

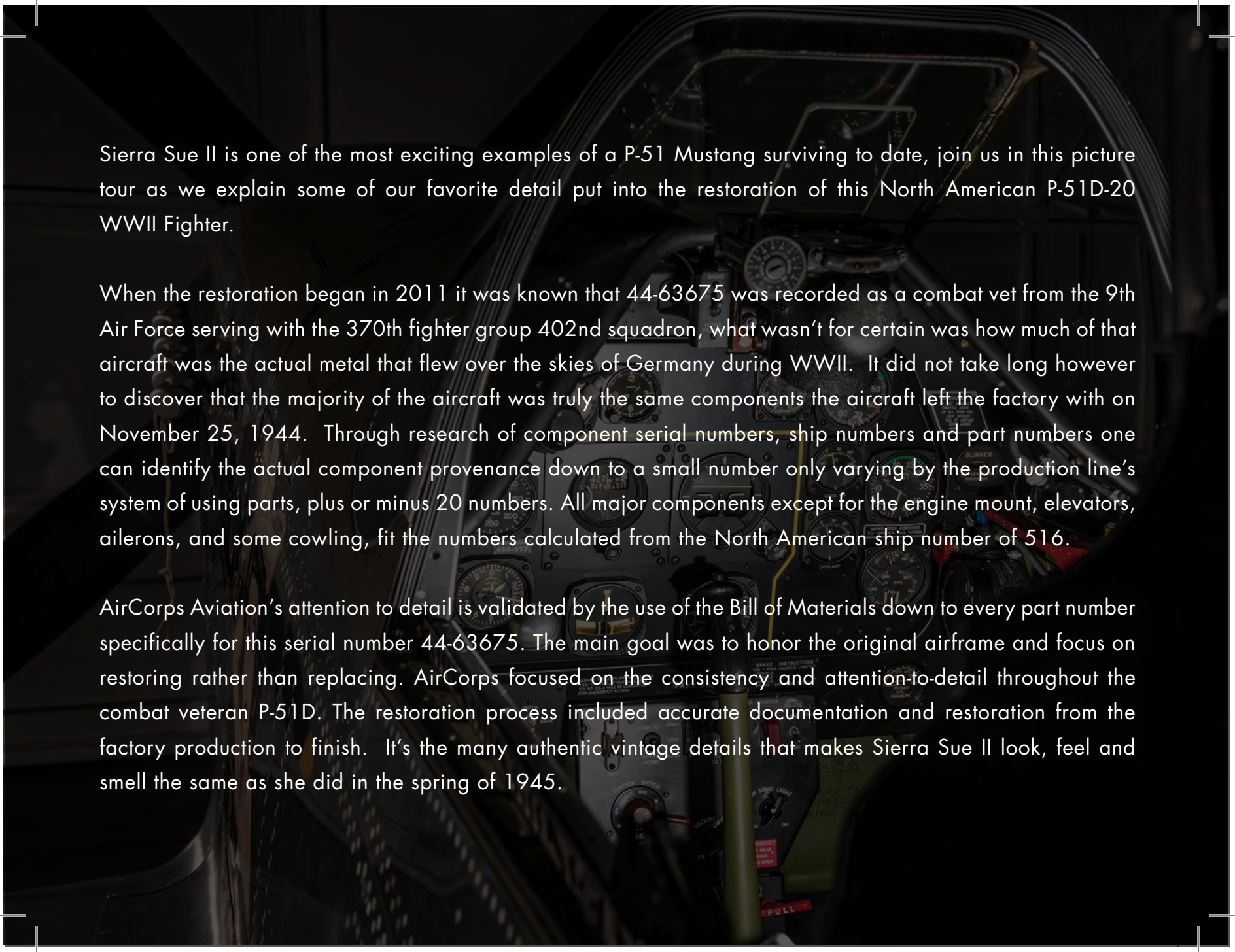


Restoration of

Sierra Sue II



AIRCORPS AVIATION



Sierra Sue II is one of the most exciting examples of a P-51 Mustang surviving to date, join us in this picture tour as we explain some of our favorite detail put into the restoration of this North American P-51D-20 WWII Fighter.

When the restoration began in 2011 it was known that 44-63675 was recorded as a combat vet from the 9th Air Force serving with the 370th fighter group 402nd squadron, what wasn't for certain was how much of that aircraft was the actual metal that flew over the skies of Germany during WWII. It did not take long however to discover that the majority of the aircraft was truly the same components the aircraft left the factory with on November 25, 1944. Through research of component serial numbers, ship numbers and part numbers one can identify the actual component provenance down to a small number only varying by the production line's system of using parts, plus or minus 20 numbers. All major components except for the engine mount, elevators, ailerons, and some cowling, fit the numbers calculated from the North American ship number of 516.

AirCorps Aviation's attention to detail is validated by the use of the Bill of Materials down to every part number specifically for this serial number 44-63675. The main goal was to honor the original airframe and focus on restoring rather than replacing. AirCorps focused on the consistency and attention-to-detail throughout the combat veteran P-51D. The restoration process included accurate documentation and restoration from the factory production to finish. It's the many authentic vintage details that makes Sierra Sue II look, feel and smell the same as she did in the spring of 1945.

Aft Compartment



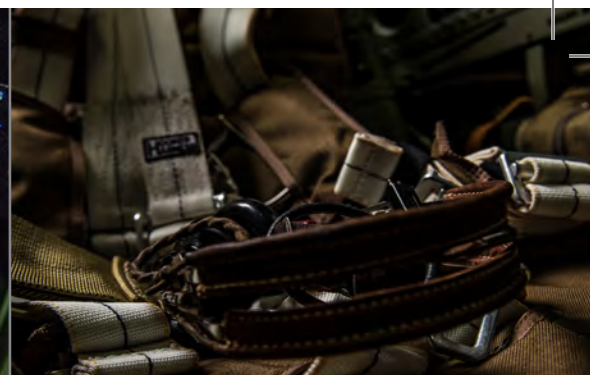
2.2 Factory Structure Finish



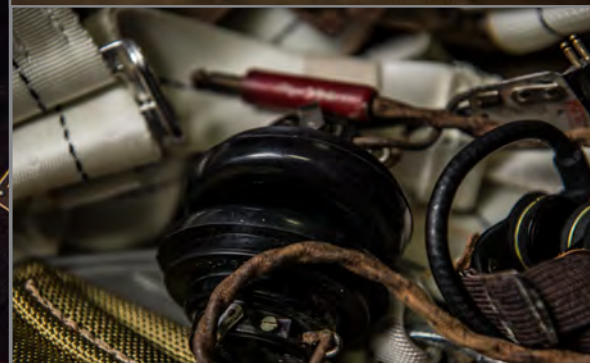
5.5 Functioning Oxygen System



Cockpit



4.2 Cockpit Furnishings



5.8 Gun Sight



3.9 Hard Placards



5.8 Gun Sight
3.4 Instruments Range Markings



6.3 P-38 Rear View Mirror



4.3 Seat Belts



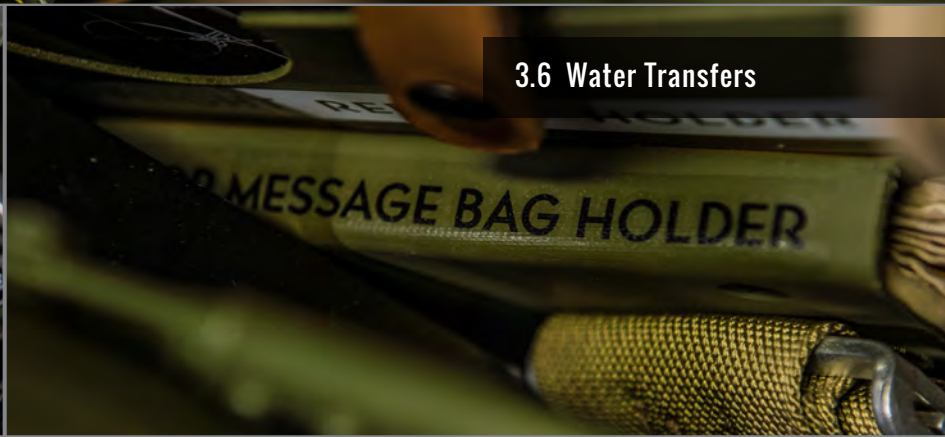
Cockpit Continued

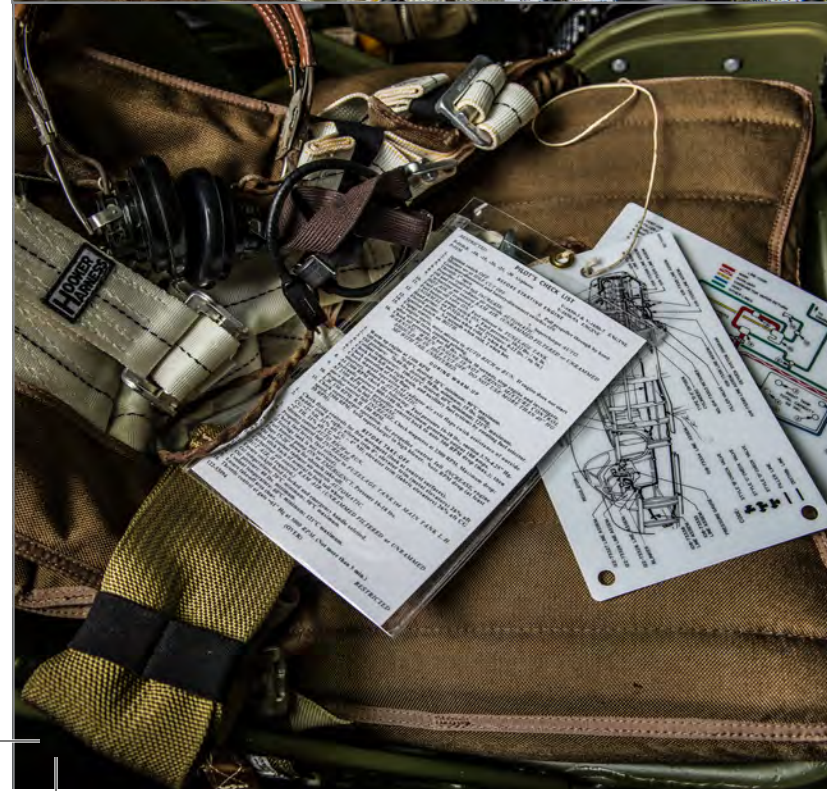


4.2 Cockpit Furnishings



3.6 Water Transfers



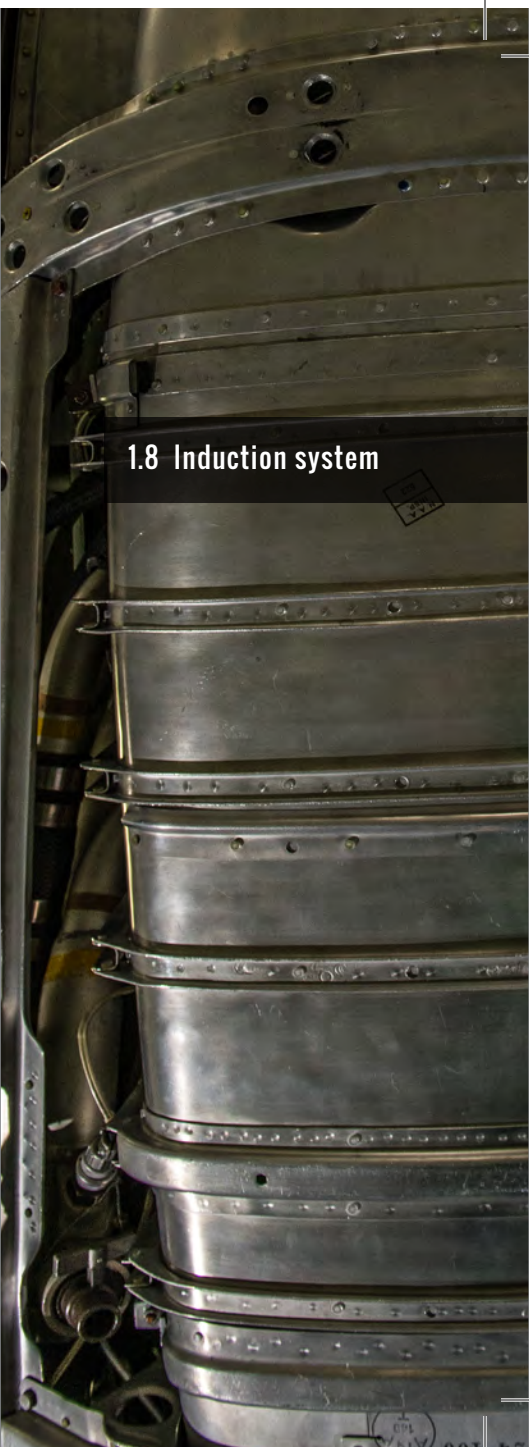


4.2 Cockpit Furnishings

Engine Compartment



1.8 Induction system



3.10 Tubing Identification
3.11 Hose Markings





3.9 Hard Placards



1.3 Lubrication markings



1.9 Operational Boost Control



3.11 Hose Markings

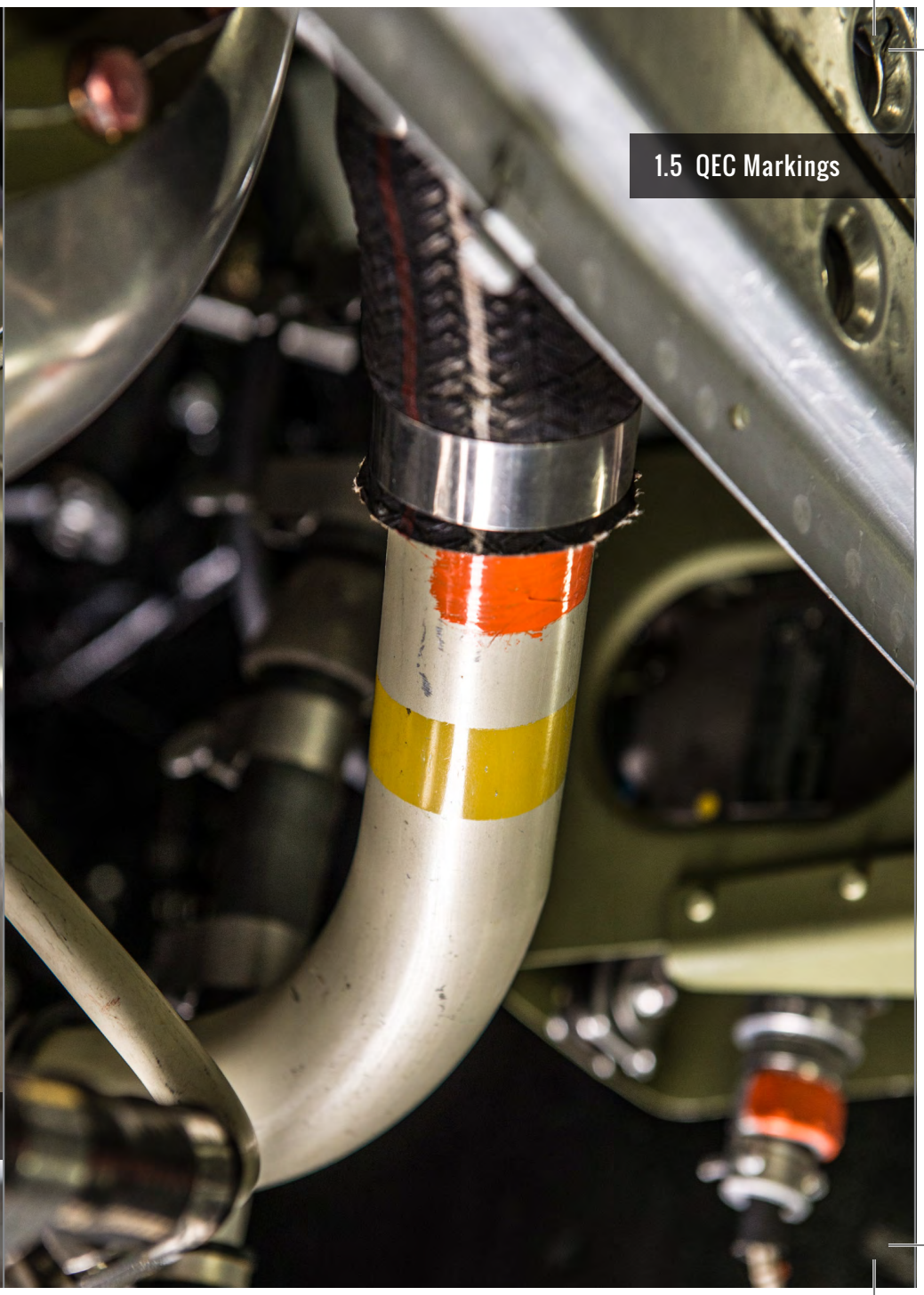


Engine Compartment Continued

4.1 Authentic Hardware

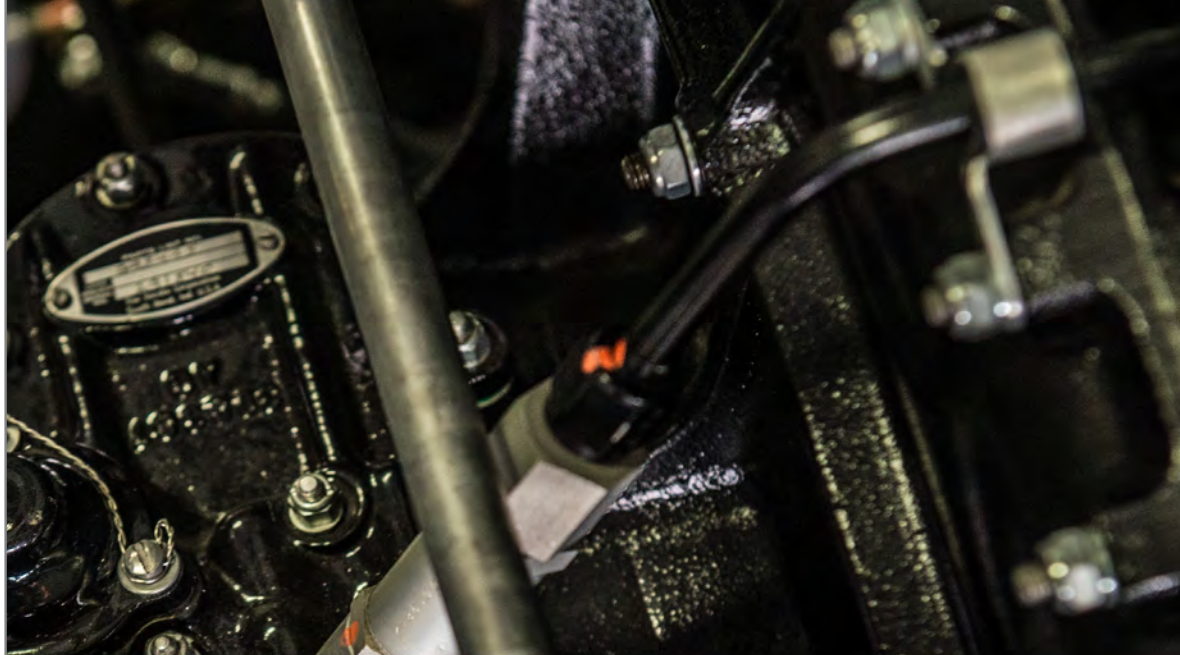
1.5 QEC Markings

1.7 Oil Tank Finish





1.2 Ignition Harness



3.7 Stencils

Exterior

3.8 Raw Material Mill Identification Markings

463675

5.1 Aux Fuel System

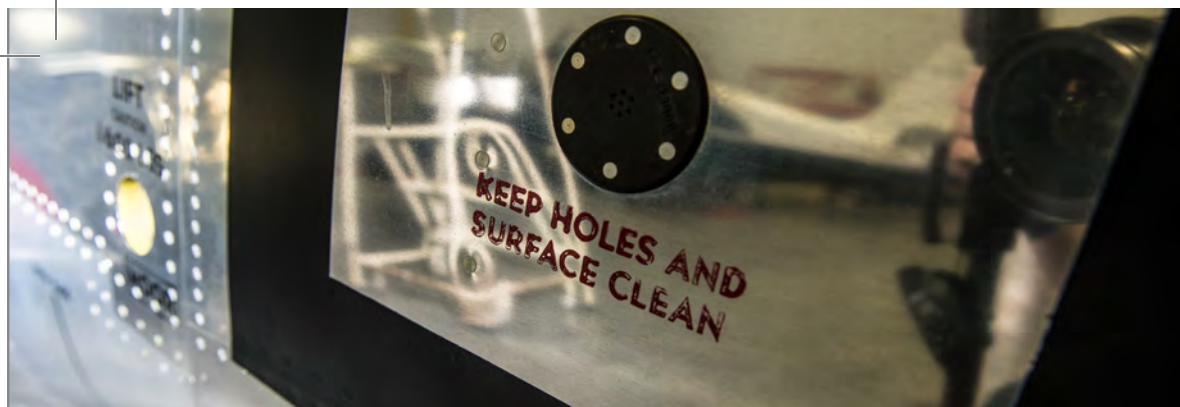
FUEL 8.5
US GALLONS

SUITABLE FOR AROMATIC FUEL

3.13 Prop Markings

LOW PITCH 23
HIGH PITCH 65

DWG. NO. K6523A-24
MFG. NO. 452513



5.2 Armament
3.15 Stainless Steel



5.7 Working Gun Camera



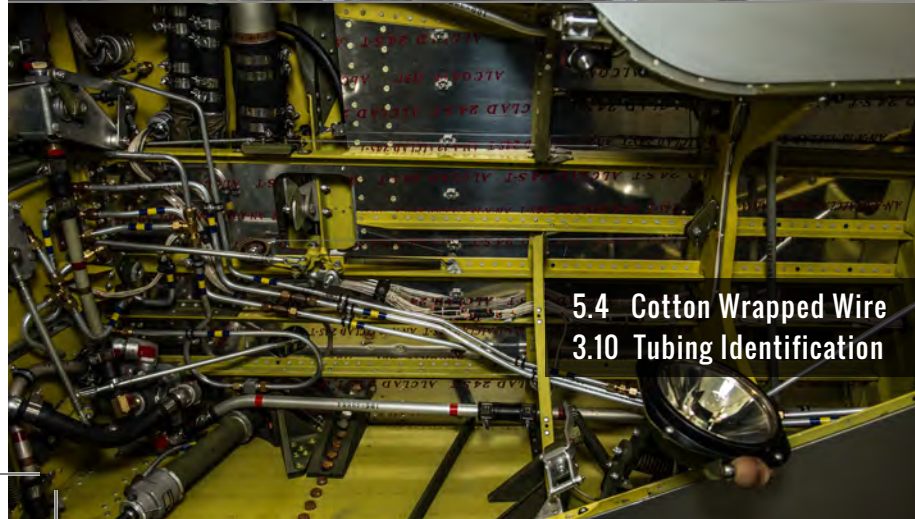
2.4 Spot Welding Acid Etch
2.1 AN Spec Rivets



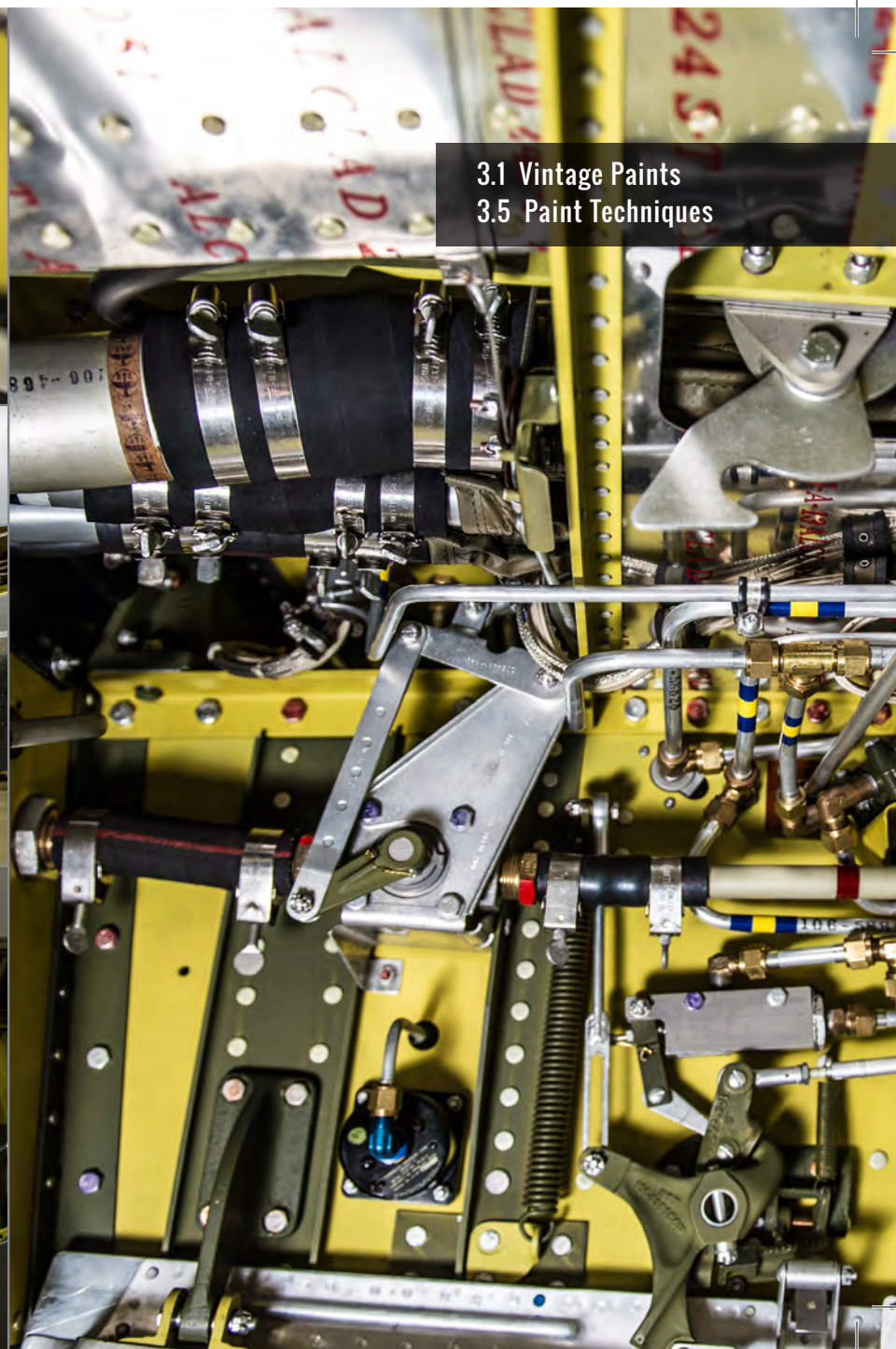
Gear Well



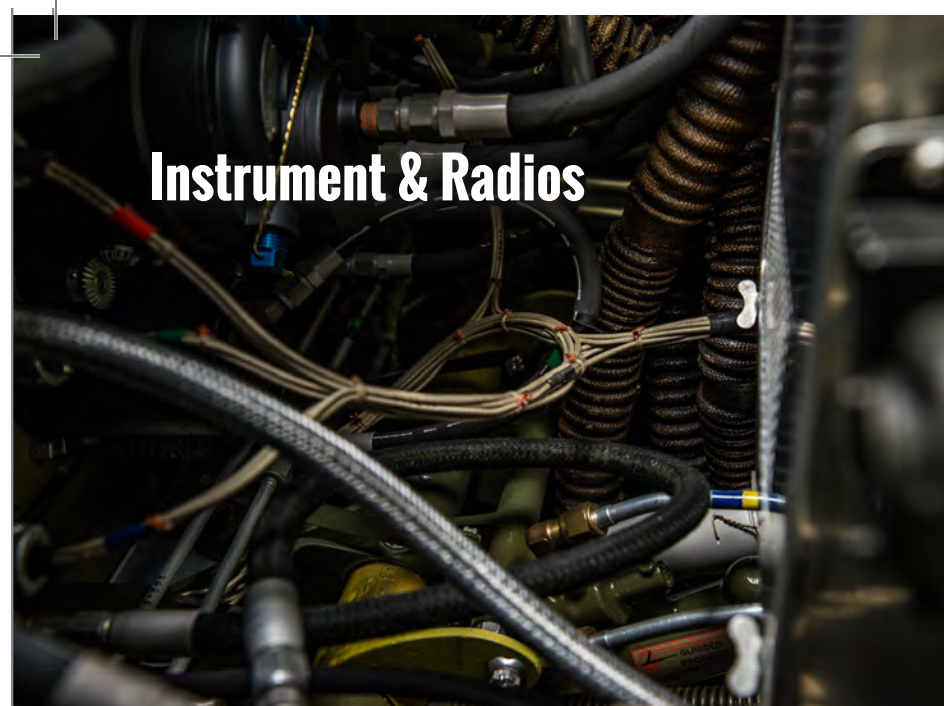
2.7 Gear Doors




**5.4 Cotton Wrapped Wire
3.10 Tubing Identification**



**3.1 Vintage Paints
3.5 Paint Techniques**



Instrument & Radios



5.3 Original Radio



5.4 Cotton Wrapped Wire
1.3 Lubrication markings

Artwork

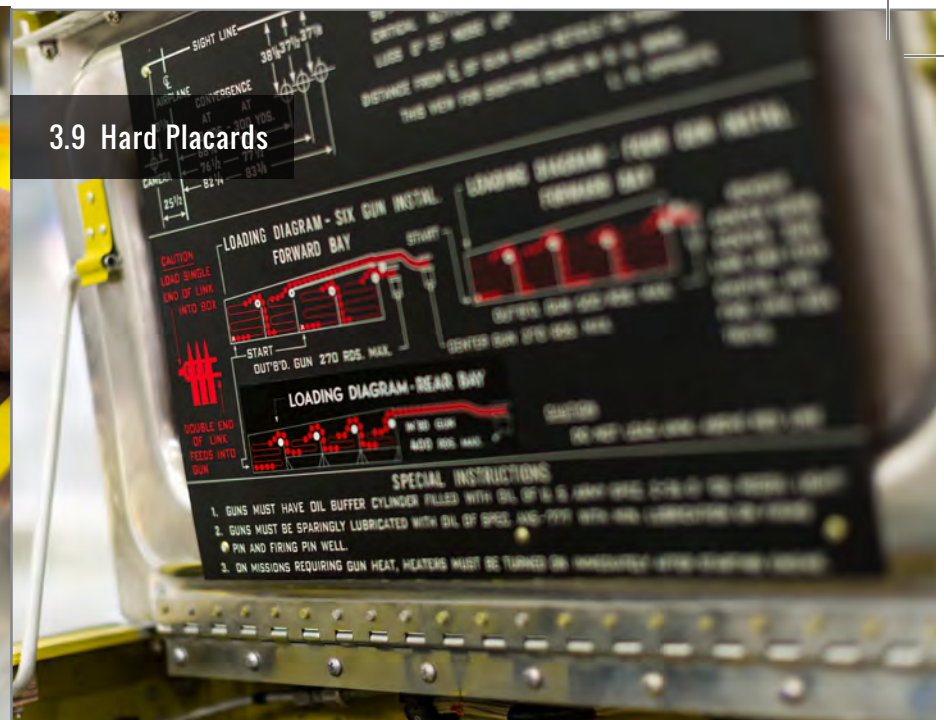


3.12 Nose Art





6.1 Aircraft Protective Covers



3.9 Hard Placards



5.2 Armament



2.1 AN Spec Rivets
2.6 Difficult Rivets





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1. Engine and Firewall Forward

1.1 Engine General

Overhauled to match the finish and specs of a 1940s built Rolls Royce / Packard Built Merlin.

1.2 Ignition Harness

Painted engine grey enamel.

1.3 Lubrication Markings

Red, yellow, and blue dots indicating lubrication types in components.

1.4 Accessories

Accessories detailed to original specs.

1.5 QEC Markings

Quick Engine change marks painted in Orange on all engine removal points.

1.6 Cowling Formers

All cowling formers bare metal per original.

1.7 Oil Tank Finish

Oil tank bare metal as per original drawings.

1.8 Induction System

All induction components original as per drawings no components removed for ease of servicing. All assemblies spot welded per the drawings.

1.9 Operational Boost Control

Original supercharger aneroid and boost controller set up as per original.

2. Structure

2.1 AN Spec Rivets

Used rivets from an original WWII rivet manufacturer produced period authentic Dichromate, clear anodized & blue rivets used throughout restoration.

2.2 Factory Structure Finish

All structure was either left bare or painted in the correct color zinc chromate as identified when the aircraft was disassembled.

2.3 Spot Welding

All items originally factory spot welded despite difficulty in spot welding some items, dorsal fin, scoop, doghouse, wing extensions because of lack of visual access.

2.4 Spot Welding Acid Etch

All spot welded components were acid cleaned as per the North American specs leaving a lighter color near all spot welds.

2.5 Farnham Rolled Skins

Farnham roller tracking could be seen in original skins at removal so all skins that were replaced were also rolled with a Farnham to again leaving them same tracking in the aluminum.

2.6 Difficult Rivets

Care and precision that went into setting every rivet including making special dies to do the ailerons.

2.7 Gear Doors

Special form was made to stretch landing gear doors skins to fit the door contour without the commonly seen kink.

2.8 Fuselage Top Skin

Tooling was fabricated and a skin was stretched from 2024-T3 per original to fit the contour.

2.9 Scoop Side Skins

Skins were formed with a drop hammer to produce a skin that could be spot welded and have the correct surface finish.

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3. Finishes and Markings

3.1 Vintage Paints

All paints and primers used are the same chemical type as used during the production in 1945 including Zinc Chromate, Lacquers, Alkyd Enamels, and preservatives like Cosmoline.

3.2 Factory Worker Markings

Duplicating markings with tracing paper on new skins and ribs (wings). Replicated & duplicated original Grease pencil marks onto restored components, parts, and structure. What survived from WWII was replaced. We didn't add markings just to add them.

3.3 Factory Inspection Stamps

Correct ink stampings duplicated in all places they were found on factory fresh Mustangs/ Replicated the Rubber stamps found throughout the aircraft and re applied where we found them. These include extrusion stamps, inspector stamps, and exterior markings.

3.4 Instruments Range Markings

Restored using original AN-L-1-A fluorescent dial paint with the writing screened multiple times, to raise the letter or numbers accurate to the original dials of WWII.

3.5 Paint Techniques

Dipping, spraying, bare metal usage, matching of color and duplicating the factory finish from the sheet metal to the landing gear to the cockpit.

3.6 Water Transfers

Production of actual Water transfers, not stickers, complete set throughout aircraft - consisting of hundreds of different markings.

3.7 Stencils

Stenciling sprayed through original card stock cut from stencil cutters to match the type font.

3.8 Raw Material Mill Identification Markings

Correct Type fonts developed from original Alcoa and Reynolds sheet and extrusion and placed on the same side of the skin and extrusions as found from the original- Easily identified when disassembled.

3.9 Hard Placards

Correct Type fonts developed from original parts and printed on phenolic, acid etched and filled and sometimes a combination of all.

3.10 Tubing Identification

Markings on fluid systems tubing.

3.11 Hose Markings

Markings on hoses identifying the hose type and material.

3.12 Nose Art

Completed by hand painting as it would have been originally and even though the original art was not done well it was still duplicated exactly the same.

3.13 Prop Markings

Factory Hamilton Standard markings with North American specifications according to the drawings.

3.14 Field Markings

Factory markings which were covered by military identification paint was replied by hand as would have probably been done in the field.

3.15 Stainless Steel

Stainless steel components were primed with zinc chromate where in contact with aluminum, this is most noticeable on the inner clam shell gear doors.

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4. Inside the Airplane

4.1 Authentic Hardware

Complete set of period authentic correct CAD 1 hardware. Each piece of hardware called out is accurate to what the drawings call for, we used ESNA brand red inserts for the nylon nut plates and nuts, the bolts are 1940s vintage with the Rockford Screw, and period correct head markings. From Spline Nuts, Electrical Terminals, and dzus fasteners through the hi-shears, electrical clips, switches, and breakers the aircraft is restored with the originality down to each piece of hardware as if it had just left the factory. Hardware dyed to stay consistent with colors found throughout the dis-assembly.

4.2 Cockpit Furnishings

Original accessories including - flare pouch, drop message bag, original WWII flight envelope, mooring case, check off lists and flare gun & pouch.

4.3 Seat Belts

Seat belts made with materials simulating the original cotton belts and harness.

5. Systems and Accessories

5.1 Aux Fuel System

Functional drop tank system and complete fuselage fuel system.

5.2 Armament

Working & fully operational machine gun armament and bomb rack system (mock guns installed)

5.3 Original Radio

Working SCR-522 radio set & ground unit.

5.4 Cotton Wrapped Wire

Original wiring system done with Cotton Wound & Lacquered Wiring & Kingsley markings.

5.5 Functioning Oxygen System

Tested, inspected and functioning Low Pressure Oxygen System.

5.6 Heat and Vent System

Original Heat & vent system with original valves, ducting and controls.

5.7 Working Gun Camera

Gun camera serviced, working and loaded with film.

5.8 Gun Sight

Stock N-9 sight as it would have left the factory.

6. Miscellaneous

6.1 Aircraft Protective Covers

All Cockpit Covers and accessories fabricated per drawings.

6.2 Tech Order Compliance

All tech orders complied with including largely disregarded "Light Ammo Bay Door" Tech Order 01-60-94.

6.3 P-38 Rear View Mirror

Rear view mirrors removed from P-38's are seen on the photos of Sierra Sue during the war, as well as many other 370th fighter group P-51s.







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Authentic Restoration by AirCorps Aviation