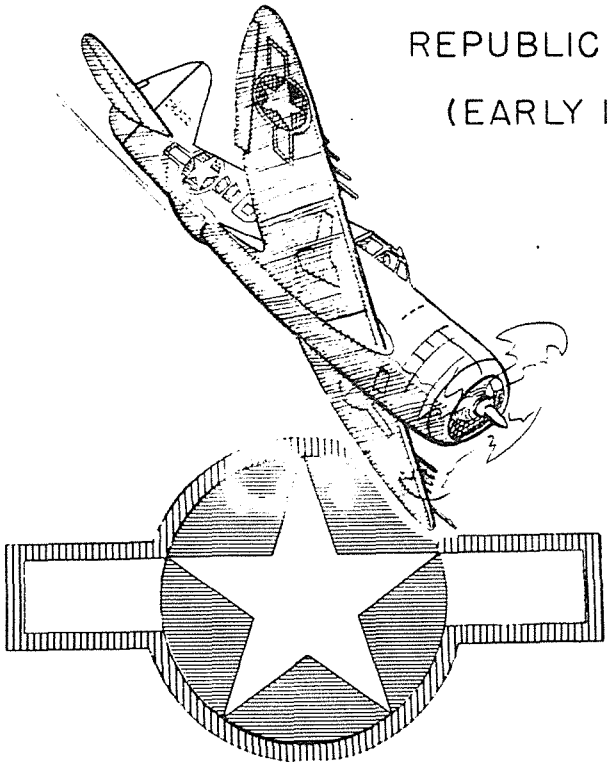
(EARLY 1942)



PRE-WORLD WAR II & EARLY WORLD WAR II MARKINGS

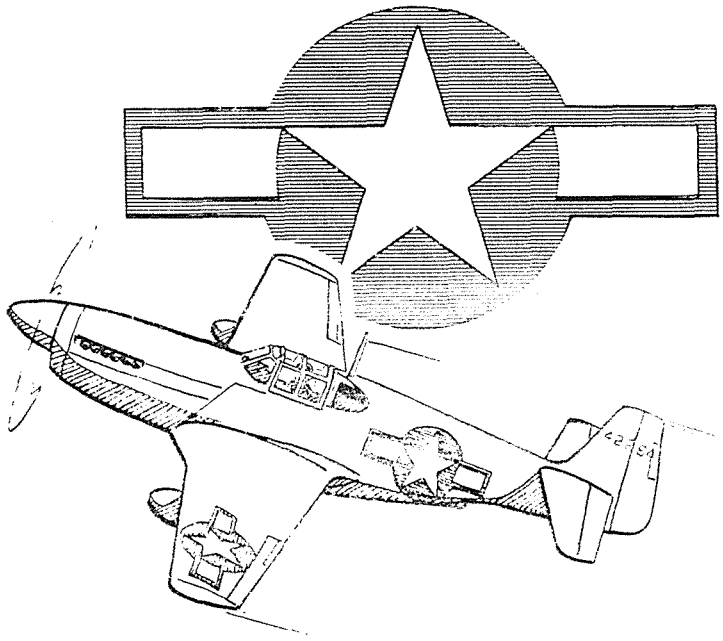
PLATE NO. 2

DURAND 6/56



REPUBLIC P-47 B

(EARLY 1943)

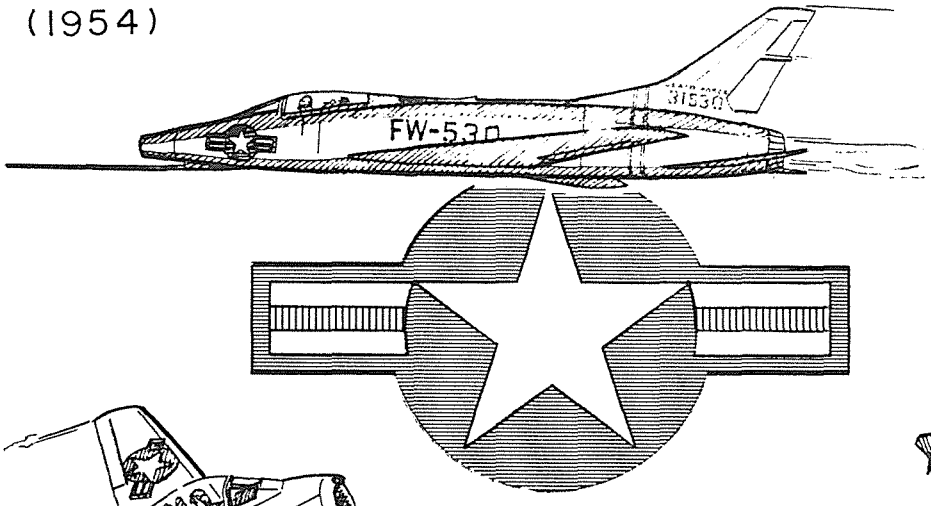


NORTH AMERICAN P-51 B

(LATE 1943)

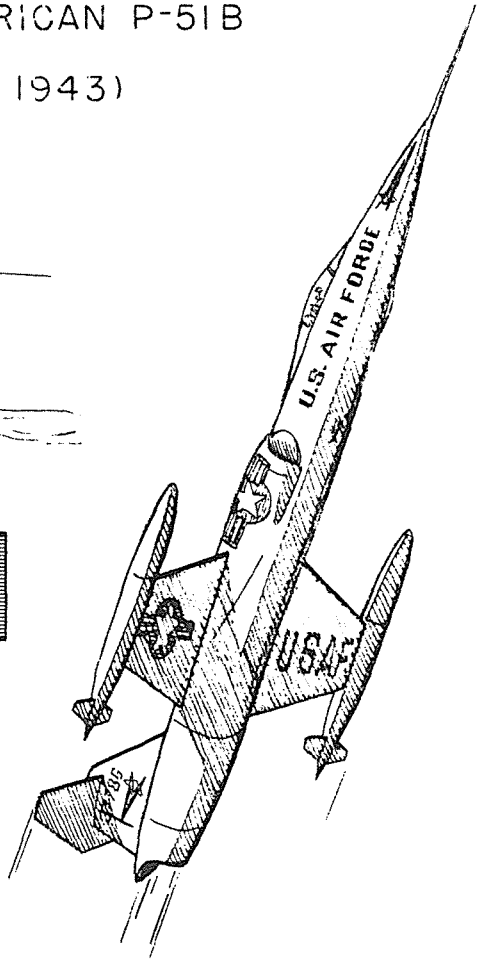
NORTH AMERICAN F-100 A

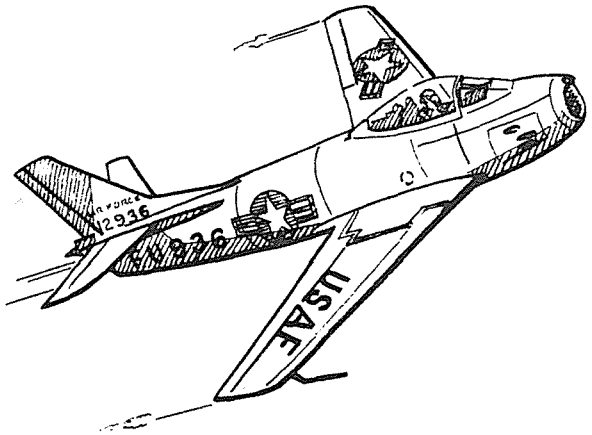
(1954)



LOCKHEED XF-104

(1956)





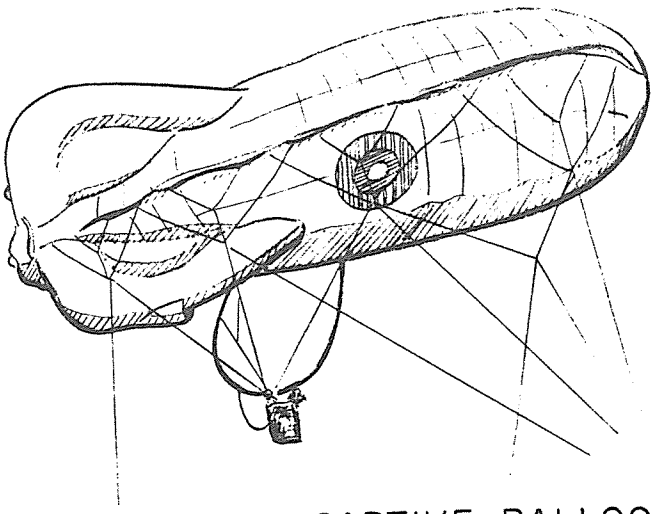
NORTH AMERICAN F-86 F

(1952)

LATE WORLD WAR II, POST-WORLD WAR II, KOREAN CONFLICT & POST-KOREA MARKINGS

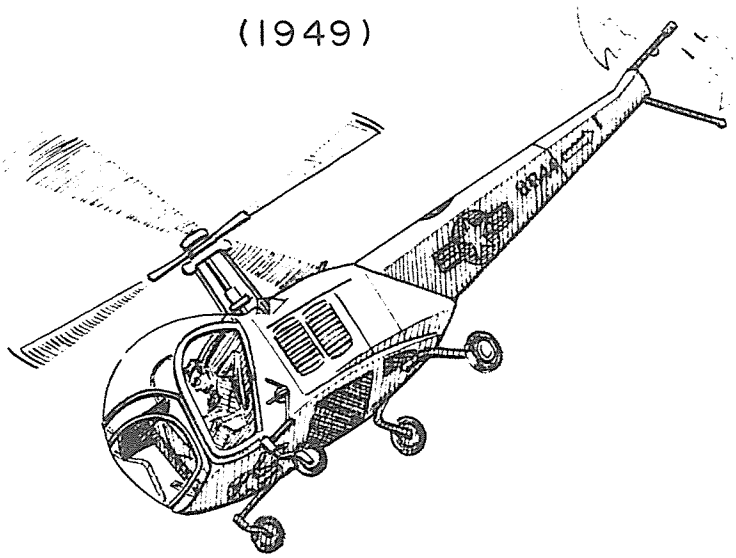
PLATE NO. 3

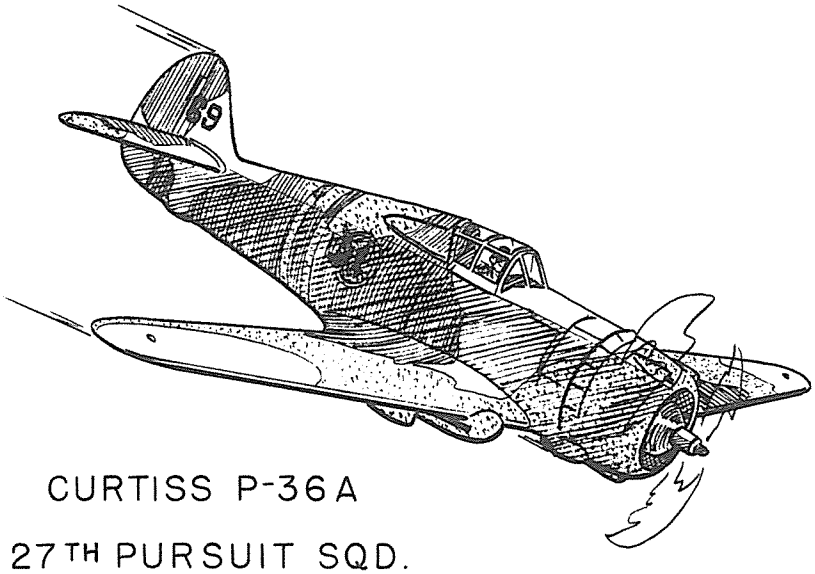
DURAND 6/56



CAPTIVE BALLOON
(1918)

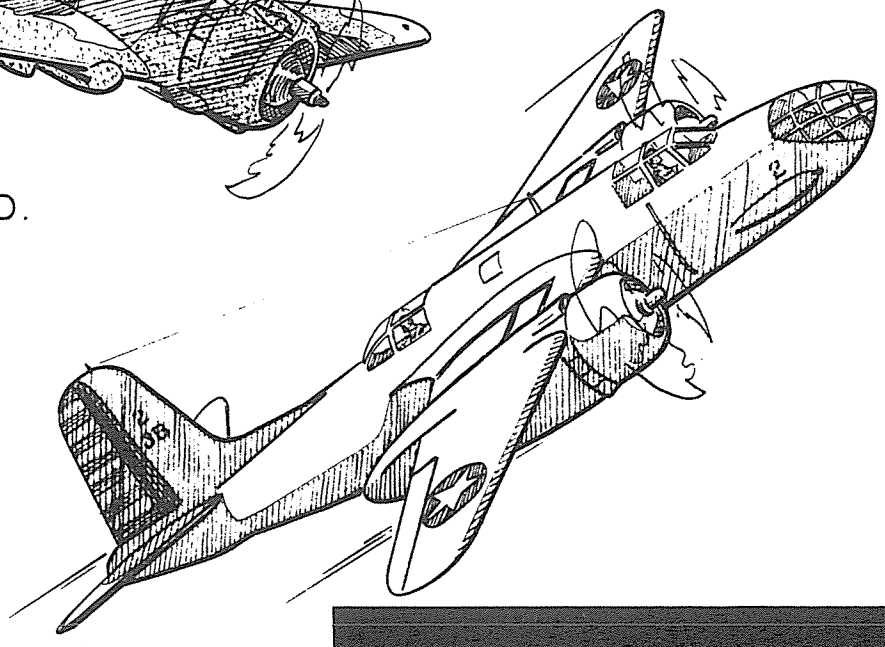
BELL H-13B
(1949)





CURTISS P-36A
27TH PURSUIT SQD.

DOUGLAS A-20A
(LATE 1942)

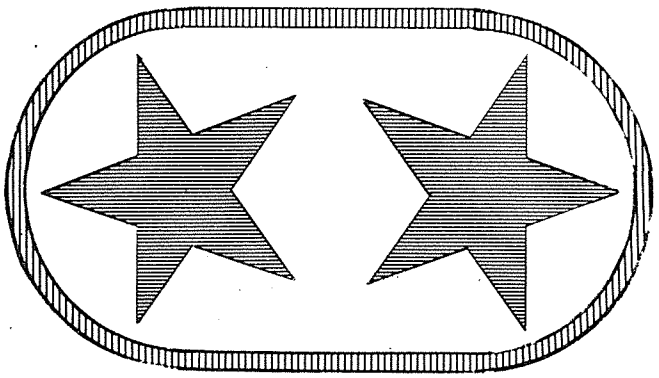


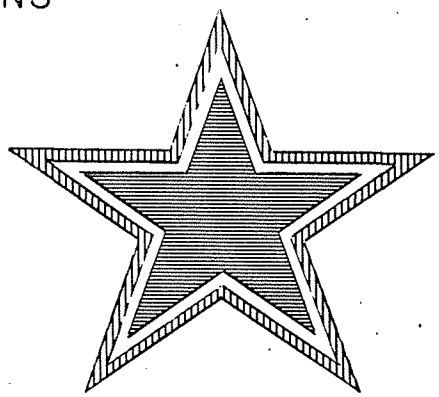
MISCELLANEOUS MARKINGS AND EXCEPTIONS

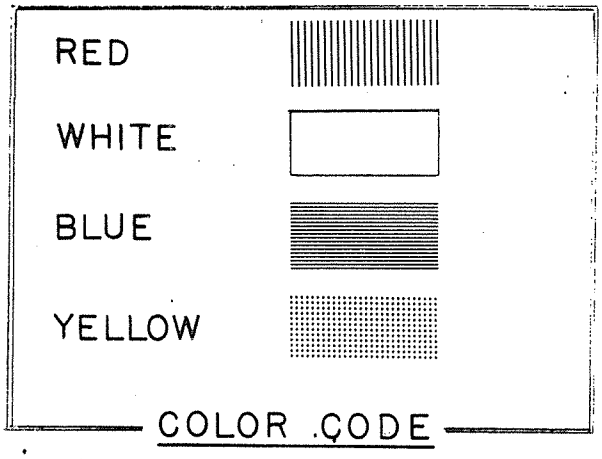
PLATE NO. 4

DURAND 6/56

AAF PROVING GROUND COMMAND
EXPERIMENTAL DESIGNS





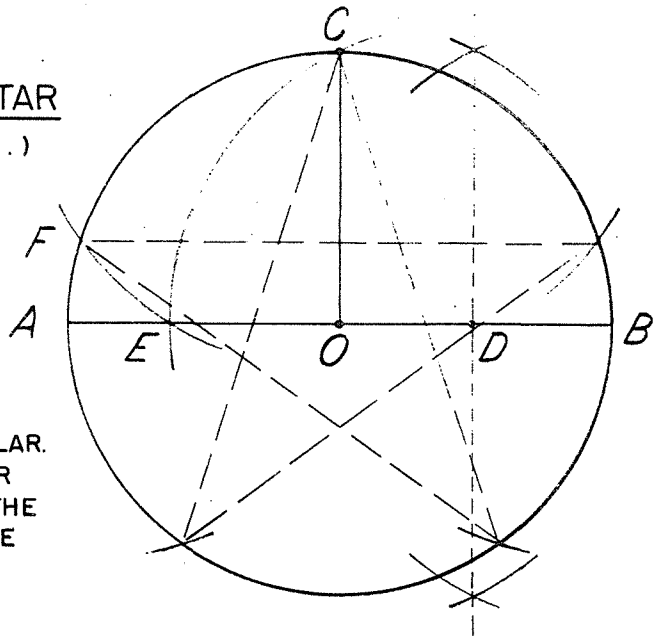


COLOR CODE

(APPLIES TO INSIGNIA ONLY)

CONSTRUCTION OF A FIVE-POINTED STAR

(GEOMETRIC CONSTRUCTION SHOWN FOR MODELING.)



DRAW DIAMETER AB WITH RADIUS OC PERPENDICULAR. BISECT OB AS ILLUSTRATED. USING D AS CENTER AND DC AS A RADIUS, DRAW ARC CE. WITH C AS THE CENTER AND RADIUS CE, DRAW ARC EF. CF IS THE DISTANCE BETWEEN THE POINTS OF THE STAR.

EXPERIMENTAL INSIGNIA, CONSTRUCTION AND COLOR CODE

PLATE NO. 5

a single blue star, bordered by a narrow white band, superimposed on a red star. Later, two blue stars were placed upon a white oval. This was then completely enclosed by a band of red. Testing proved these designs unacceptable and they were discarded in favor of the prototype of the present insigne. This design consisted of a white five-pointed star on a blue circumscribed disc with white rectangles located at each side of the disc. A red border edged the design. Length of each rectangle was equal to the radius of the disc, while the width of the rectangles was equal to one-half this radius. The upper edge of the rectangles extended from the top edges of the opposite upper points of the star, forming one continuous line with the upper edges of these points. The red border was one-eighth the radius in thickness. Visibility of this design was greatly improved over its predecessors.

Several months later, resulting from further objections, the border color was changed from red to blue. Final approval was given in August or September of 1943.

The final revision, which resulted in the insignia currently in use, was accepted on June 16, 1947. A red horizontal bar equal in width to one-sixth the radius, was located on the center-line of each white rectangle, once again including our national colors in the approved Air Force insigne design.

On most reciprocating engine aircraft the star and bar remained in the standard location: upper left wing tip between leading edge and aileron, underneath right wing tip between leading edge and aileron, and on both sides of the fuselage between the wing trailing edge and empennage leading edges. With the introduction of jet aircraft, some with wing location far to the rear of the fuselage (as on the Convair delta-winged and Lockheed F-104A aircraft), it was found advisable to relocate the fuselage insigne forward on the plane between the nose cone and wing leading edge, generally at the cockpit area.

The arrangement of insignia on rotary-wing aircraft varies with the individual design of the aircraft. The star and bar are usually found on each side of the fuselage, on the top and the bottom of the cabin area and sometimes on the most forward portion of the nose, facing forward.

During the development of these markings, exceptions were in evidence. Most notable of these were the Curtiss P-36A's of the 27th Pursuit Squadron based at Mitchell Field during the late 'thirties. This entire squadron was camouflaged in attractive colors of orange, green and white. Each plane received its own individual pattern. To increase the camouflaging qualities of these designs, all national markings were omitted. The only markings to remain were the squadron's diving hawk, identification numbers and leader stripes. In late 1942 the Douglas A-20 was observed to be carrying rudder stripes although these had been officially abandoned the previous June.

The introduction of new and unusual aircraft designs may necessitate further revisions in our present marking system.

(1) Signal Corps File No. 334.7 Army Navy Joint Board of Aeronautics, Folder No.1 in National Archives: Stencil 1063, Office, Chief Signal Officer, 15 March 1918. Sources cited in Jones Chronology.
(2) Air Service News Letter, 24 May 1919. Source cited in Jones Chronology.