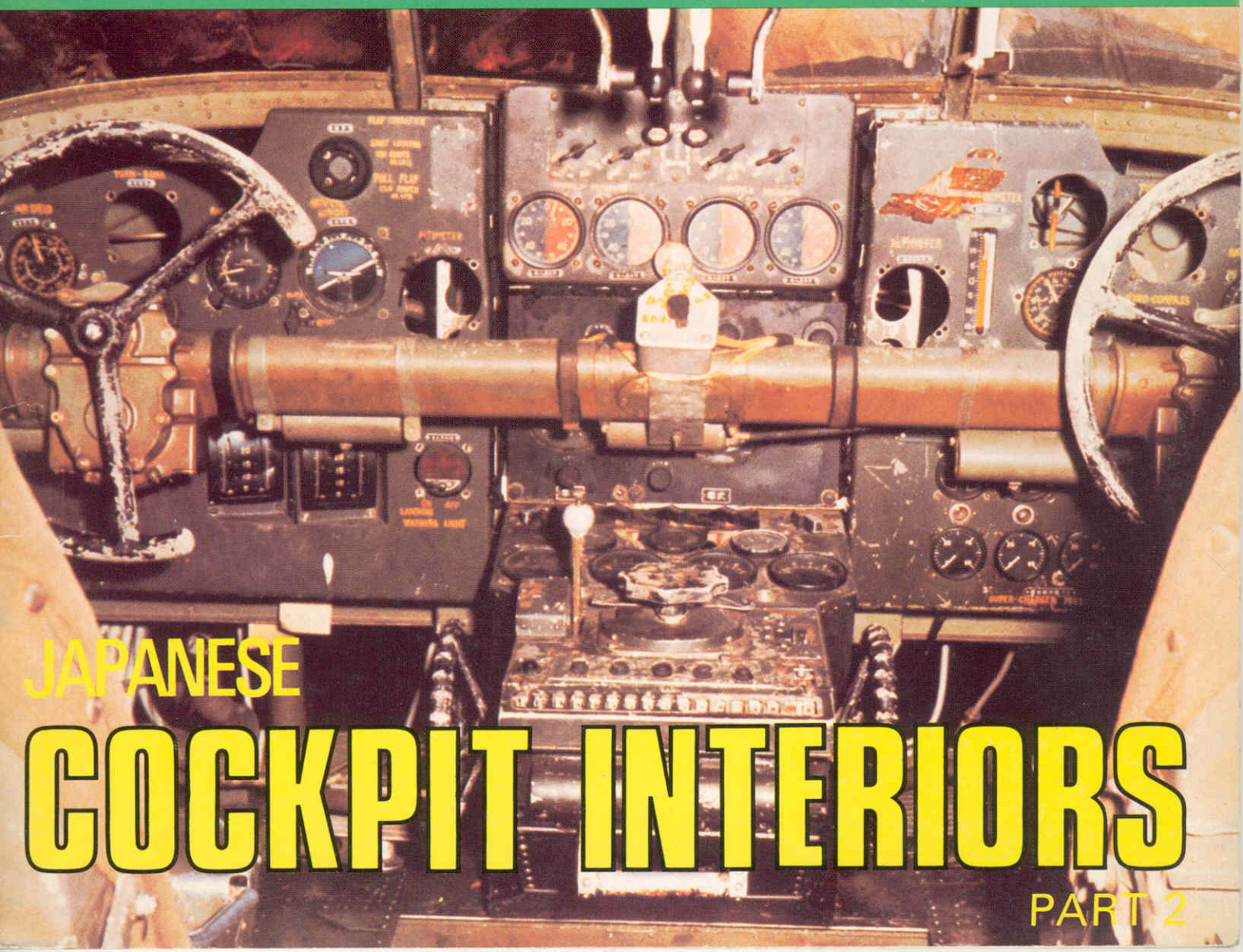


MONOGRAM

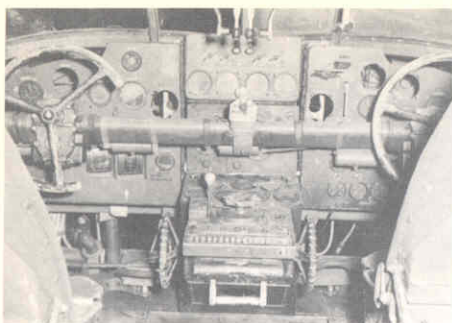
Close-Up 15



JAPANESE

COCKPIT INTERIORS

PART 2



Interior of Kawanishi H6K2 EMILY in October 1975 at NAS Norfolk, Virginia.

Like the first installment, this concluding segment of **JAPANESE COCKPIT INTERIORS** contains a wealth of previously unpublished material pertaining not only to cockpits but also to other interior areas of Japanese wartime aircraft. Even aircraft support equipment is included for those model builders who require authentic dioramas.

The author, Robert C. Mikesch, has given us an intriguing glimpse into thirteen additional aircraft produced during the war years by the prodigious Japanese. One cannot help but marvel at Mr. Mikesch's resourcefulness and attention to detail, for as recounted in part one, precious little documentation remains today.

The author, who has been a serious model builder for as long as he can remember, has recognized details sought by fellow modelers. Cockpit viewpoints expressed throughout this title are based upon his twenty-one years of U.S.A.F. experience, which includes hundreds of flying hours in such aircraft as the Douglas B-26, C-47, B-57, F-100, O-2A and many others, with combat tours in Korea and Vietnam.

Coupled with this is the fact that Mr. Mikesch has been a relentless researcher into Japanese wartime aviation activities. The qualities have come together in an ideal combination for all of us to better understand the inner workings of wartime Japanese aircraft.

The publisher and author wish to express sincere thanks to several persons who deserve special recognition for their enthusiastic assistance in the preparation of this title. For numerous translations from Japanese technical documents, we appreciate the willing help of Shorzoe Abe, Toru Miyagi and Osamu Tagaya. A number of rare photographs could not have been included were it not for the generous assistance of Mannosuke Toda. Donald W. Thorpe, who is noted for his pioneering publications in the field of Japanese aircraft color and marking research, provided enthusiastic support which kept conflicting information to a minimum.

• Photographic Sources
National Archives
United States Air Force

Shorzoe Abe
Hideya Ando
R. W. Cranham
Edward T. Maloney
Robert C. Mikesch
Steven Pope
Richard L. Seely

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AIRCRAFT INTERIOR COLORS

There is little reason to believe that exactness in color values used on Japanese aircraft of World War II were any less variable than those of any other warring nation. Many samples of colors have been evaluated by researchers, and all have some variations even though they may have been originally of the same color specification. Exposure to the elements as well as age have their varying effects. Enamels of that period, for example, are known to darken by virtue of their oil base.

Colors have been reasonably standardized and closely keyed to the Munsell Color standard chips. For the model builder who relies on the Federal Standard 595a color code system, the five digit numbers referred to within this book relate to that system. It must be remembered that this cross reference is approximate, due to the lesser number of FS colors than in the Munsell system, however, all color values are close approximations to begin with.

The placing of a color value on the translucent blue/green protective coating requires further explanation. Evidence shows that this was a deep transparent blue when first applied, and exposure over the years lightened it in varying shades to the point of reaching a light green. When removing structural members from aluminum skin previously coated, for instance, had the point of contact been tight, the vivid blue was retained, while the exposed portion of the same coating material around it had become a light translucent green.

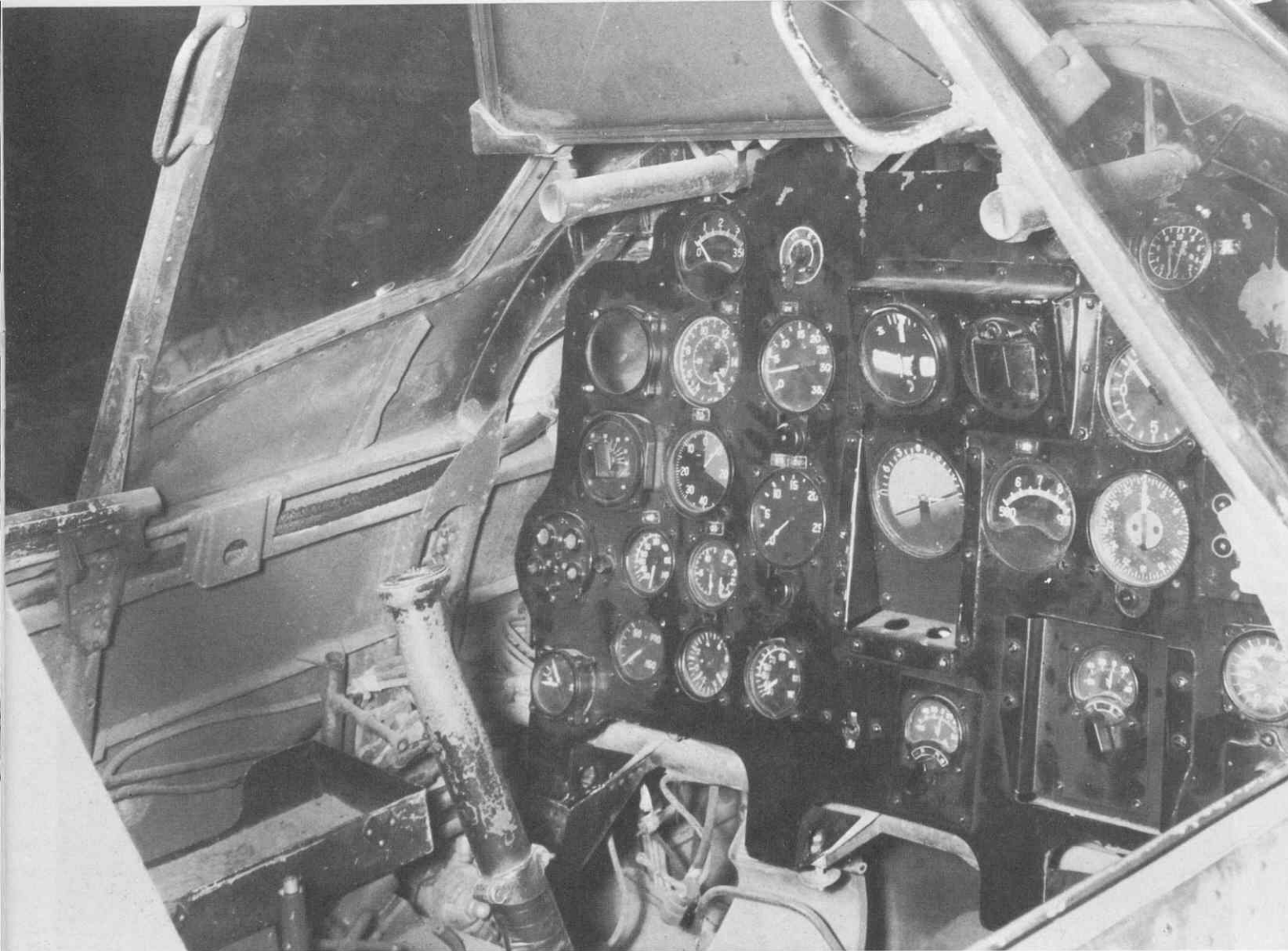
Readers desiring additional information relating to the Munsell color listings are invited to contact:

Munsell Color Division
2441 North Calvert Street
Baltimore, Maryland
21218/U.S.A.

CONTENTS

JACK, Mitsubishi J2M3	2
BETTY, Mitsubishi G4M	4
SALLY, Mitsubishi Ki.21	6
EMILY, Kawanishi H8K2	7
MYRT, Nakajima C6N1-S	12
LIZ, Nakajima G5N1	15
DINAH II, Mitsubishi Ki.46-II	17
DINAH III, Mitsubishi Ki.46-III	19
FRANCES, Yokosuka P1Y1	23, 32
IRVING, Nakajima J1N1-Sa	24
PEGGY, Mitsubishi Ki.67	26
Shinden, Kyushu J7W1	29
SPRUCE, Tachikawa Ki.9	30
Aircraft Ground Equipment	31

Interior Colors	Munsell	FS 595a
Light Grey Green	7.5 GY 5/2	34226
Light Olive Green	10 Y 4/4	34151
Buff Green	7.5 Y 5/4	14255
Exterior Navy Green	10 G 3/2	None
Translucent Green	5 BG 3/6	34058
Translucent Blue	2.5 B 4/6	None



JAPANESE COCKPIT INTERIORS PART 2

by Robert C. Mikesh

The contents of this second part featuring interiors of Japanese aircraft of World War II, is a climax to years of searching for these unusual photos on this fascinating subject. These pictures are from a number of sources with the greatest contribution coming from the files of the National Archives in Washington, D.C. For years, the contents at the Archives have been virtually unknown on this subject. After an extensive search, photo by photo, of the Technical Air Intelligence Center (TAIC) Pacific collection, the best

and often the only pictures available to describe the interior features of the aircraft covered here have been included in these two Close-Ups. A few isolated interior pictures remain for several other aircraft, but their poor quality is such that they reveal little or no detail to warrant their use, even as a miscellaneous grouping. These aircraft include JAKE, JILL, FRANK, GEORGE, NELL, PETE, PAUL, VAL, and Ku.8 glider. Coverage is limited to a single detail such as a gun installation, radio grouping, pump assembly, etc.

Wherever possible, current photographs of Japanese wartime aircraft that exist today have been used, supplemented by the earlier photographs of war ravaged derelicts. The largest collection of Japanese planes is owned by the National Air and Space Museum, and all these interiors have been featured in this series with the exception of GRACE, REX, and Ki.115 Tsurugi. These were completely stripped of their contents prior to museum owner-

ship. The museum's Kikka, Japan's first jet fighter, will be covered separately as Close-Up 19 to include interior details. A complete coverage of the interior of the existing Aichi M6A1 Seiran, Japan's submarine-based bomber designed to destroy the Panama Canal is contained in Close-Up 13, which also covers the development and operational history of this remarkable airplane.

Now that the search of all U.S. Government photo files for interior views has been completed, additional material may only come from private and foreign sources. It is hoped that these two books will serve as a basis upon which newly discovered photographs can be recognized and made known to interested researchers.

Fighter cockpit of the Mitsubishi J2M3 Raiden, code named JACK, owned and displayed at the Planes of Fame, Chino, California.

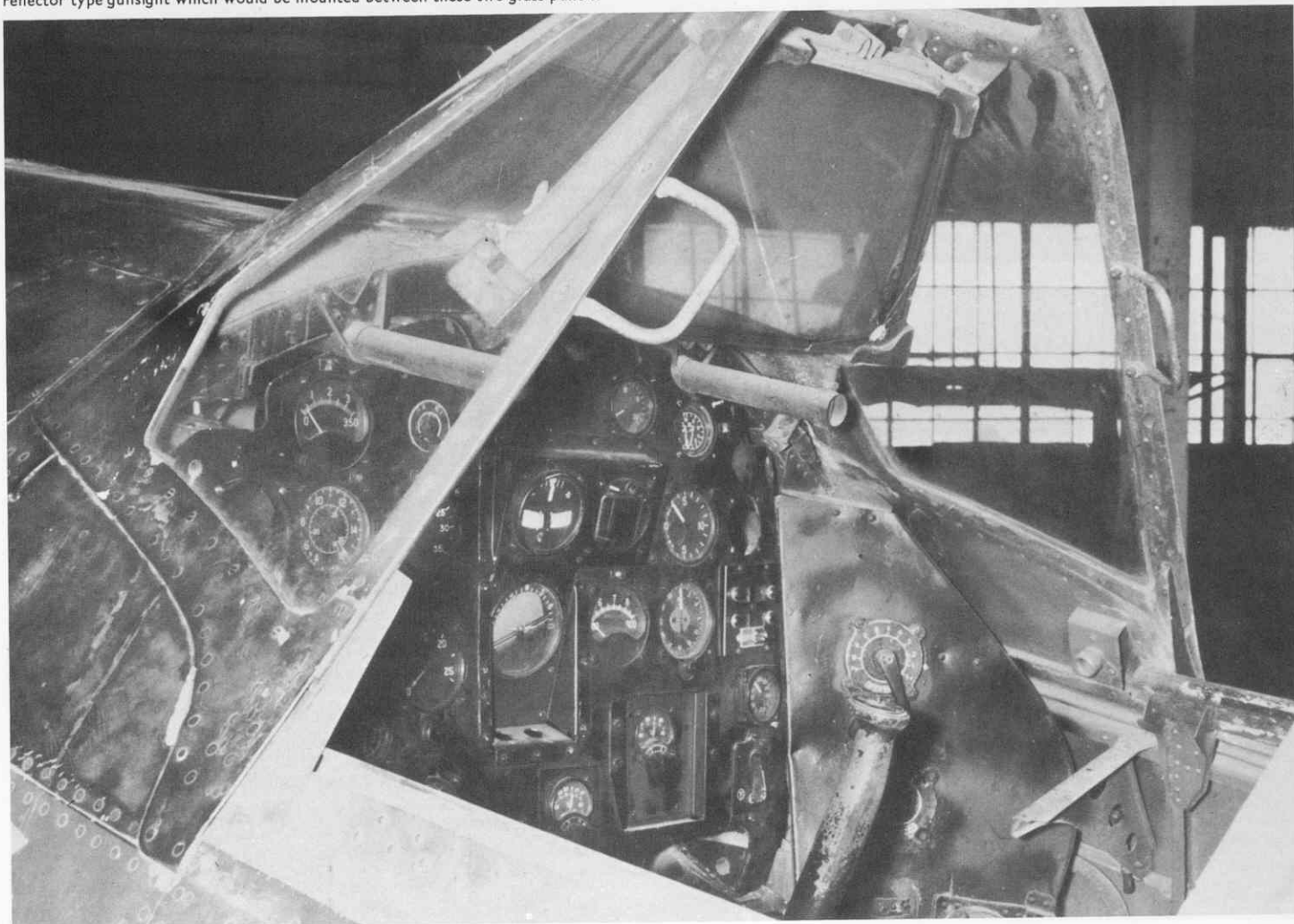
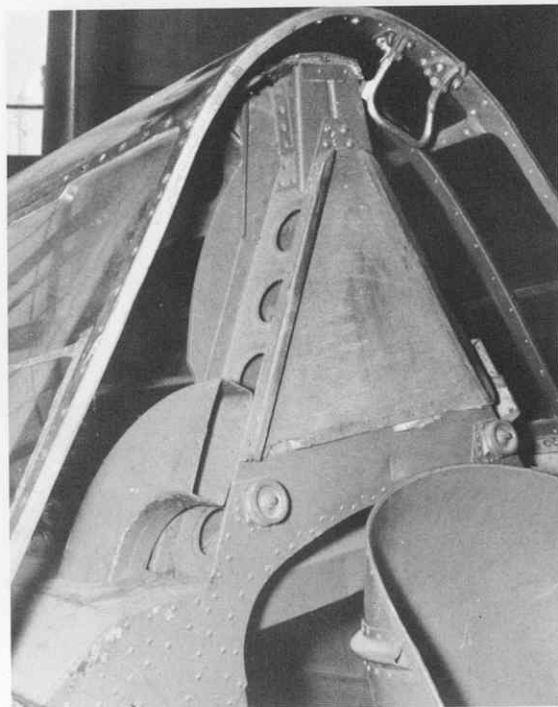
JACK, Mitsubishi J2M3



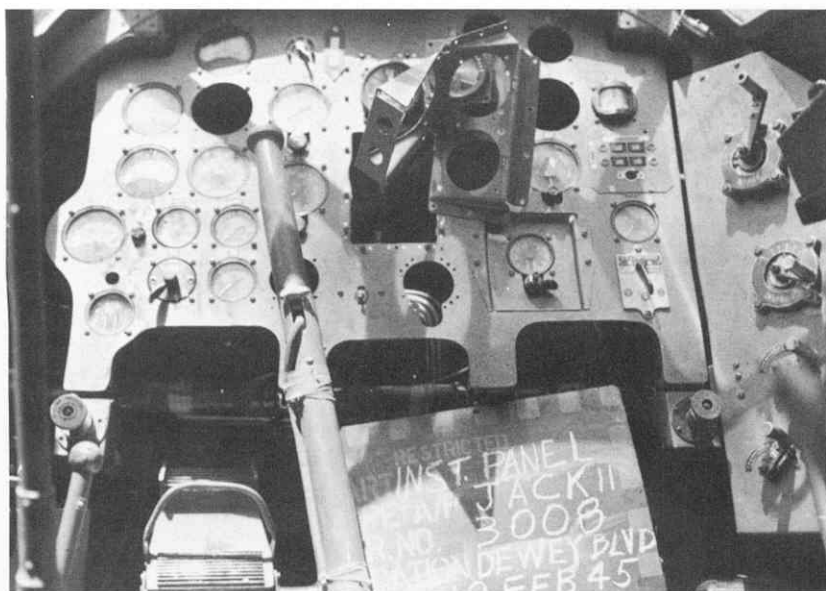
Above: Of more than 400 JACKs built by Mitsubishi, this is the only one remaining. One time displayed in a Los Angeles City park, it was saved from destruction by Edward T. Maloney and is part of his Planes of Fame collection. Considerable work went into the restoration of this Japanese fighter. Markings are of the Tainan NAC.

Right: Head rest structure of JACK appears not to have had a head rest pad. The back of the seat is large and concave to accommodate pilot back pack parachute. Two pulleys were for bungee cord to assist raising the seat.

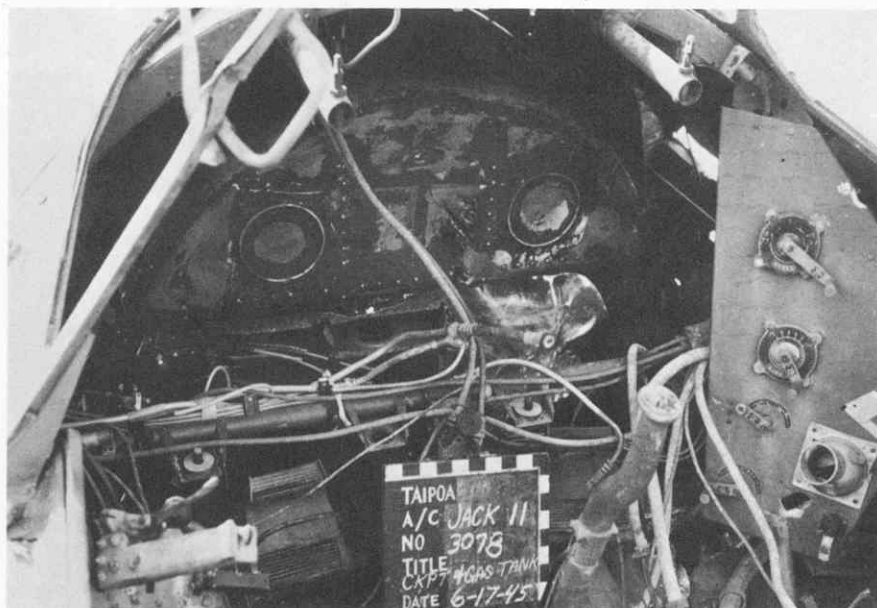
Below: The restored cockpit of JACK shows it to be the roomiest of all Japanese operational fighters owing to its large diameter Kasei 23 engine, originally developed for bombers. Tubes extending from instrument panel support the heavy bullet proof glass panel. Not shown is the reflector type gunsight which would be mounted between these two glass panels.



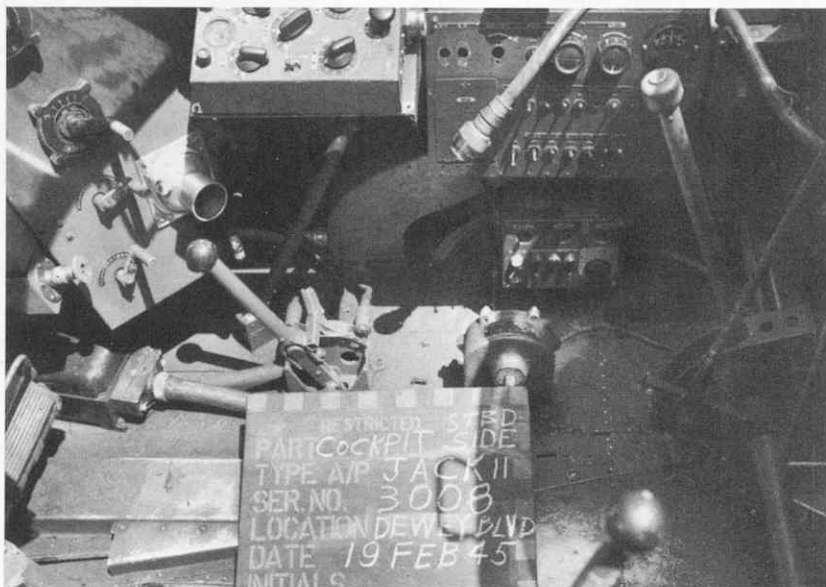
This abandoned Mitsubishi J2M2 JACK was inspected and photographed by U.S. intelligence teams in Manila. Location on identification panel is given as Dewey Boulevard, (now Roxas Boulevard) a main artery from the airport to downtown Manila. Instrument positions are different from that of the restored JACK but often this varied and Japanese documentation for positioning is not available. This is the earlier of the two operational models.



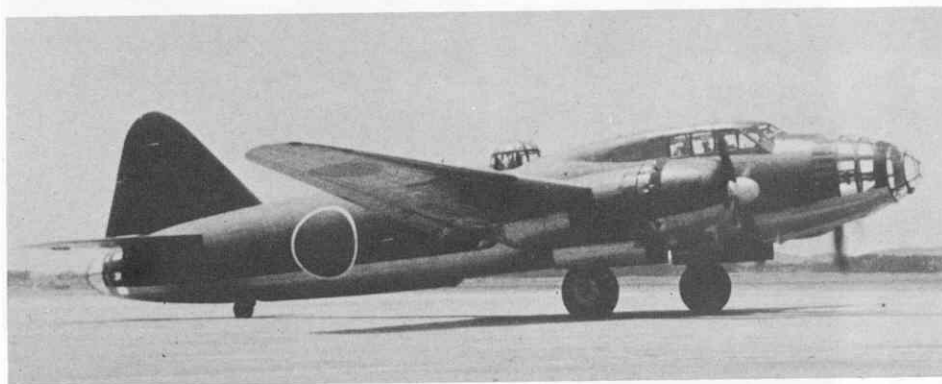
With instrument panel removed, the fuselage fuel tank is revealed. Tubes protruding from antiglare panel formerly supported bullet proof glass, a lethal protrusion to strike a pilot's head in a crash landing. Crank handles actuate cowl flaps and engine oil cooler doors. Cockpit air vent adjustment opening is at lower right.



The seat has been removed from this JACK and shows more clearly the electrical panel on the right side of the cockpit. Long handle at right is for seat adjustment, and bungee cord connected to seat lifting arm can be seen. All of the interior of this JACK appears to have been painted a green, presumably 34151, including the instrument panel.

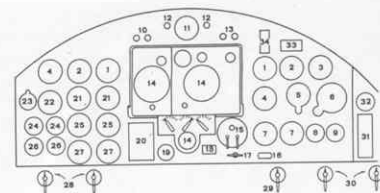


BETTY, Mitsubishi G4M

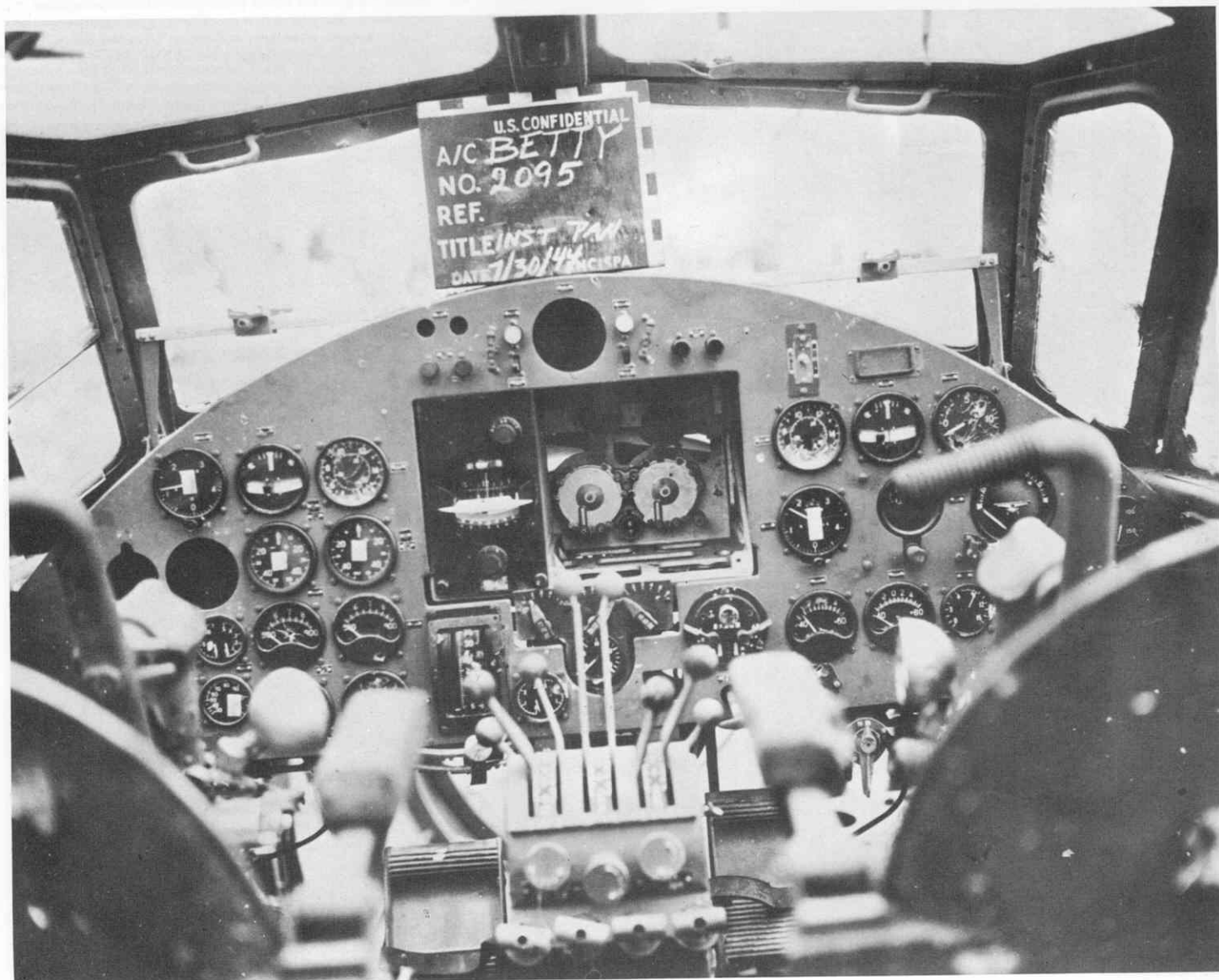


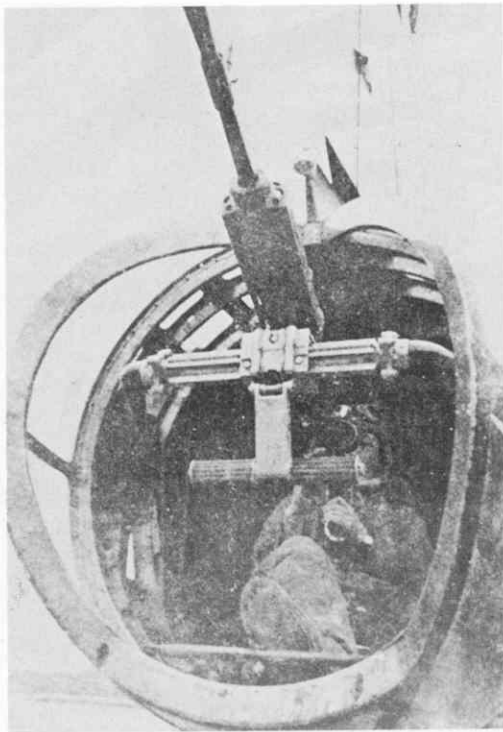
Above: The Mitsubishi BETTY was the Japanese Navy's first-line bomber in strength throughout the Pacific War. This is a late model G4M3E equipped to carry an Ohka human guided bomb in its bomb bay.

Below: Instrument panel of BETTY seems obtrusive to pilot's vision across the nose but otherwise visibility was quite good to the front and side. Flight attitude indicator of automatic pilot in center has been removed from this aircraft. The pilot sat on the right side and the copilot on the left which was customary with most Japanese aircraft. Gyro instruments were on pilot side only, however the larger automatic pilot gyros in the center were more convenient for both pilots to use.

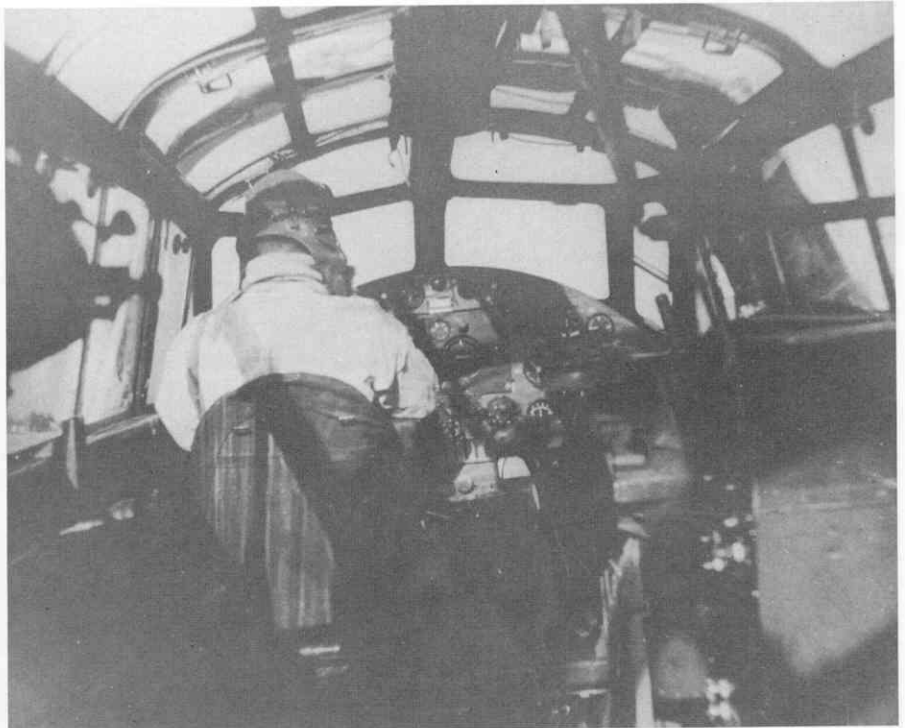


1. Airspeed Indicator
2. Turn and Bank Indicator
3. Rate of Climb Indicator
4. Altimeter
5. Directional Gyro
6. Artificial Horizon
7. Carburetor Air Temperature
8. Vacuum Gauge for Gyros
9. Flap Angle Indicator
10. ADI water low level lights
11. PDI (Pilot's Direction Indicator)
12. Engine Start Buttons
13. Fire Warning Lights
14. Automatic Pilot
15. Engine Ignition Switches L. & R.
16. Electrical Master Switches
17. Automatic Cut-off Switch
18. Bomb Bay Door Position Lights
19. ADI Water Pressure Gauge
20. Dual Tachometer
21. Manifold Pressure Gauge





Tail gunner position of G4M2 BETTY was open at all times giving unrestricted movement of the single 20 mm Type 99-1 cannon.



The cockpit of BETTY seemed suited to the Japanese size pilot shown here, but to American pilots it was considered cramped, very much like that of the B-25. Accommodations were for three to four crew members, the aircraft commander being seated behind the right seat. A navigator chart board is hinged to the wall behind the copilot.

22. Dual Fuel-Air Ratio Analyzer
23. Clock
24. Fuel and Oil Pressure
25. Cylinder Head Temperature
26. Hydraulic Pressure Gauge
27. Oil Temperature Gauge
28. Engine Fire Ext. (Red)
29. Auto-Pilot Press. Bypass (Yellow)
30. Auto-Pilot On-Off (Blue)
31. Inclinometer
32. Pressure Gauge
33. Compass Correction Card
34. Landing Flap Switch

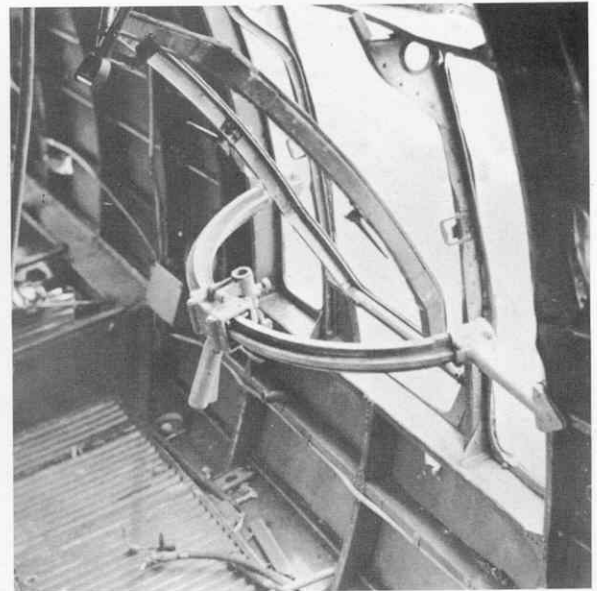
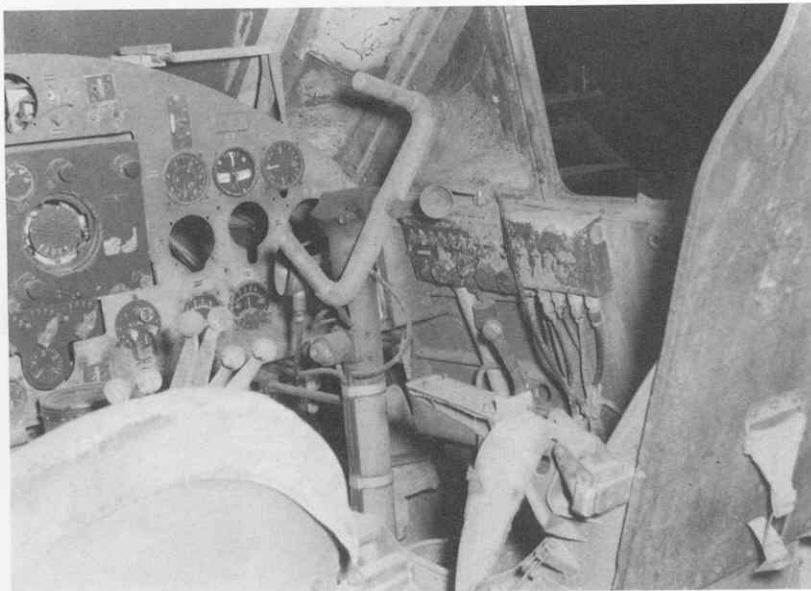
While most large bombers of this period were crowded with systems controls throughout the cockpit, those of BETTY were well confined to the instrument panel and control quadrant. One exception was the landing gear hydraulic control handle which was located on the right side of the cockpit. Elevator trim wheel was on the inboard side of the right seat, and rudder trim wheel was centered overhead. A 5-inch top-reading magnetic compass was fixed to the quadrant between the throttles and the instrument panel. The support bar at each windshield may have held a torpedo-run alignment sight in front of both pilots.



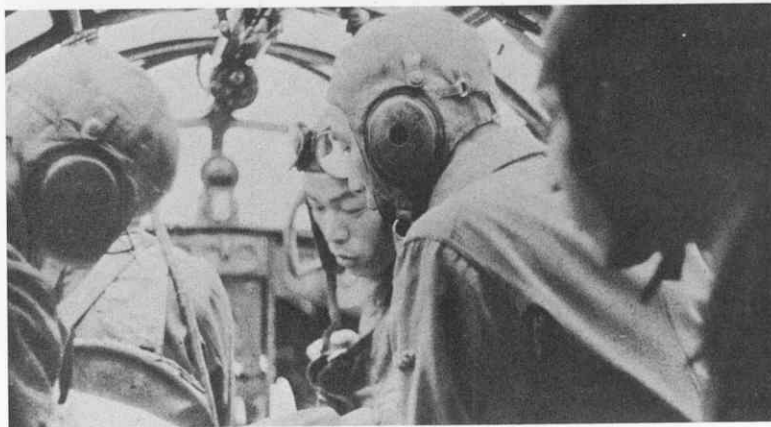
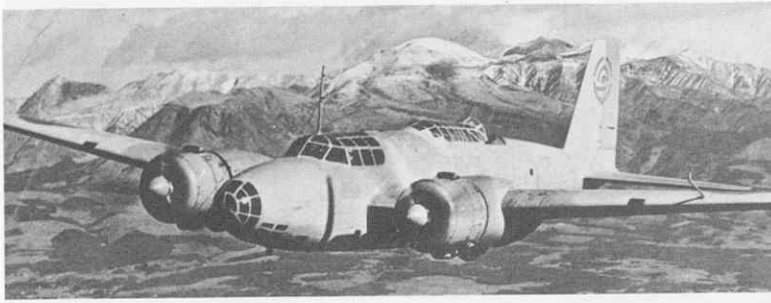
Nose and waist gun.

Most Japanese bombers, including BETTY, lacked crew armament. As the war progressed, some armor was added by the units themselves. This BETTY nose section retained by the National Air and Space Museum has armor added to the back of the pilot's seat. A consistent color 34151 is used throughout the interior.

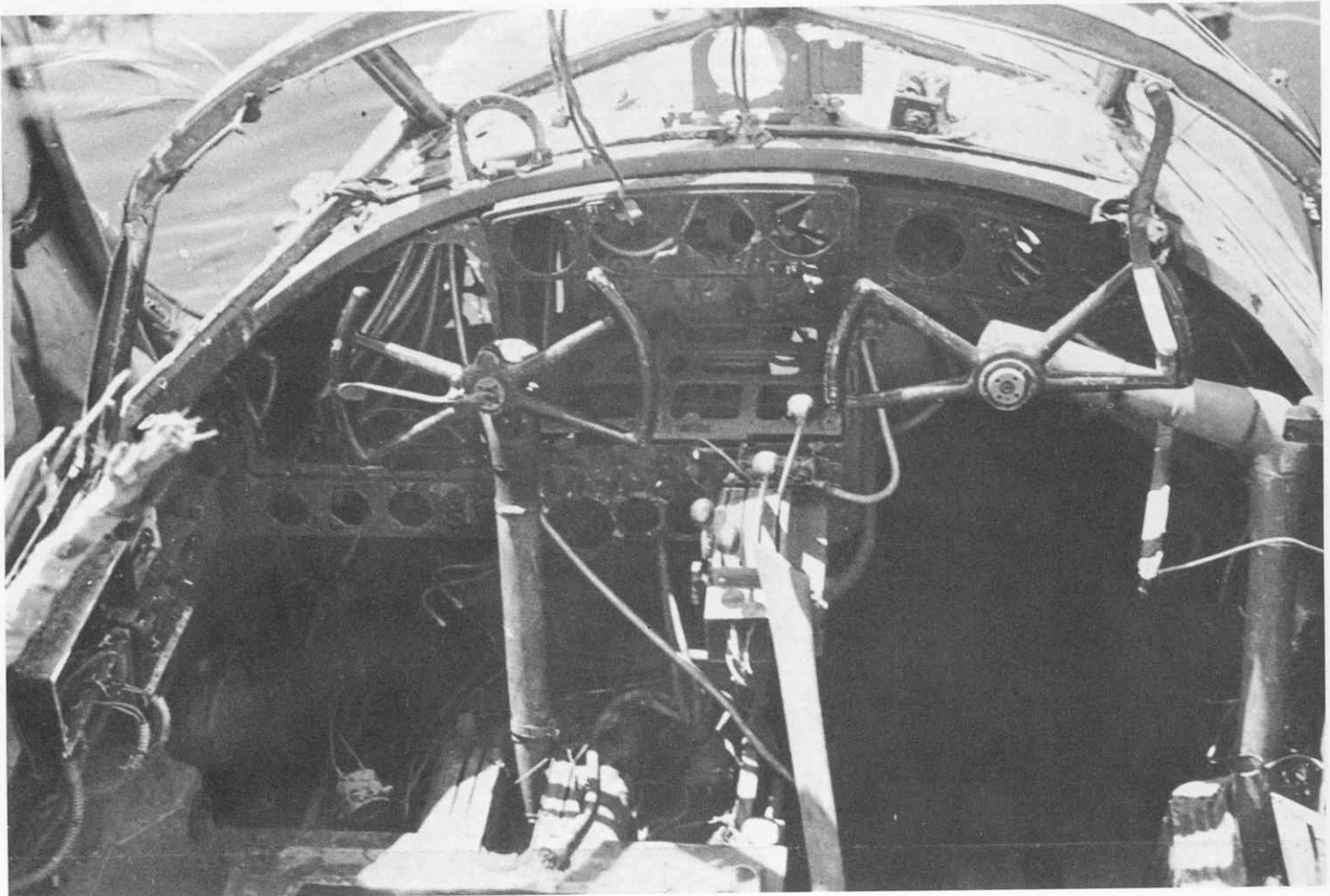
Details of scarf mount for flexible 7.7 mm Lewis type machine gun in waist position is shown here. Side hatch is partially opened, the bottom of which slides in tracks, and top has swing-arm attached and pivoted overhead. Short tubes on wall hold six single cartridge magazines.



SALLY, Mitsubishi Ki.21



Above left: Mitsubishi Ki.21 Ia SALLY of the Hamamatsu Flying School. Above right and below: Access to the nose compartment of SALLY was through opening in front of right hand pilot position. Control column was of asymmetrical configuration for this purpose. This arrangement would indicate that pilots of SALLY sat on the left. Note different design of the unusually high mounted control wheels in these two pictures. Another cockpit view of SALLY appears on page 1, of Close-Up 14, Part I of this subject.



Kawanishi H8K2, EMILY

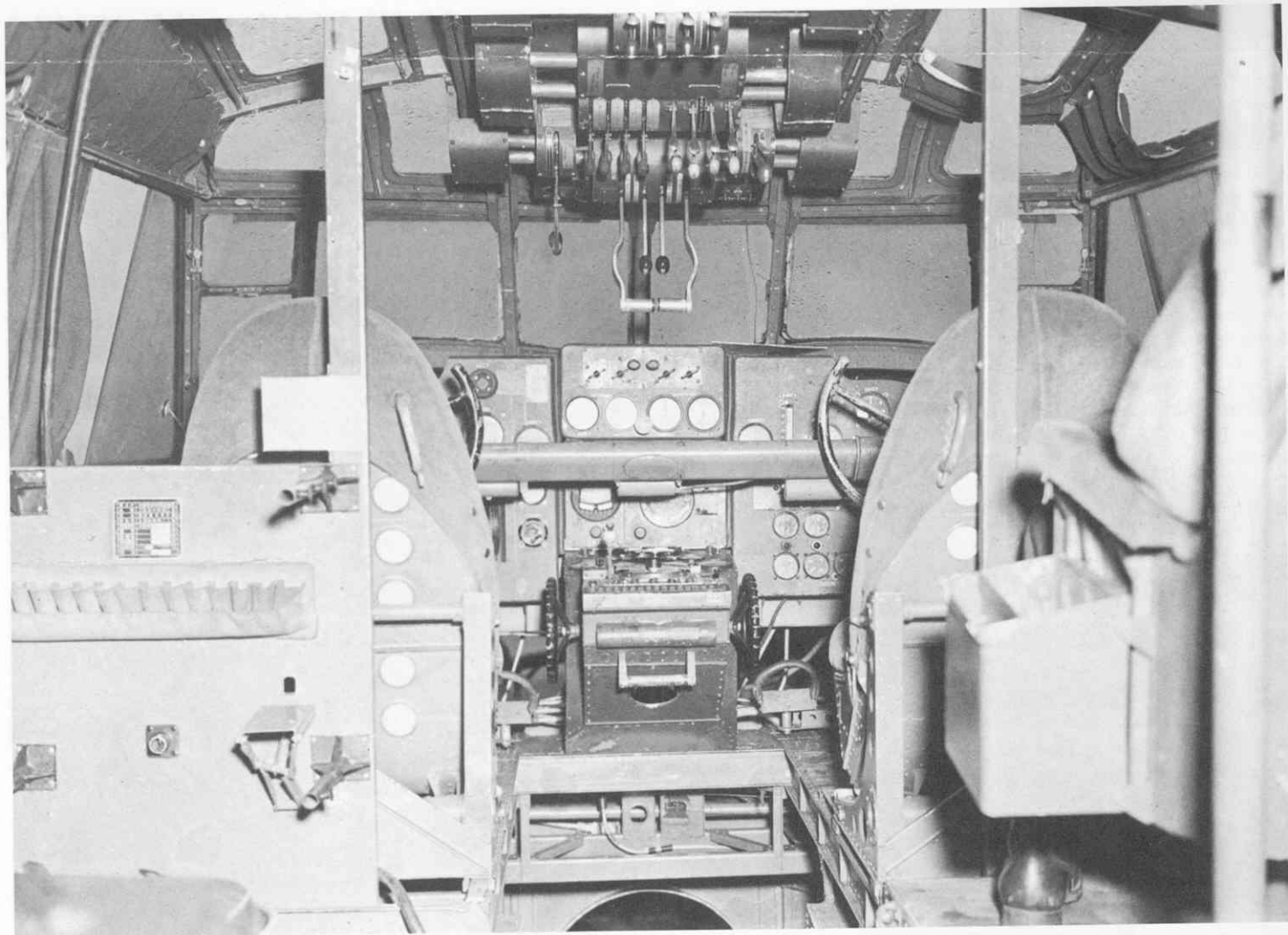
EMILY outclassed all other flying boats of World War II in nearly all performance aspects. Two EMILYs made a second attack on Pearl Harbor in March 1942, but clouds shielded their targets. EMILYs roamed the waters over which the Japanese influenced throughout the war. Kawanishi built 167 including 36 transport models. One EMILY survives, acquired at Kure, Japan, at the end of the war. It was taken to the U.S. by ship where it underwent extensive evaluation by the U.S. Navy and industrialists. When tests were concluded it was set aside for the National Air Museum and preserved and stored at NAS Norfolk. Its future is now uncertain. Hull features appeared in the post war P5M, P6M and R3Y.



Above: Captured EMILY undergoing water tests at NAS Patuxent River, Maryland, following World War II. It had been operational with 801st Kokutai, where it was finally based at Kure, Japan.

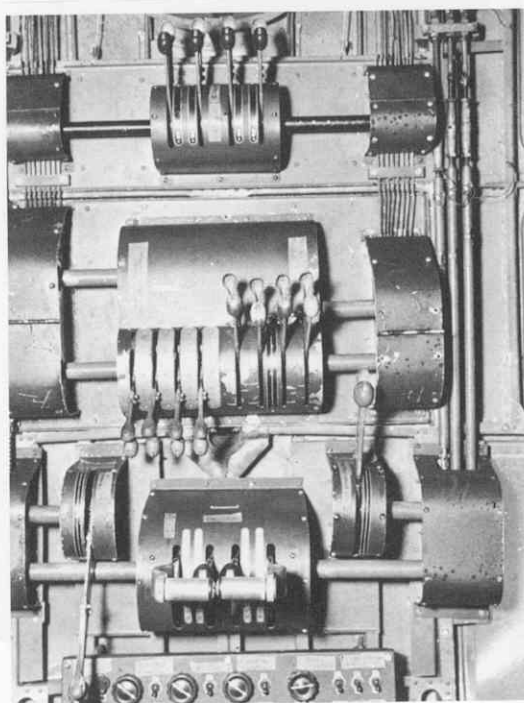
Below: The control column of EMILY was unusual by its crossbar interconnection. Pilot sat on this right side which was typical of most Japanese aircraft. Interior black and white photos were taken during its evaluation soon after its arrival in the United States in December 1945.





EMILY's flight deck was comfortably roomy. Note entry to forward compartment under control quadrant, accessible down steps between pilot seats. Seat at right foreground is for aircraft commander. Photo below is

looking aft into waist compartment showing blisters and top turret. Engine controls are overhead between pilots with astrodome and rear located at top of picture.

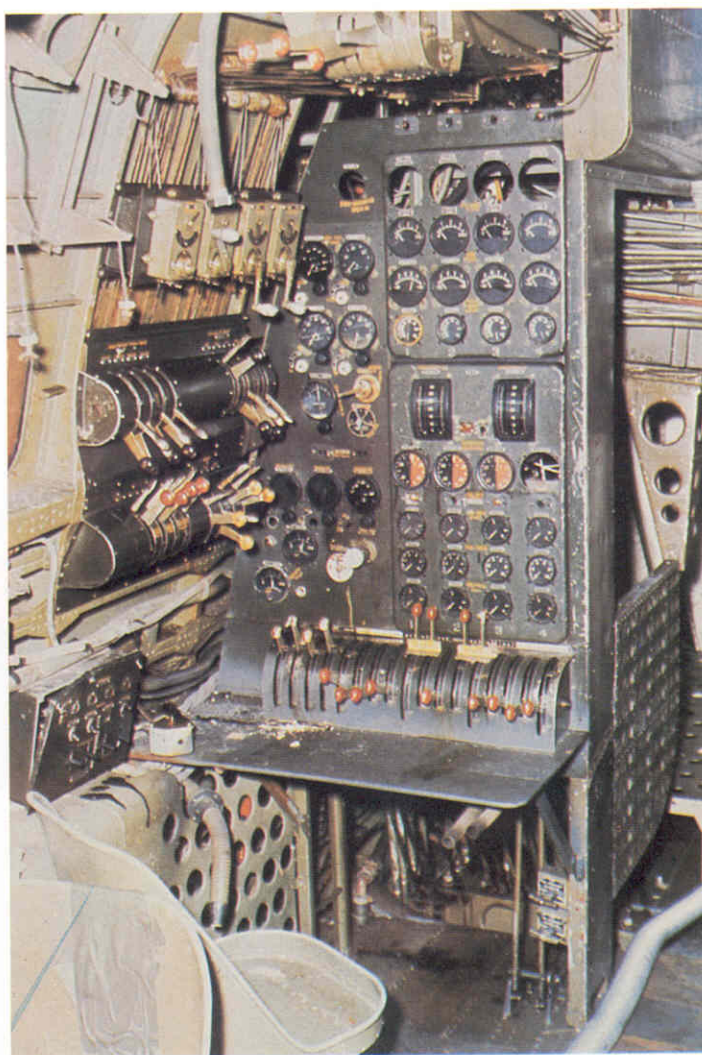
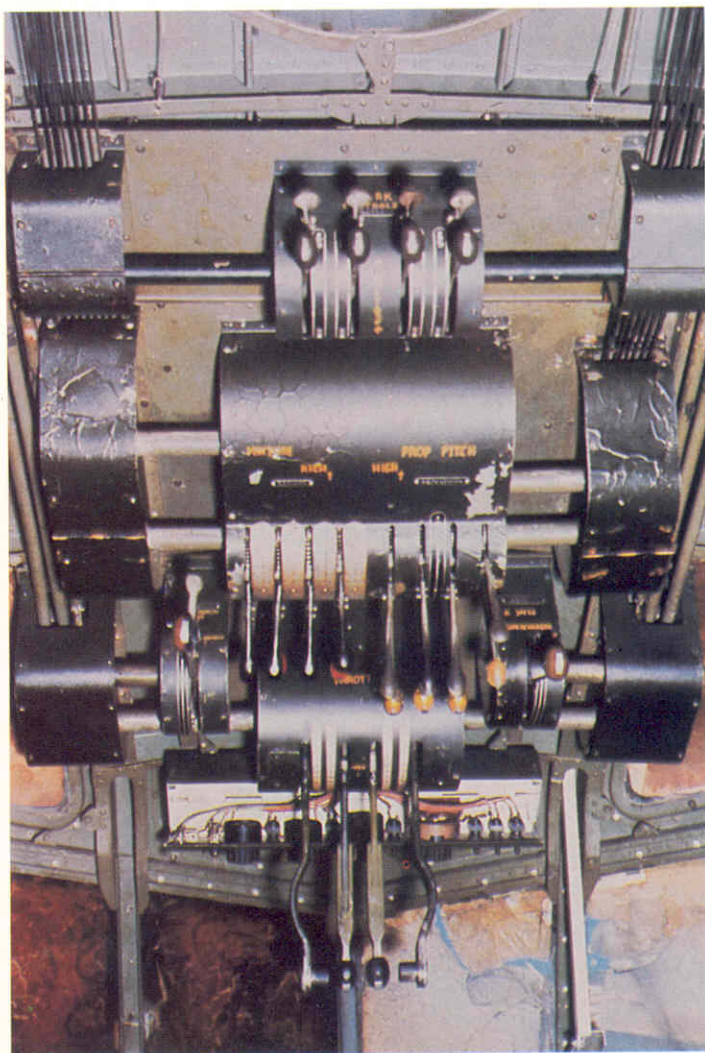
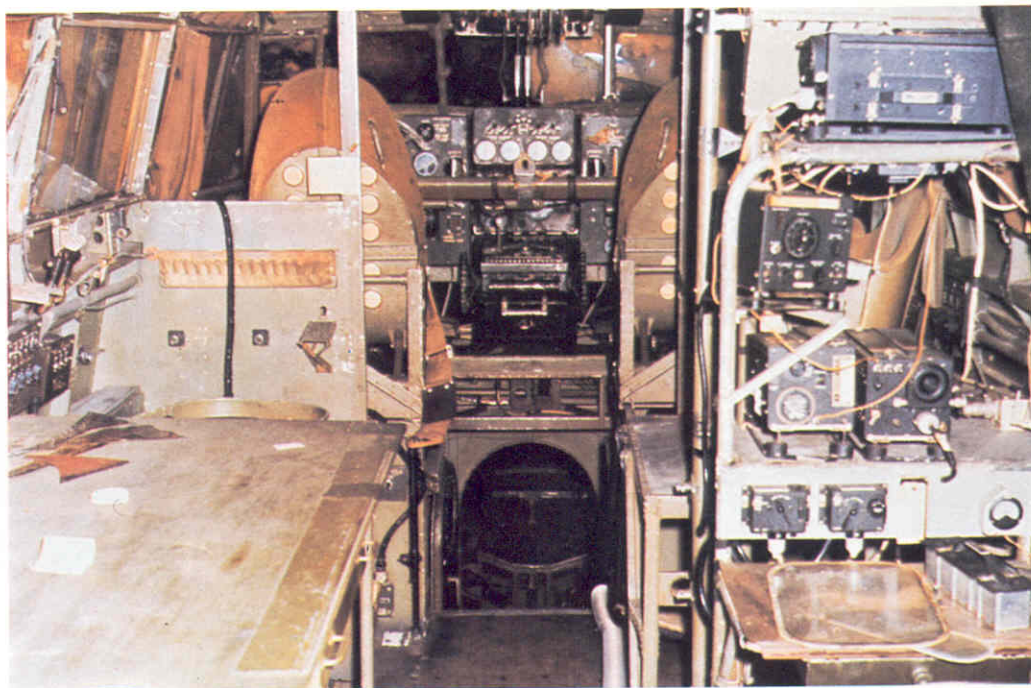


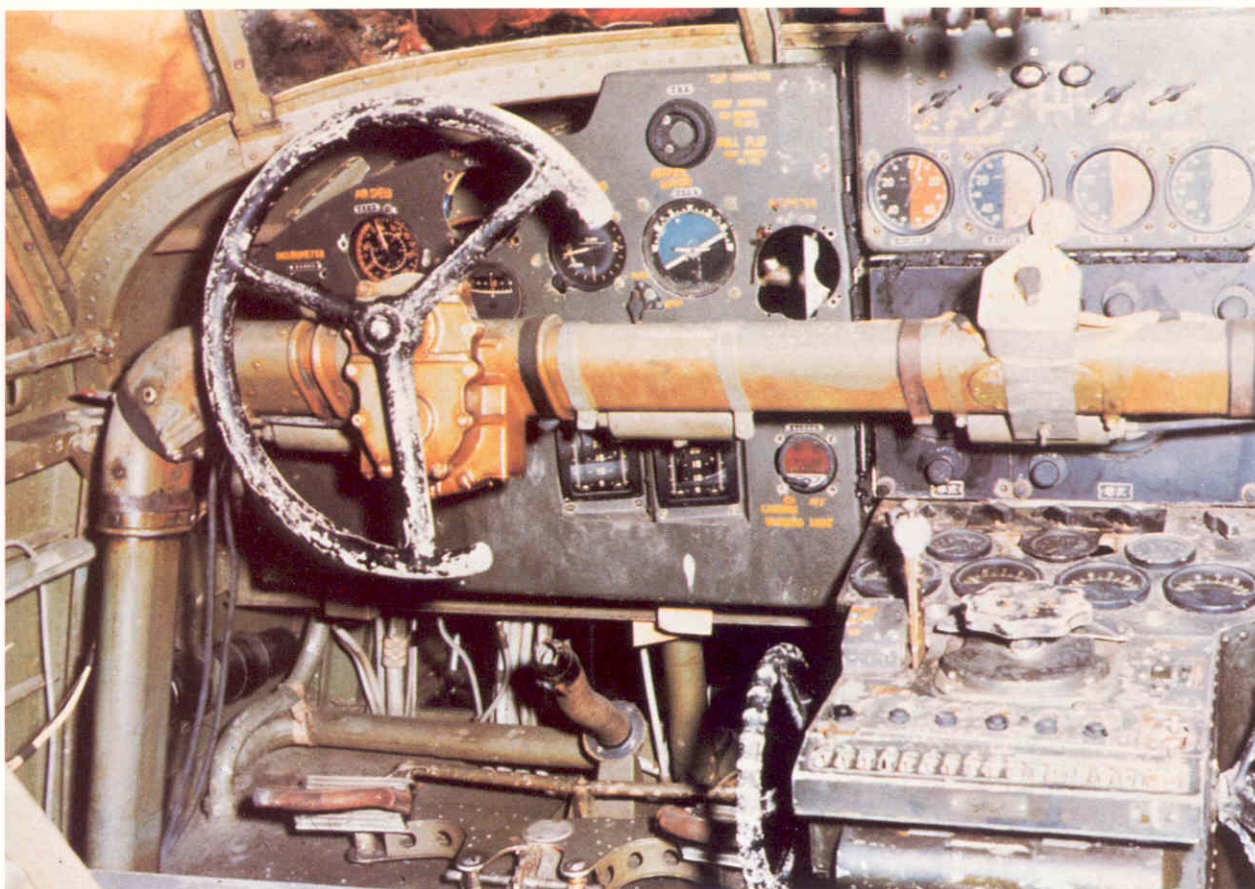
Right: Movement within the flight deck of EMILY was unobstructed. Navigation plotting table at left behind the copilot was unusually large for that time period. Radio operator's position is at right. Entry to bow was down six steps and forward of pilot's seats with reasonable head room.

Interior color photos of EMILY were taken by the author in October 1975, at NAS Norfolk, Virginia, where the flying boat is stored.

Below Left: For the functional testing of EMILY by the U.S. Navy, all engine operating controls overhead were marked with yellow lettering. Note two colors of green that were used. Throttles are long, forward handles.

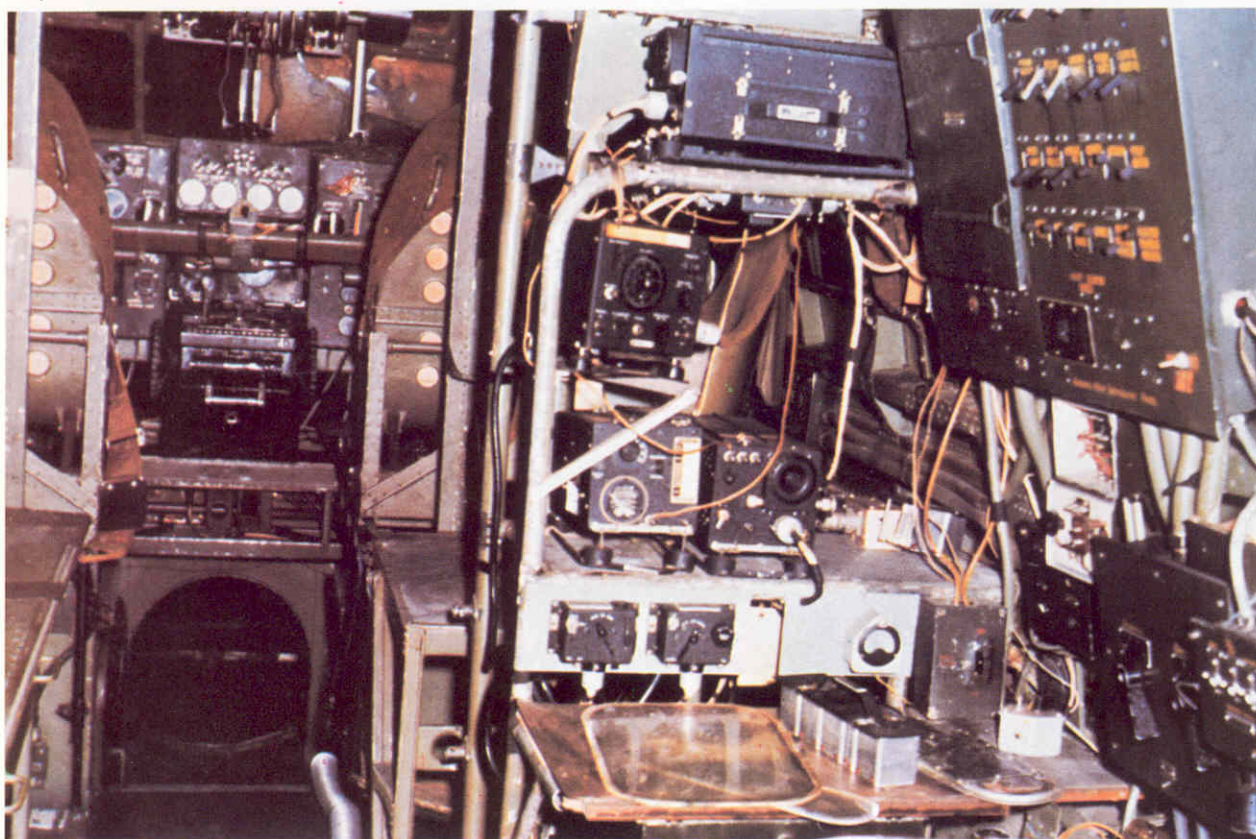
Below Right: View looking aft at flight engineer's station of EMILY on starboard side just aft of radio operator's position. Flight engineer positions became popularized aboard the flying boats of this period due to their size.



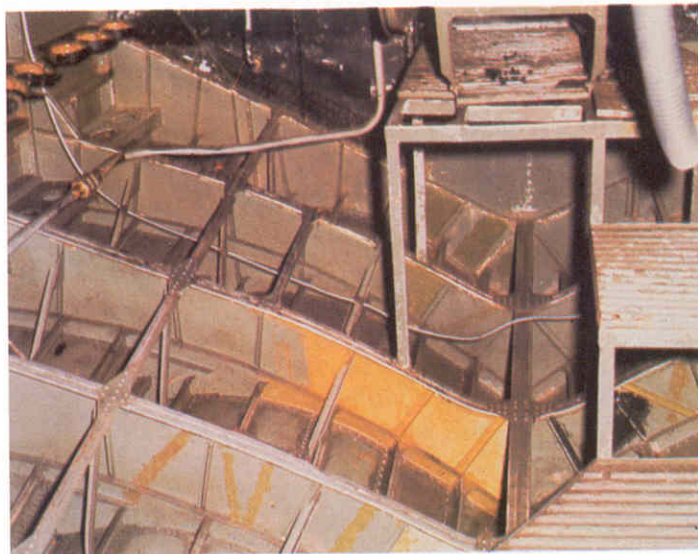
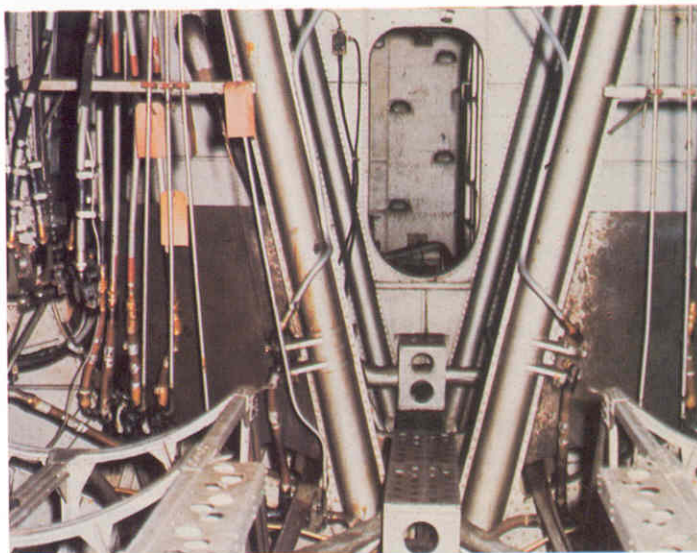
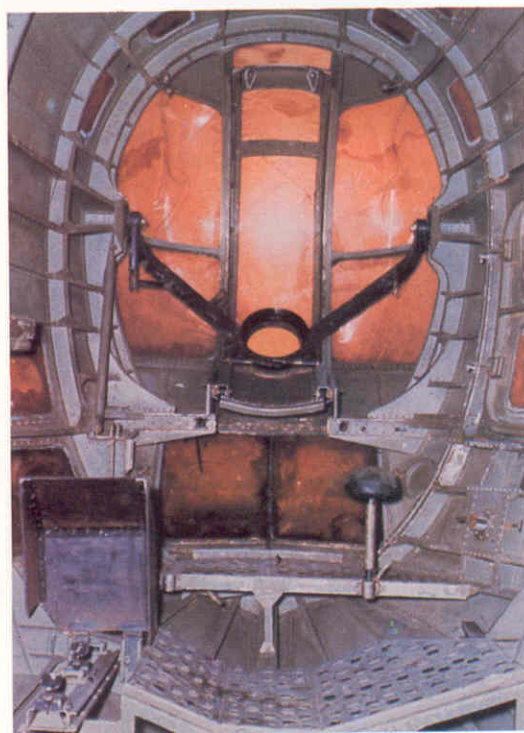
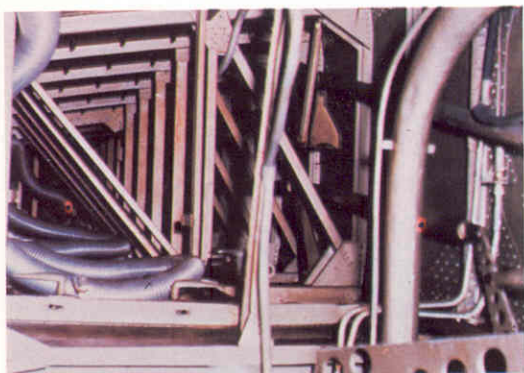
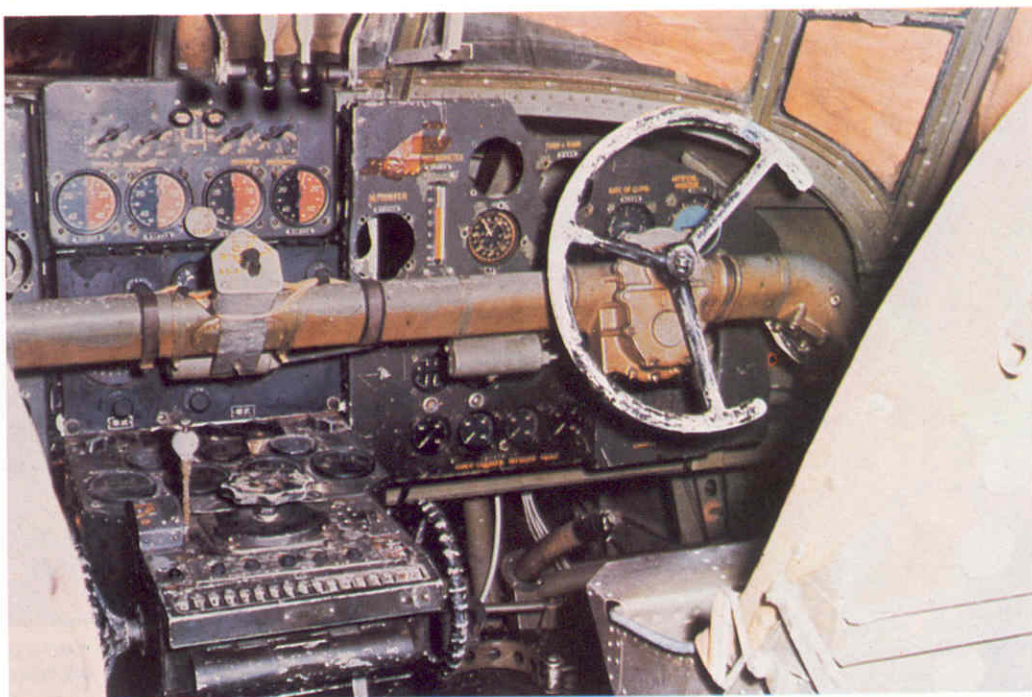


All Japanese instruments appear to have been retained while operated by the U.S. Navy on the waters of the Chesapeake Bay. Frequent engine failures limited its flying to one trip from Norfolk to Patuxent River. Only water tests followed. Black instruments under cross-over bar are

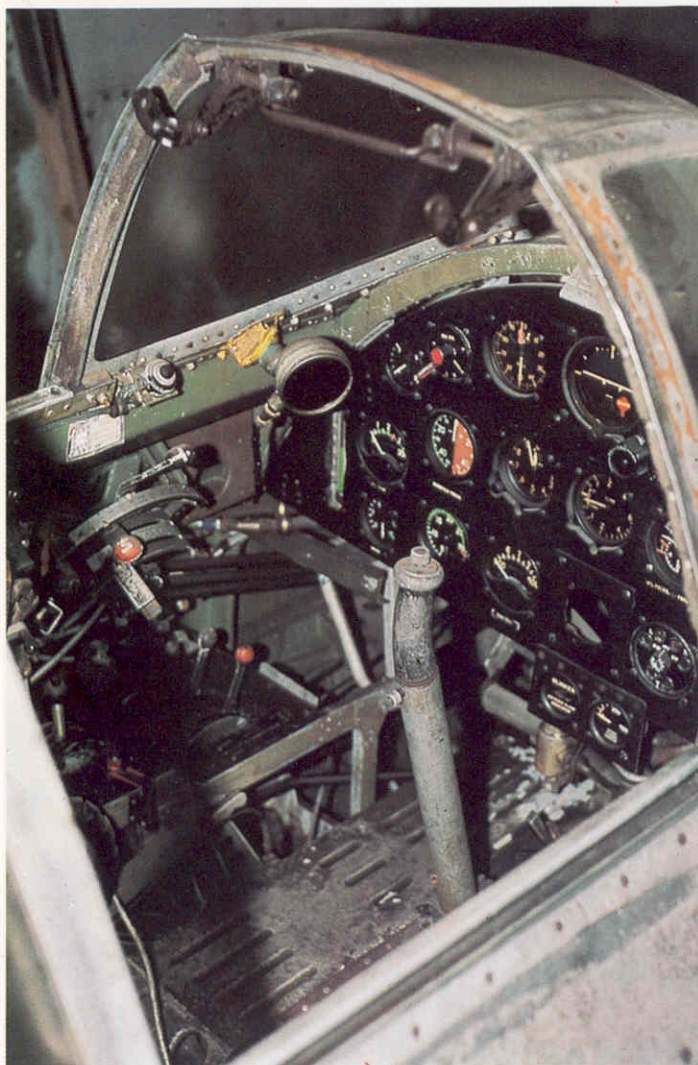
vertical reading tachometers. Radio compartment (below) was located across the aisle from the navigator's station. Most of the radio gear appears to have been replaced by American equipment.



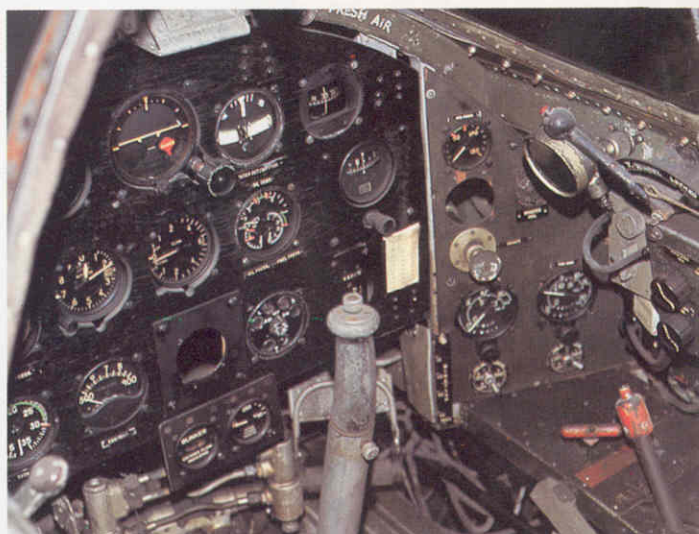
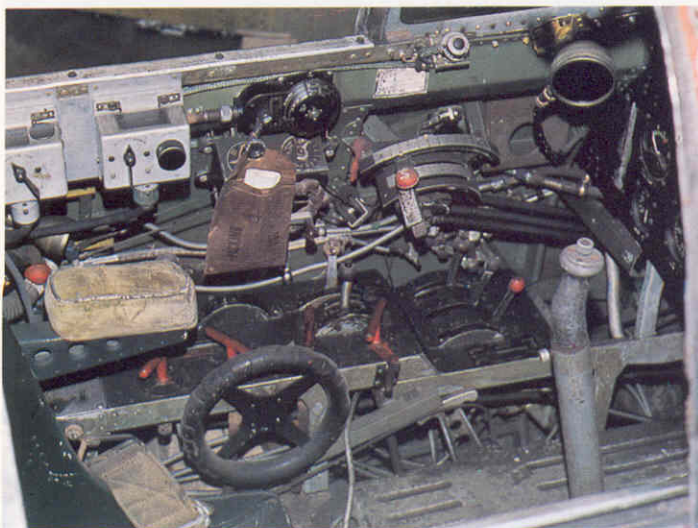
Only one type of automatic pilot manufactured by Tokyo Koku Keiki (Air Gauge) was in evidence in Japanese Army and Navy aircraft, and EMILY was no exception. Its location is the black panel behind the control cross-over bar. Half-red faced instruments above are manifold pressure gauges. Wheels on both sides of the control quadrant are for elevator trim tab adjustment. Photo below shows interior of port wing structure, visually exposed at eye level from the upper deck. Flex hoses are for control of air while in storage. Bottom left shows nose from within. Brown color on glass is protective coating on outside of entire aircraft for preservation. Center right is looking aft in lower hull compartment. Extra fuel tanks could be carried on cradles on either side. Note catwalk and step through doorway and foot and hand holds on aft bulkhead. Bottom right photo looks forward within the hull at the base of the ladder coming from the flight deck to the nose compartment.



MYRT, Nakajima C6N1-S



Cockpit of MYRT was cramped for an aircraft of this size but all controls were relatively well positioned for the average size pilot. Heavy flying clothes on a large pilot would create a problem. Mechanism for raising overhead windshield is visible in this view. Original instrument panel may have been exterior dark green, Munsell 10 G 3/2, matching that of the existing rear seat instrument panel. Left side of pilot cockpit is below.



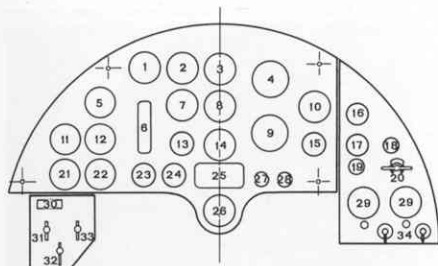
This MYRT was flown by TAIC in the U.S. and has had nearly all instruments replaced by U.S. types.



Right side of pilot's cockpit of MYRT contained electrical panels and systems controls. Aft crew position is below with its original 34151 color.



While it was general practice of the Allies during World War II to convert fighters and bombers into reconnaissance aircraft, the Japanese did quite the opposite. MYRT is one of those examples and because its design was geared exclusively to that mission it was superior in its class. Much of its success was credited to the small diameter Homare 24 engine with just under 2,000 hp. MYRT'S first appearance in combat was just before the battle of the Marianas in June 1944. Flying at a remarkably high altitude of 39,000 ft, its presence went unchallenged when it located the U.S. task force in the Majuro atolls. A few days later, MYRTs, operating for the first time from carriers, found the U.S. fleet grouping west of Saipan for their attack. In the final days of the war, many C6NIs were converted to the night fighter role for attacking B-29s.



1. Type 2 Sensitive Altimeter
2. Type 3, Mod. 1, Airspeed Indicator
3. Type 2 Turn and Bank Indicator
4. Artificial Horizon
5. Type 3 Manifold Pressure Gauge
6. Type 2 Inclinator
7. Type 1 Rate of Climb Indicator
8. Type 0, Model 1, Magnetic Compass
9. Directional Gyro
10. Radio Direction Finder
11. Engine Inlet-air Temp. Gauge
12. Type 1 Tachometer
13. Methanol Pressure Gauge
14. 15-Shi Oil Pressure-Temp. Gauge
15. Clock
16. Type 2 Hyd. Press. Gauge, Norm Sys.
17. Type 2 Hyd. Press. Gauge, Emg. Sys.
18. Methanol Pressure Regulator Switch
19. Engine Primer Pump
20. Methanol Fire Cutoff Valve
21. Cylinder Temperature Gauge
22. Type 2 Exhaust Temperature Gauge
23. Electrical Master Switch
24. Fuel & Oil Pressure Gauge
25. Vacuum Pressure Regulator Valve
26. Landing Gear Position Ind. Lights
27. Methanol Warning Light
28. Fuel Warning Light
29. Model 1 Fuel Quantity Gauge
30. Carburetor Air Temp. Control
31. Gyro Horizon Vacuum Valve
32. Vacuum Pump Selector Valve
33. Directional Gyro Vacuum Valve
34. Fuel Gauge Selector Switch

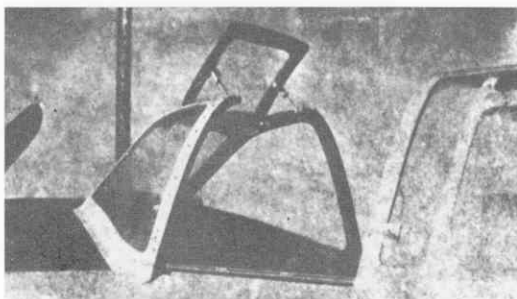


The only surviving Nakajima MYRT is this C6N1-S night-fighter. Photo taken at Patterson Field, Ohio in 1946 while undergoing flight tests, and now in the collection of the NASM. Oblique guns are removed making it appear as reconnaissance aircraft from the outside.

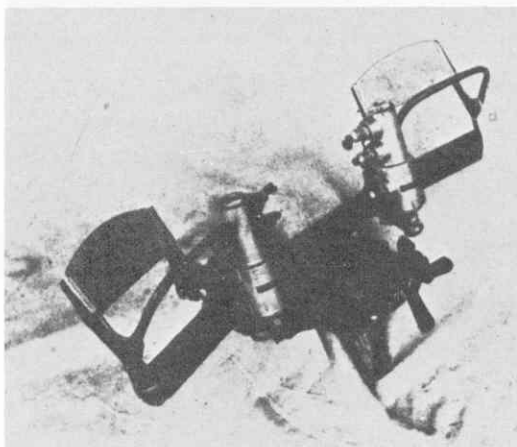


Left side of pilot's cockpit shows details of seat which is painted Munsell 10 G 3/2 exterior dark green. Of the two aluminum U.S. radio control boxes, the one on the left has a telegraph key on top. Photo below is of rear seat looking forward. American radio box is in center crew position.

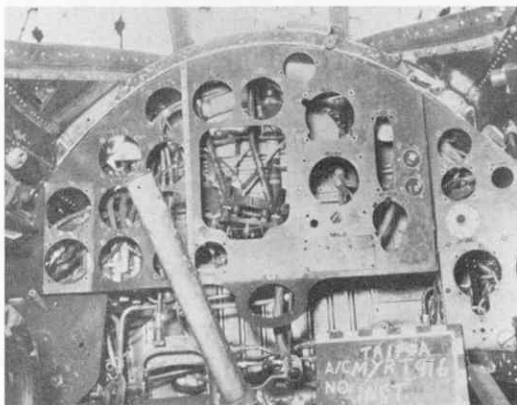




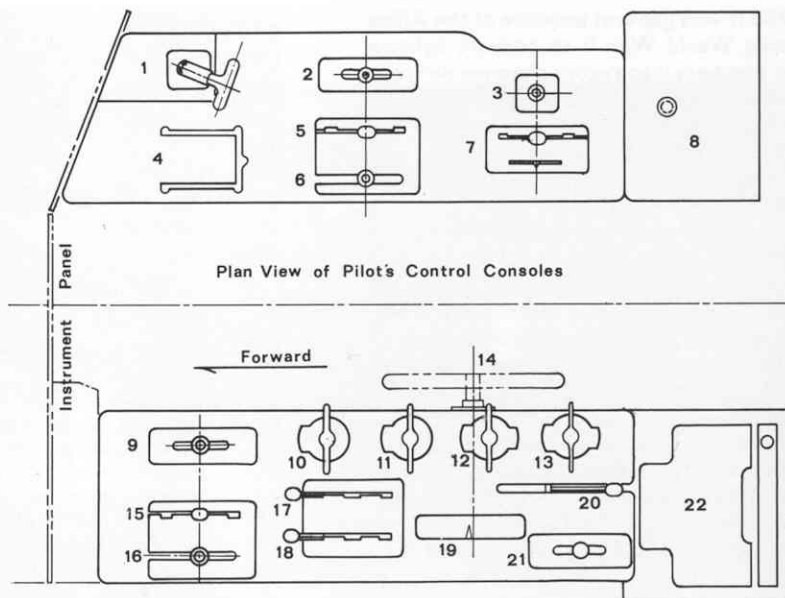
Raised windshield for ground operation.



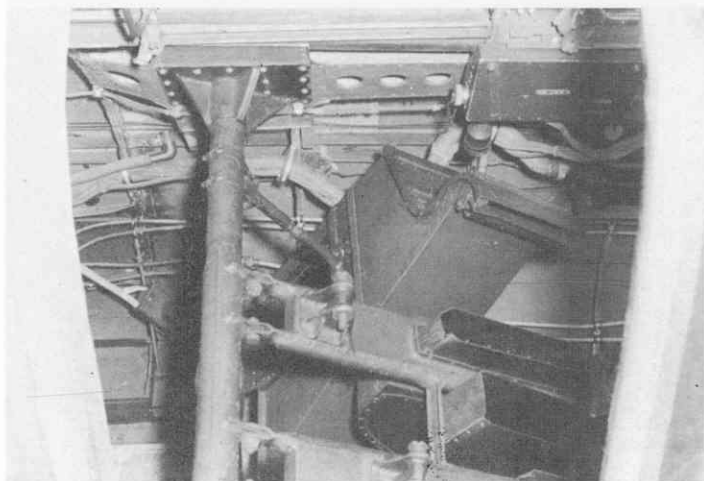
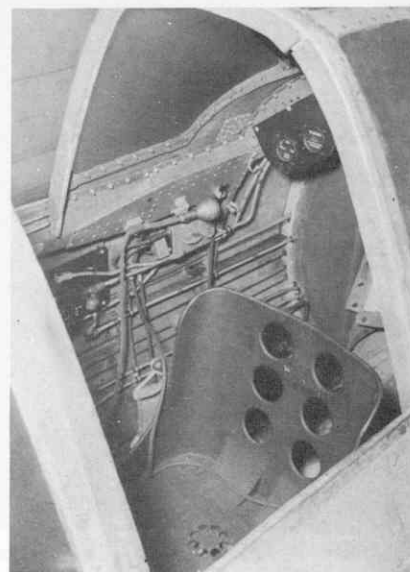
Rudder pedal details.



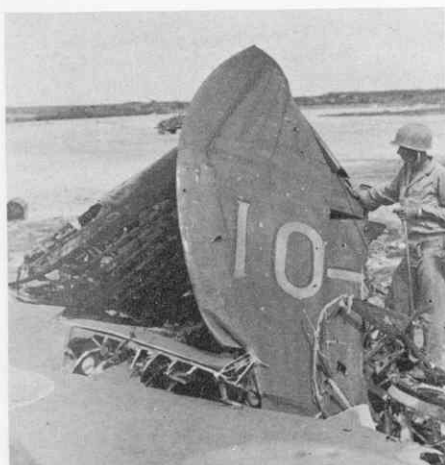
Original instrument panel of MYRT left, differs in format from existing panel. Photos below and at lower right show mounts and ammo box for obliquely mounted twin 20 mm Type 99 cannon in the normal center crew position. Photos are from left side of aircraft. Above is the rear seat for radio operator/navigator.



1. Drop Tank Jettison Handle
2. Wing Slot Operating Handle
3. Hydraulic Power Control Handle
4. Clipboard Holder
5. Tail Wheel Lock
6. Landing Gear Actuating Handle
7. Wing Flap Actuating Handle
8. Tool Case
9. Cowl Flap Operation Handle
10. Drop Tank Selector Valve
11. Main Fuel Tank Selector Valve
12. Left Wing Tank Selector Valve
13. Right Wing Tank Selector Valve
14. Elevator Trim Control Handle
15. Oil Cooler Shutter Handle
16. Carburetor Heat Control
17. Two-Speed Supercharger Control
18. Engine Boost Control Handle
19. Elevator Trim Setting Indicator
20. Manual Fuel Pump Handle
21. Emergency Fuel Dump Valve
22. Five-Power Binocular Case



Nakajima G5N1, LIZ

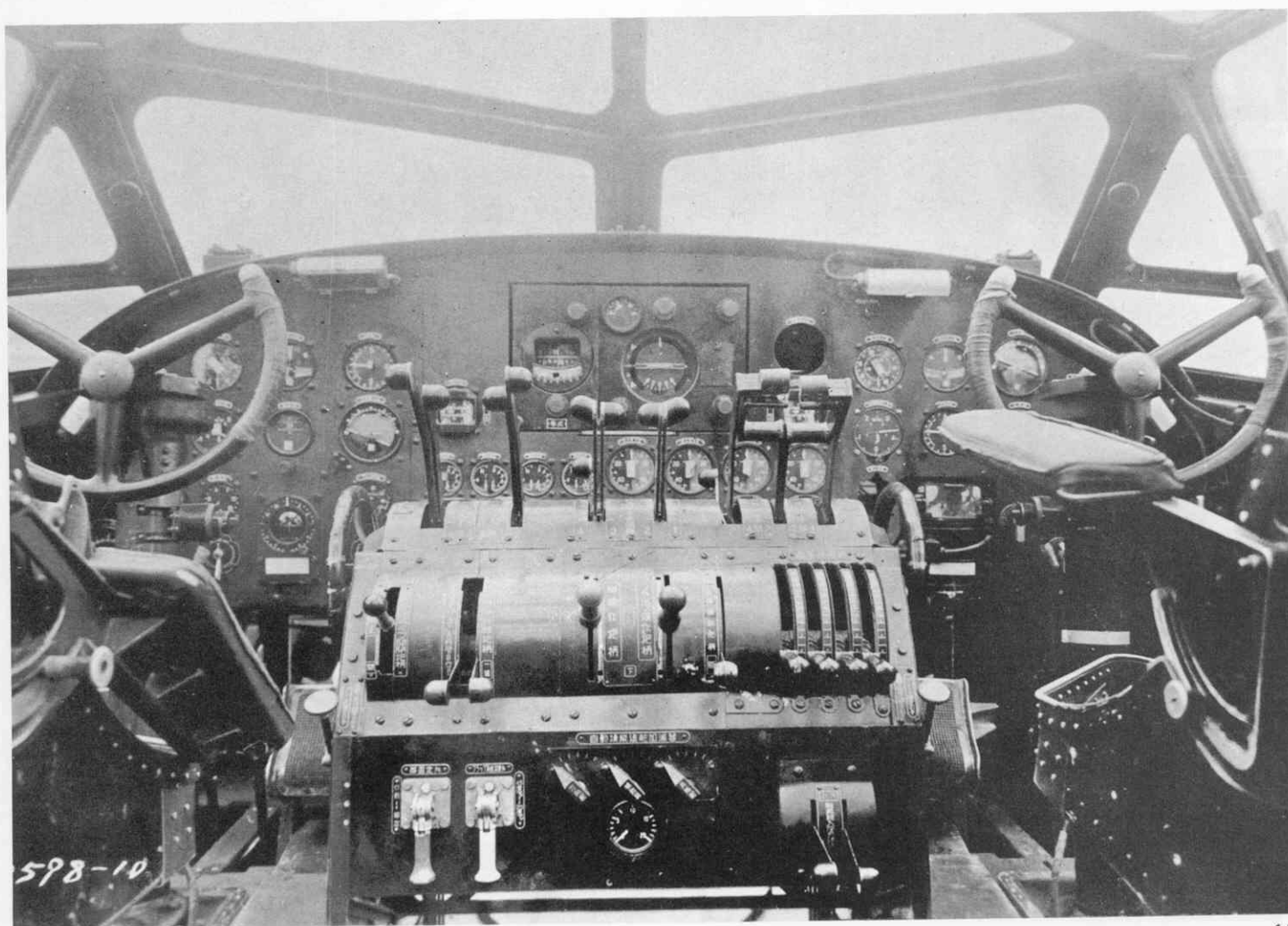


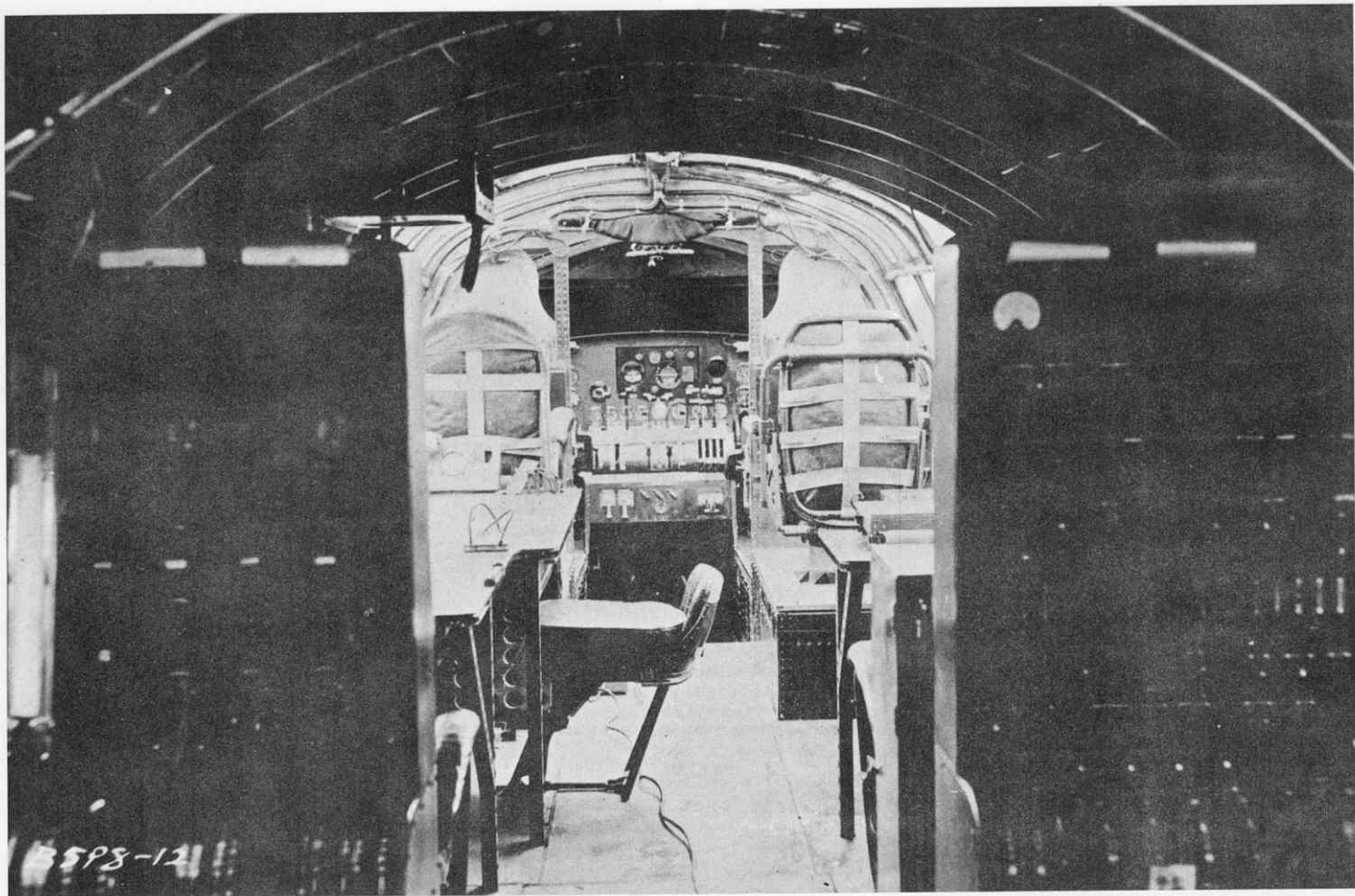
Above: In a desperate attempt to bring supplies to Tinian for the Japanese, this LIZ experienced mechanical trouble while on the ground there, and was soon caught by American fighter planes. A U.S. serviceman inspects the burned out remains and interesting tail number on the inverted fin, August 1944.



Above: A failure from the start, the Nakajima G5N1 LIZ was overweight and under powered due to Japanese lack of experience with large 4-engine land based aircraft. Its design was heavily influenced by the Douglas DC-4E which in itself was a failure. Only six of this type were built before the project was cancelled, and the aircraft served in the combat role only as a freight transport. This postwar view at Atsugi shows LIZ rolled into a parked DAVE before all aircraft on the field were destroyed.

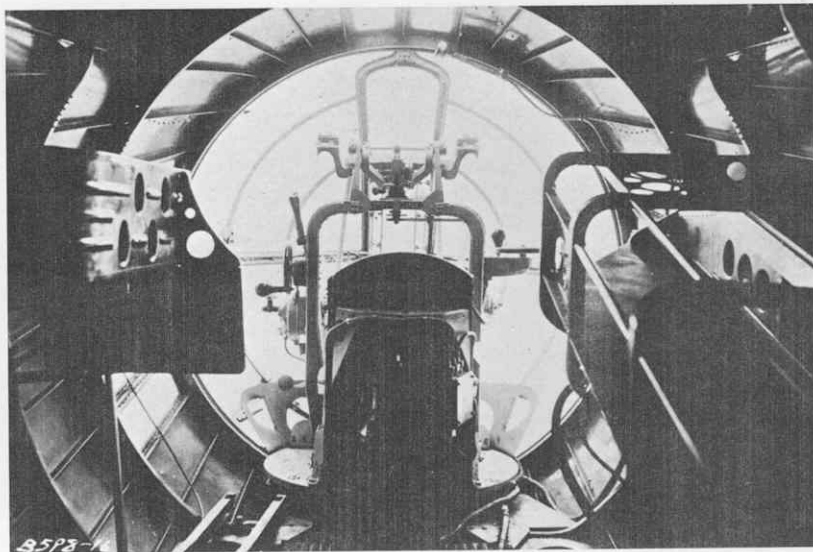
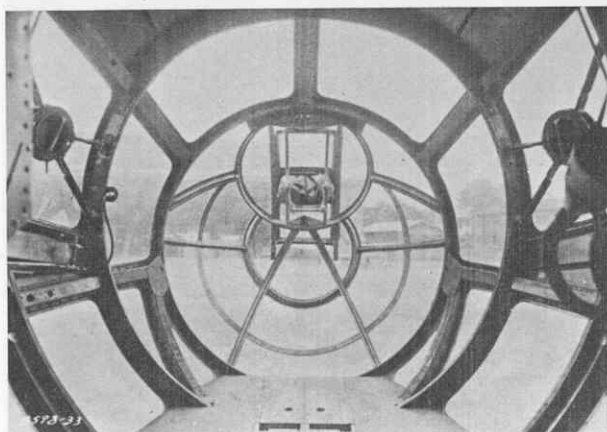
Below: The cockpit of LIZ was very spacious with an unusually large control quadrant that widely separated the two pilots. The pilot's position was very likely on the right, copilot on the left. In addition to its mammoth size for Japanese aircraft, it was also an early, if not the first, use of tricycle gear in Japan, giving good visibility on the ground for the pilots.





At the lower left is an uncluttered inside view of the bombardier's station in the nose with a comparison external view at the left. Note the sliding arrangement of the flexible 7.7 mm gun mount. At the lower right is the tail gunner's position which appears a bit more business like. The gun position was semiflexible as opposed to a revolving turret.

Above: View of flight deck of LIZ shows the enormous size of this aircraft for that period. Both pilots' seats have armor plated backs and head rests. A raised aircraft commander seat is on the right with an observer's seat on the left. A spacious navigator's table and seat is also on the left. In the foreground are the flight engineer's panels with engine controls on the left, and mostly electrical controls on the right.

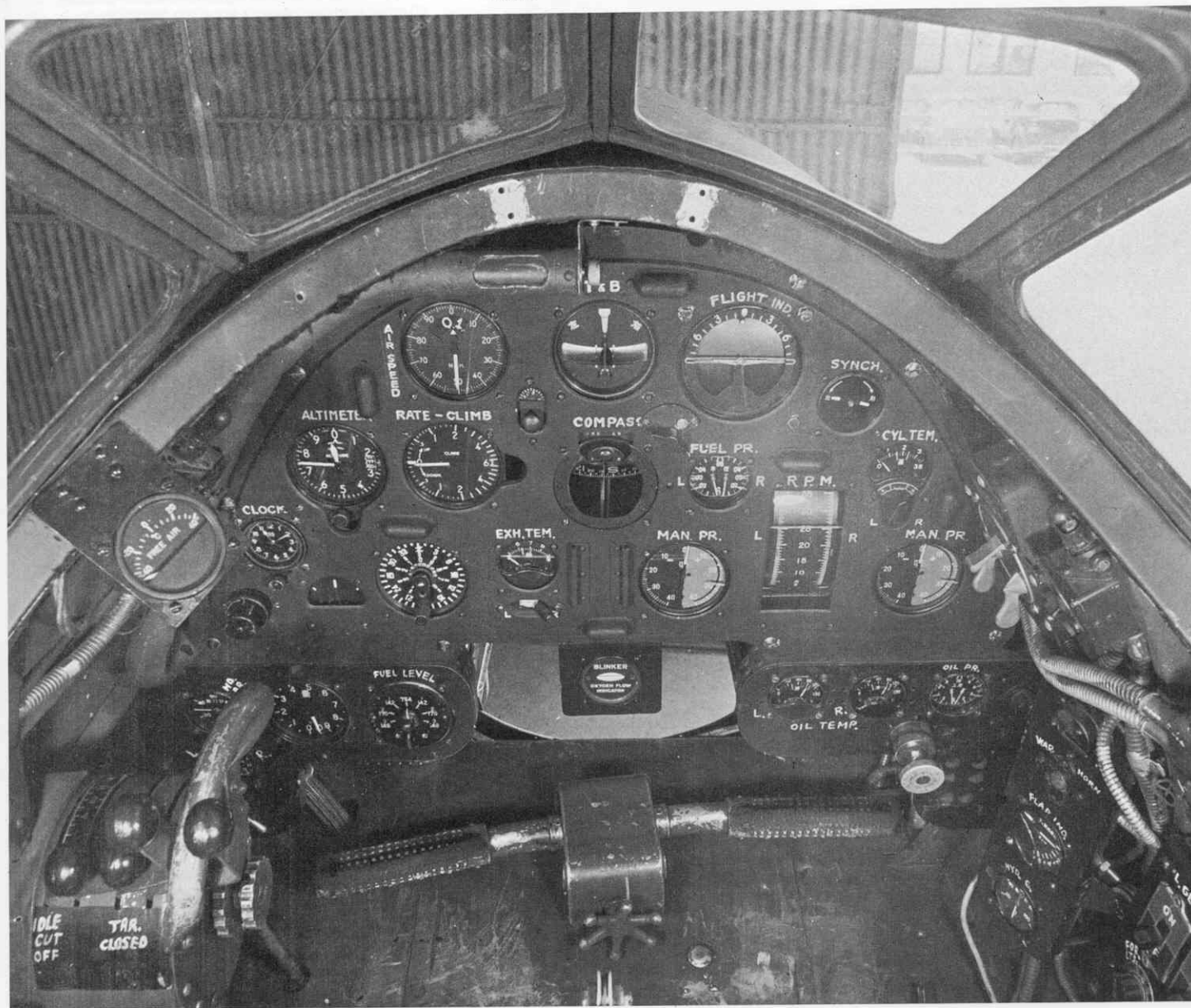


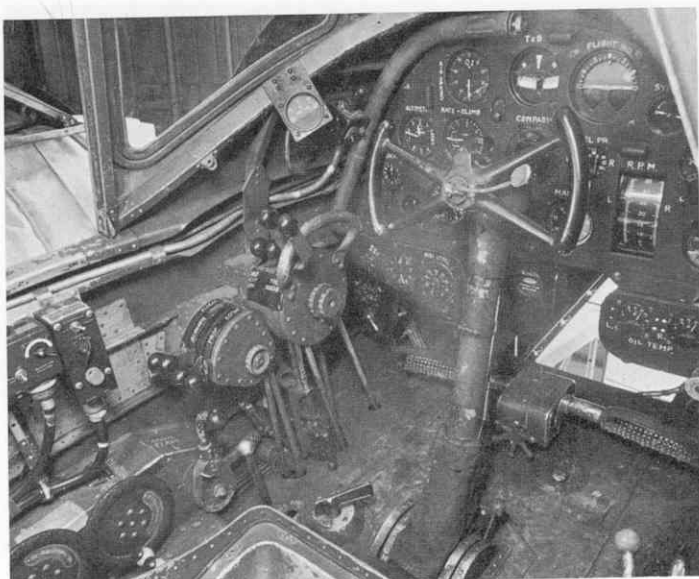
Mitsubishi Ki.46 II, DINAH II

DINAH was one of the sleekest twin-engine airplanes to be used by the Japanese Army. Rightfully so, for it was designed as an unarmed high-speed reconnaissance airplane for a mission it served well. Pilots and ground crew alike regarded it as a masterpiece in flying and ease of maintenance. Its field of activity covered almost all the theaters of the war. It is one of the few combat types to be used by both services when the Navy acquired a small number to fill a special mission need.

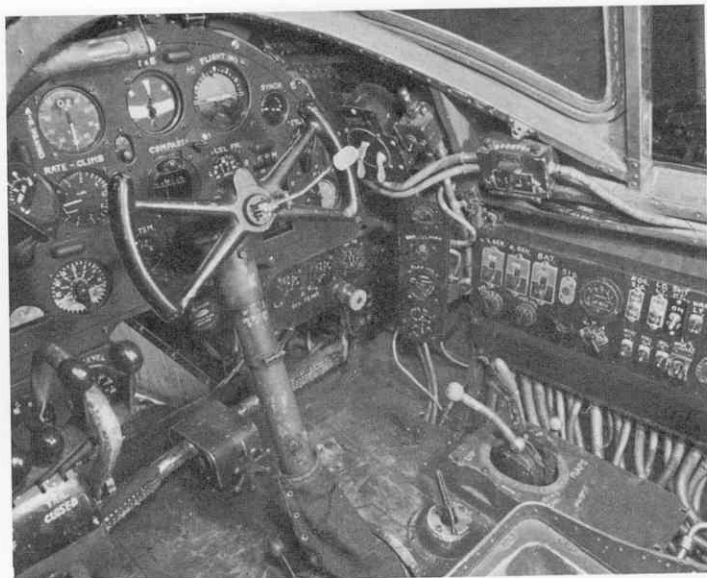


Mitsubishi Ki.46 II, DINAH II photographed at NAS Anacostia, D.C., just after being completely rebuilt by the Technical Air Intelligence Center assigned there. Instrument panel of the same aircraft appears below.





A full reconditioning of the instrument panel by TAIC included prominently marking the Japanese as well as American instruments in English.



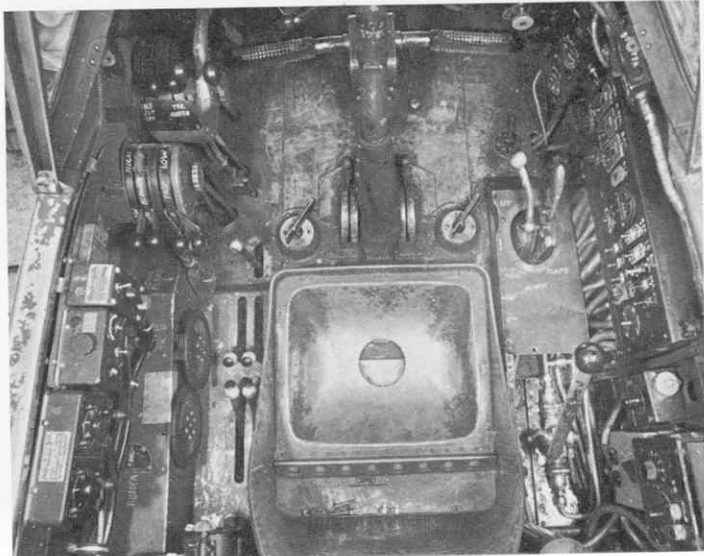
Engine magneto and master switch seem awkwardly placed on the right, just under the windshield. All other electrical controls are along right side.



American radios on left replaced Japanese equipment. Hand wheels are for elevator and rudder trim control. Caution had to be exercised not to kick accidentally the fuel selector valve handles located in front of the pilot's seat.



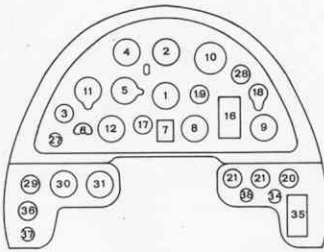
Long handle is emergency hydraulic hand pump. Aluminum box behind it is American equipment for electrically heated flying suit. Many details like this were installed when the Americans prepared captured airplanes for flying, for seemingly an indefinite service life. Unfortunately they remained in service for a very short period.



The cockpit arrangement of DINAH gave a well laid out appearance with uncramped roominess for the pilot. For the maneuverability that DINAH is said to have had, some fighter oriented pilots may have preferred a control stick instead of a wheel. However, due to DINAH's inherent high altitude capability and reconnaissance mission, the control wheel would have an advantage.

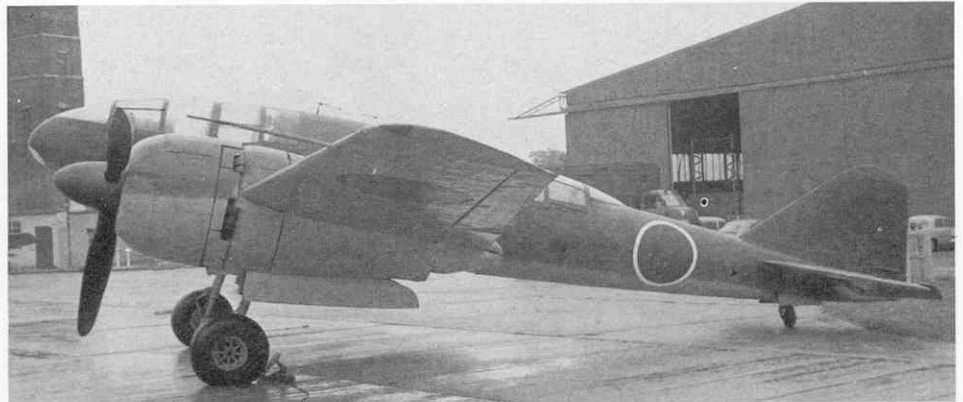
One drawback with DINAH, as was the case with a number of World War II aircraft of many nations, the gear and flap handles were on the right side, requiring the pilot to change hands on the wheel to actuate either system. This required the right hand to be off the throttles longer during the critical phase of takeoff and landing. Thumb lever on wheel was for wheel brakes. Steering was effected by positioning the rudder pedals to the direction of turn which metered differential brake pressure.

Mitsubishi Ki.46 III, DINAH III



Ki.46 III

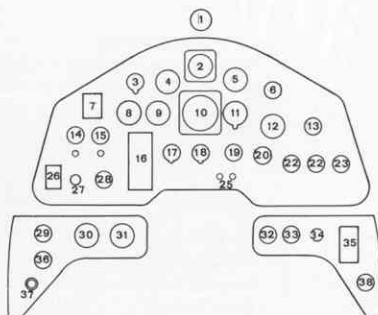
1. Gyro Compass, Type 2
2. Turn and Bank Indicator, Type 98
3. Flight Clock
4. Airspeed Indicator, Type 98
5. Rate of Climb, Type 95
6. Radio Direction Finder
7. Compass Correction Card
8. Manifold Pressure Indicator
9. Manifold Pressure Indicator
10. Artificial Horizon, Type 98
11. Altimeter, Type 97
12. Azimuth Indicator
13. Water Injection Flow Meter
14. ADI Pressure Indicator
15. ADI Pressure Indicator
16. Tachometer, Dual Type 98
17. Exhaust Temperature Gauge, Type 98
18. Exhaust Temperature Gauge, Type 2
19. Fuel Pressure Indicator
20. Oil Pressure Indicator
21. Oil Temp. Gauge, Type 98
22. Oil Temp. Gauge, Type 1
23. Outside Air Temperature Gauge
24. ADI Low Level Warning Light
25. Fuel Pressure Warning Light
26. Vacuum Control Valve
27. Moisture Drainage Valve
28. R.P.M. Synchronizer
29. Hydraulic Accumulator Pressure
30. Fuel Quantity Gauge, Type 97
31. Fuel Quantity Selector Switch
32. Supercharger Oil Pressure Ind.
33. Autopilot Hyd. Press. Indicator
34. Fuel Primer Pump
35. Landing Gear Indicator Lights
36. Brake Pressure Gauge
37. Vacuum Selector Valve
38. Vacuum Pressure Indicator



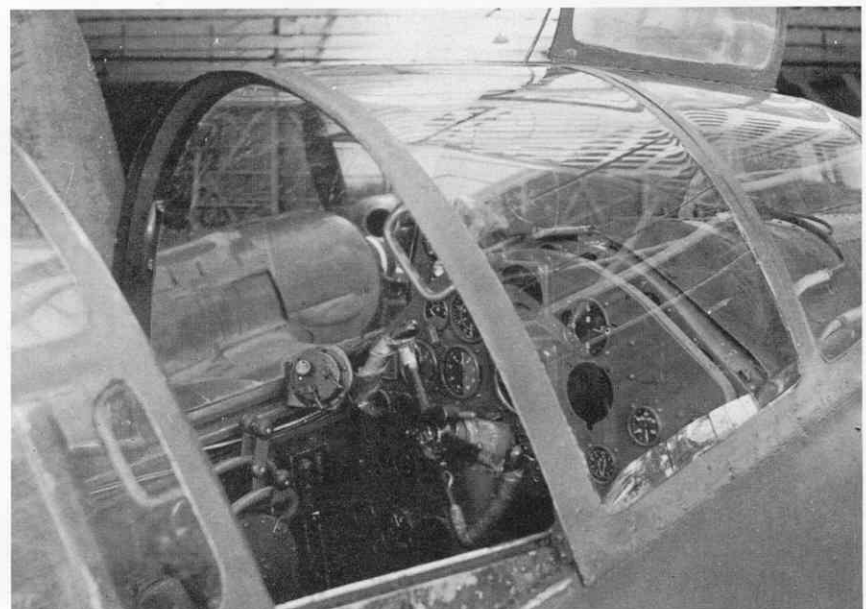
The only surviving DINAH is the Ki.46 III of the Royal Air Force Museum. Most noticeable difference over the Model II was the nonstep windshield.

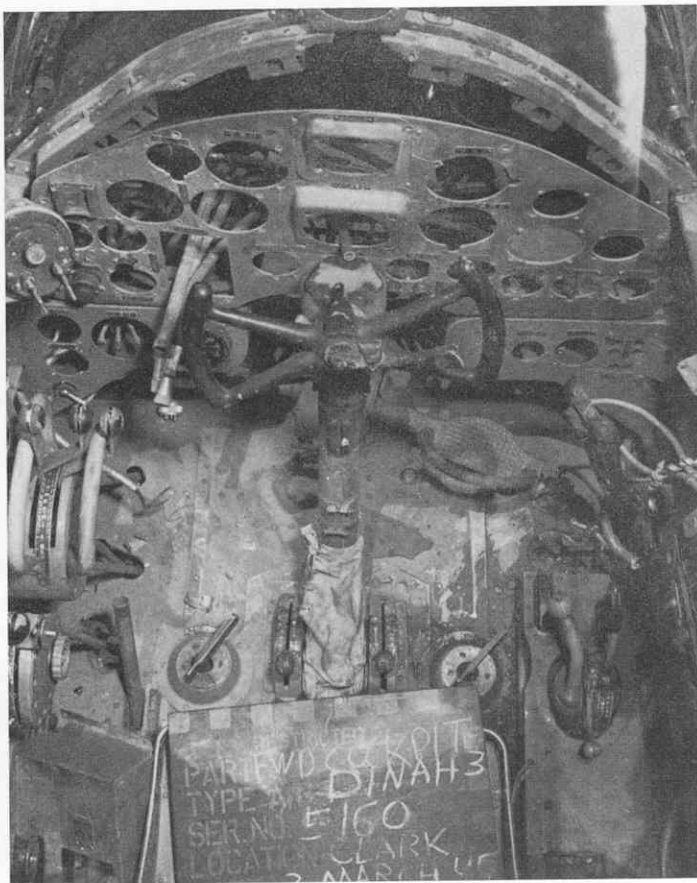


Two photos of the RAF Museum's DINAH give a pilot's impression of this elongated canopy arrangement. It would approximate flying solo from the rear seat of a tandem place airplane.

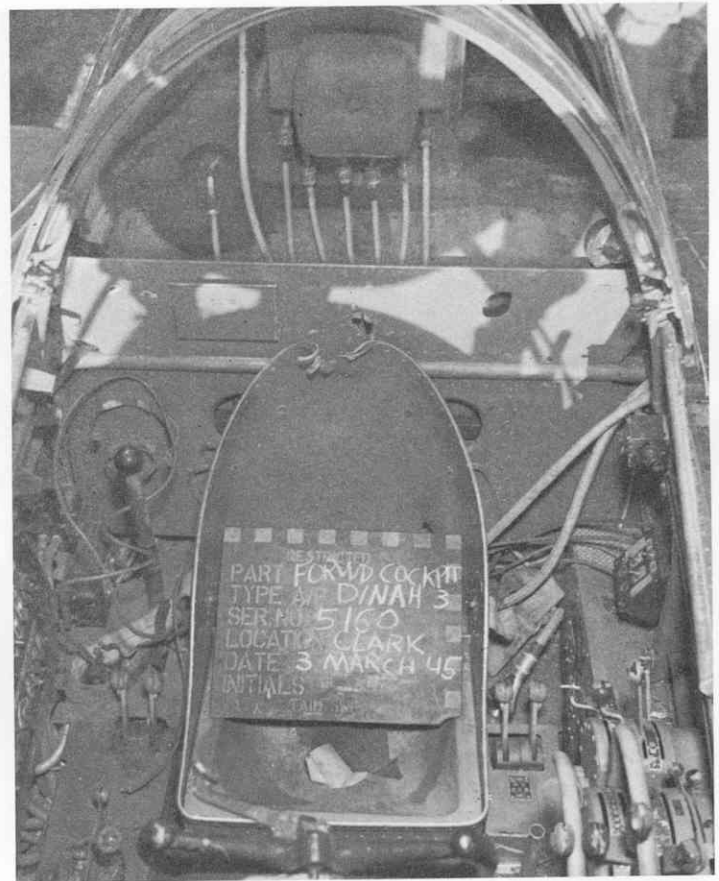


Ki.46 III



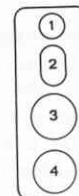


This abandoned DINAH III captured at Clark Airfield in the Philippines had instruments removed by the Japanese and its panel remained loose from the structure. Engine magneto switches on left side are more appropriately placed than on the DINAH II. Bars separate the two throttles and propeller controls are unique and interesting, yet serve a practical purpose for supporting the pilot's wrist while making small power adjustments.



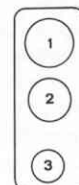
This photo of the DINAH III at Clark shows well the details of the seat and head rest. Only speculation can develop a story about the bullet that pierced the back panel and entered the pilot's seat back.

DINAH III cockpit below is evidence of an Americanized and restored airplane of this later type that may have been flight tested. It too no longer survives.



PILOT'S RIGHT PANEL

1. Aerial Photography Signal Light
2. Landing Gear Warning Horn Cutout Button
3. Flap Indicator
4. Hydraulic System Pressure Gauge

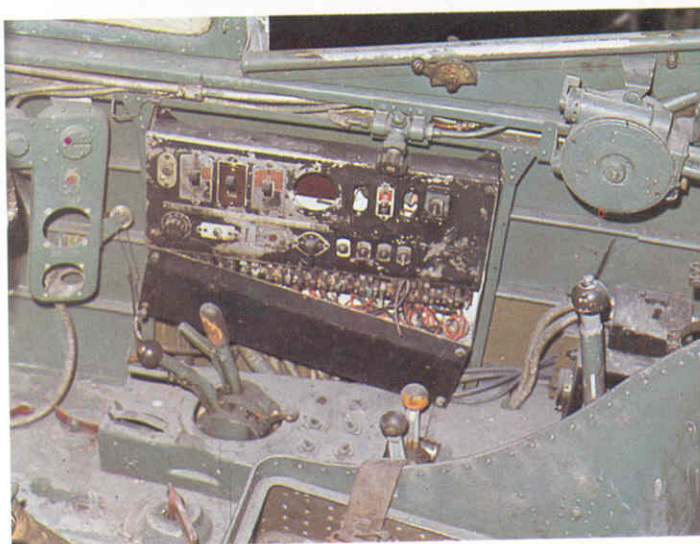
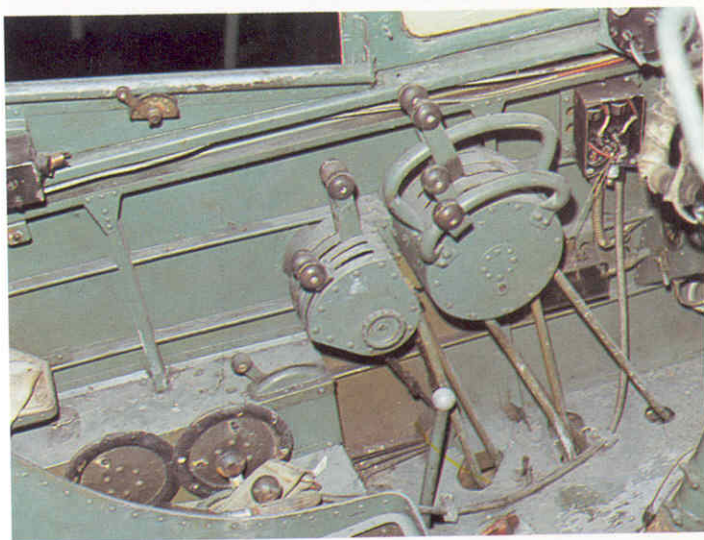
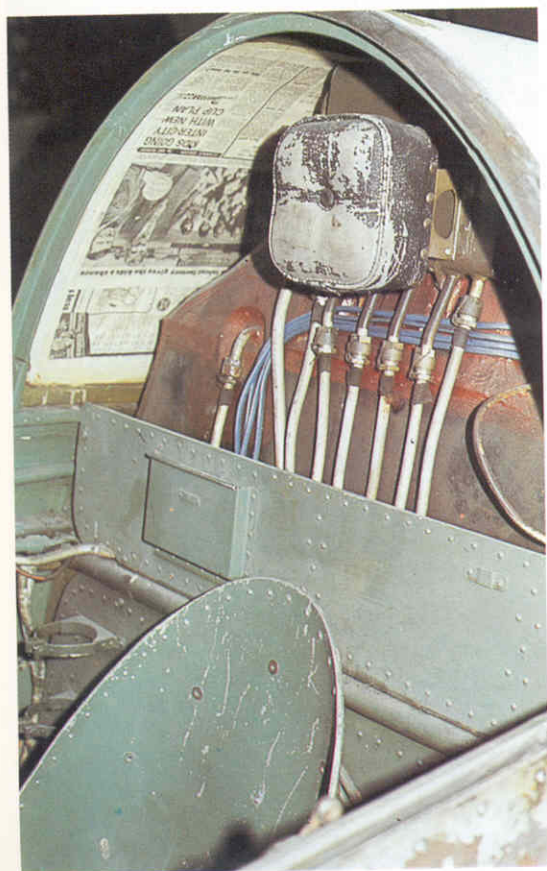
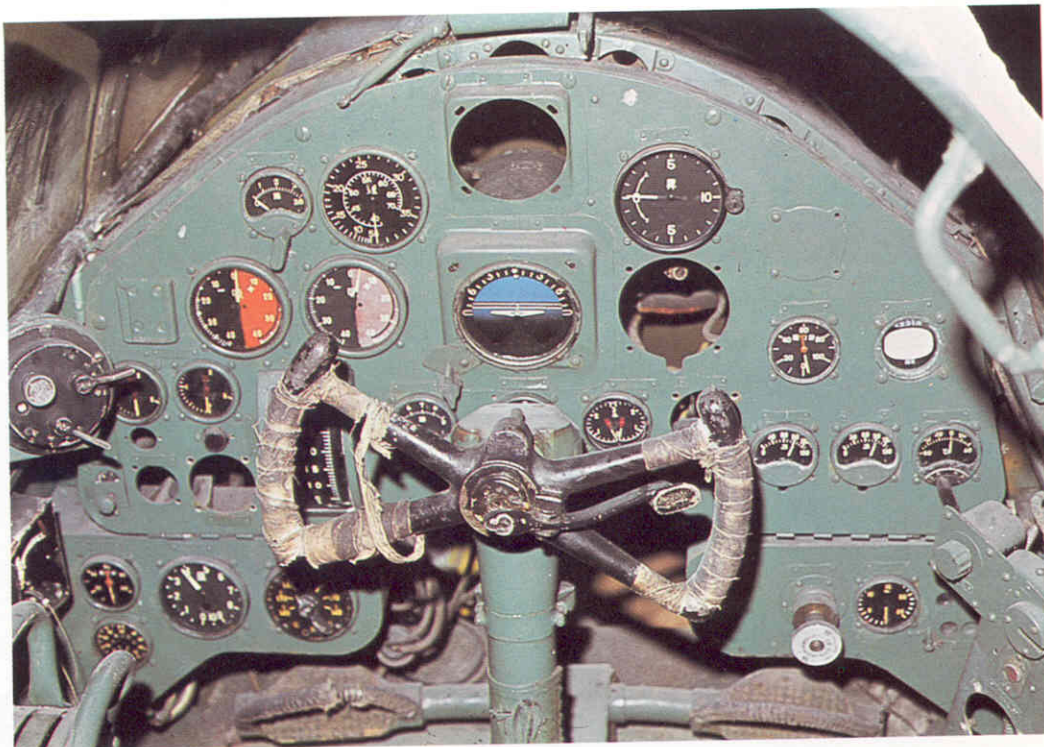


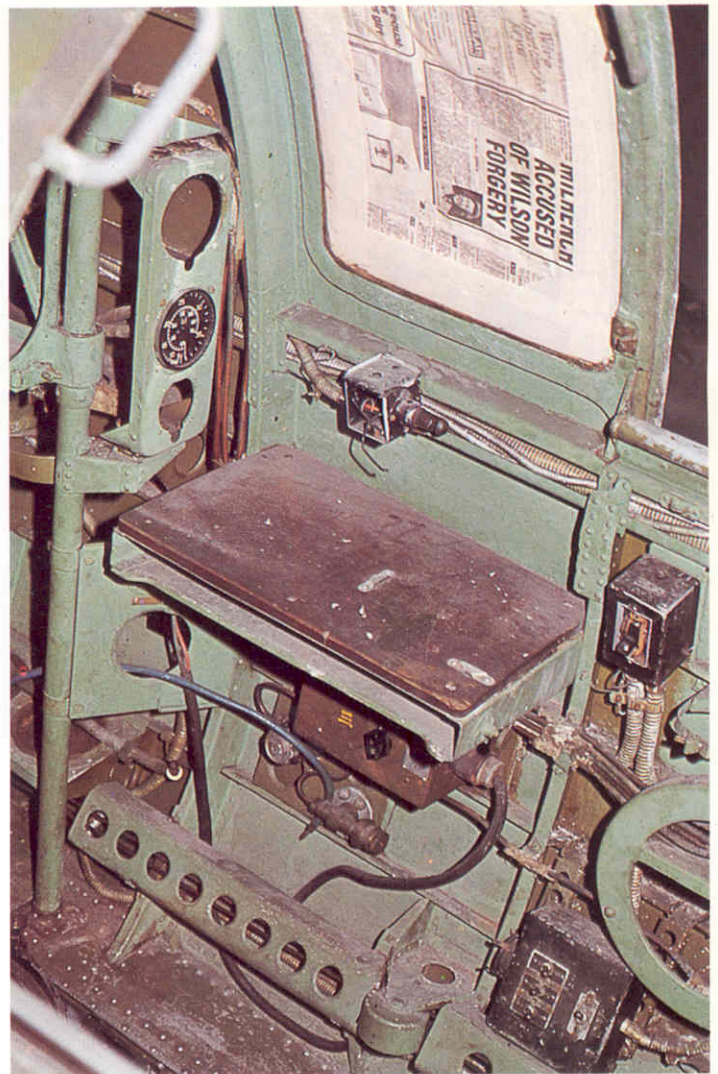
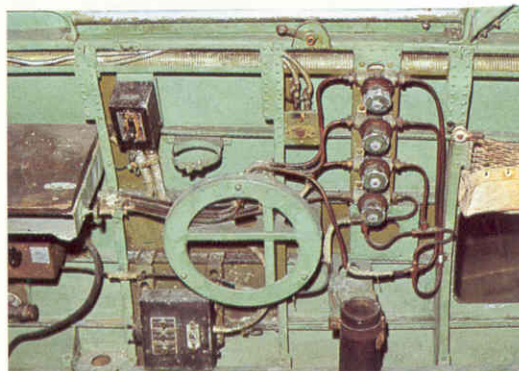
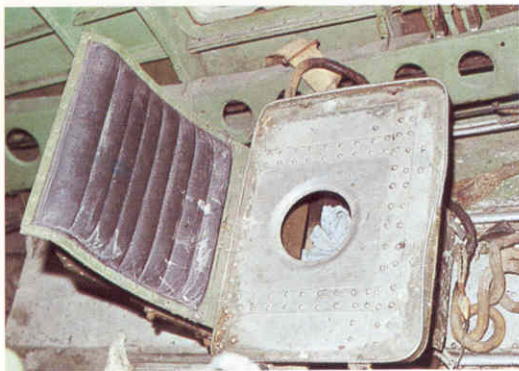
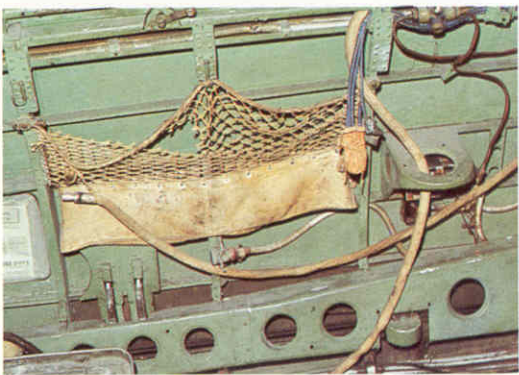
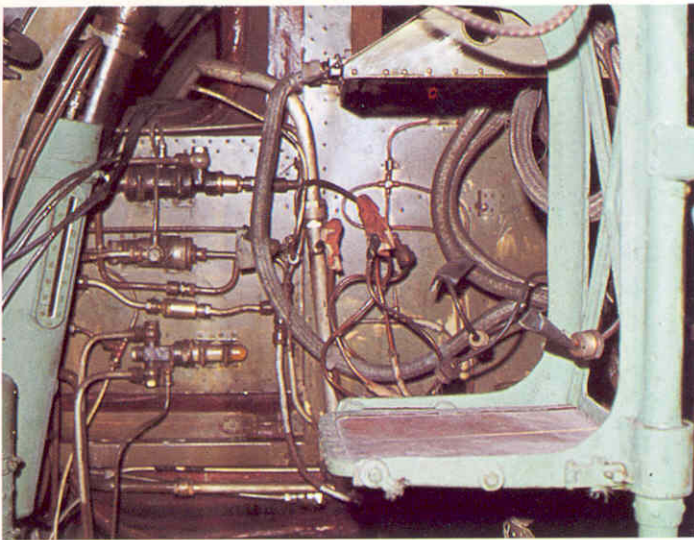
REAR SEAT PANEL

1. Altimeter, Type 97
2. Airspeed Indicator Type 98 Kai
3. Clock, Type 93

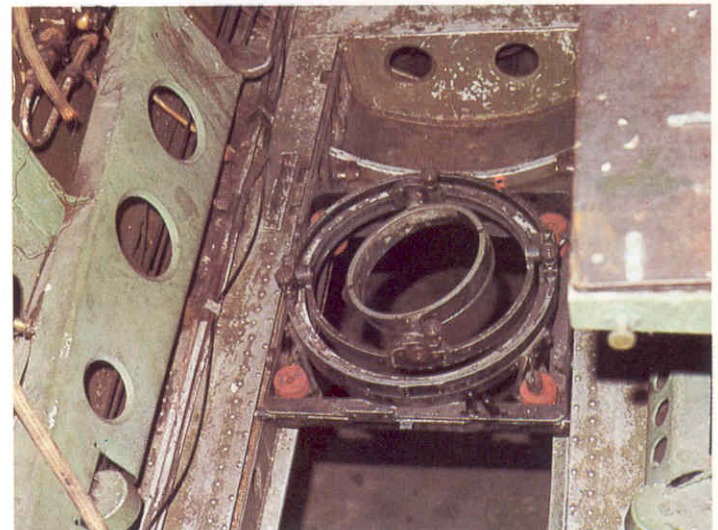
Top Right: All color photos of DINAH are of the Ki.46 III at the RAF Museum, taken December 1975.

A restoration has taken place with this DINAH III but there is no record on the accuracy of the colors that have been used internally. Obvious care was taken to retain originality of cockpit details during restoration. All instruments are Japanese. Left and right side of cockpit are at the middle & lower right, and photo below left shows head rest seat details. Canopy is masked with newspaper in preparation for exterior painting.

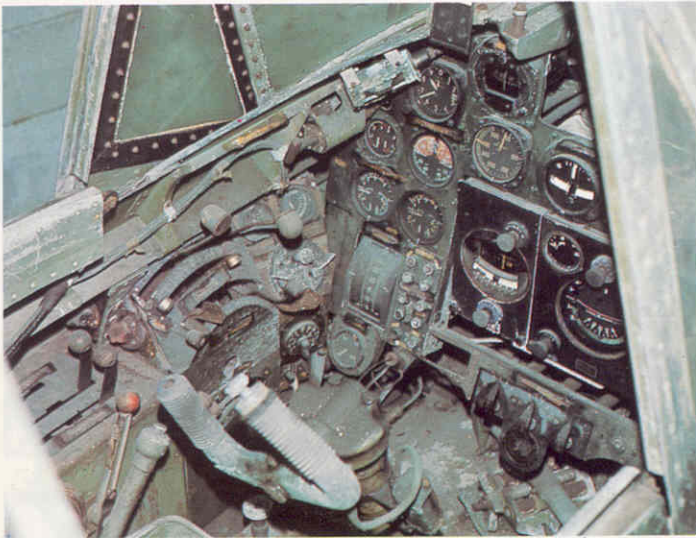




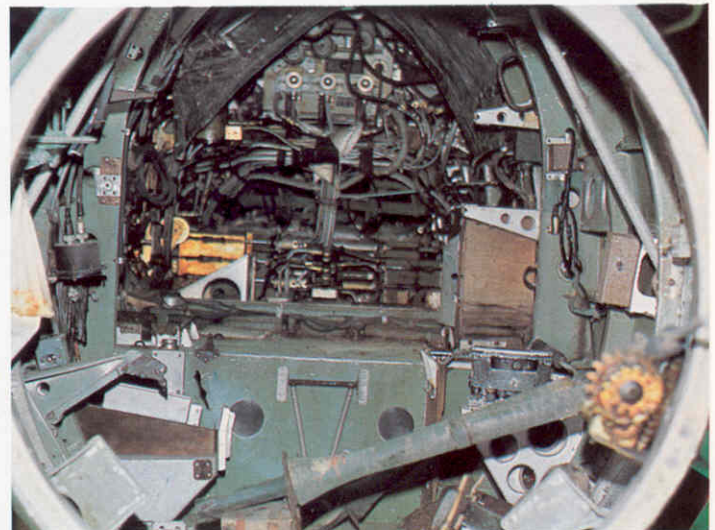
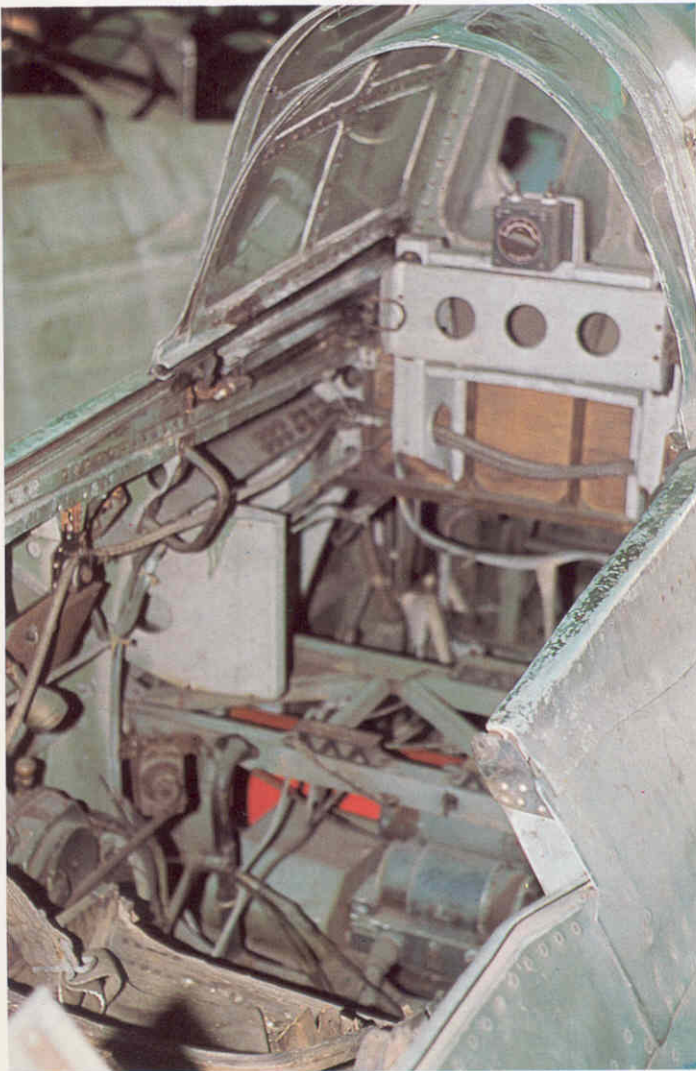
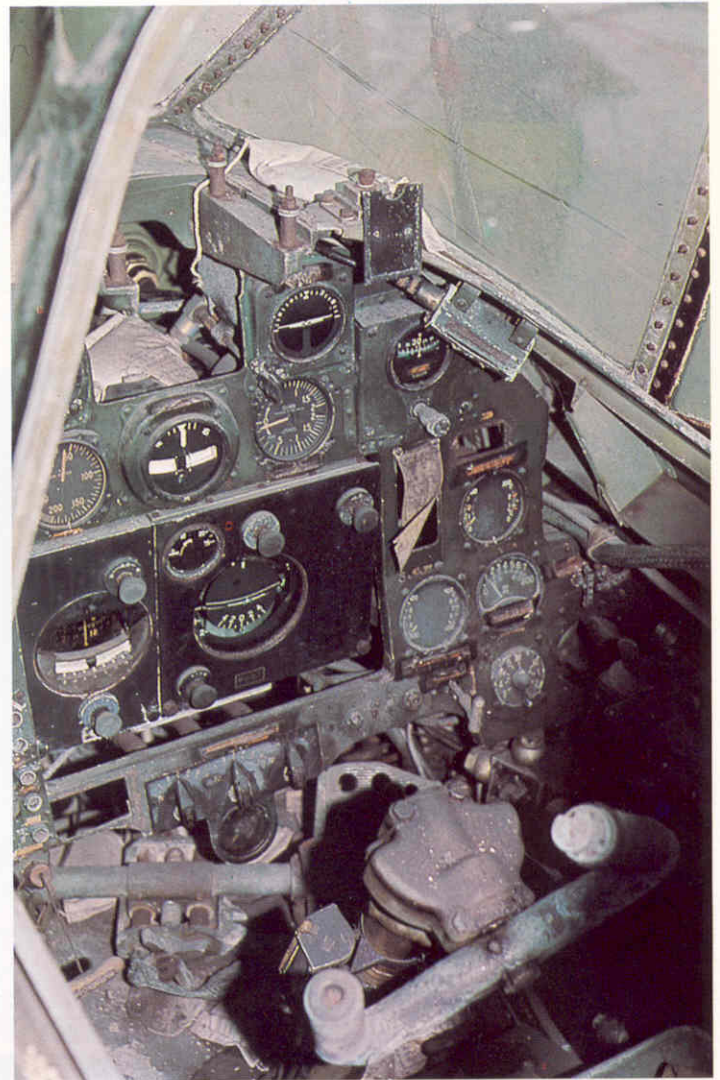
All photos on this page are of the rear seat position for the observer/cameraman. Top left photo shows view forward into the camera bay. Second from top is left side of the rear cockpit. At left is observer's seat and lower left is right side of aft position. Note low-mounted observer's window with drop curtain. Photo above shows observer's instrument panel and window masked for painting. Camera mounting is below, position oriented to the same table surface seen in photo above.



Yokosuka P1Y1, FRANCES

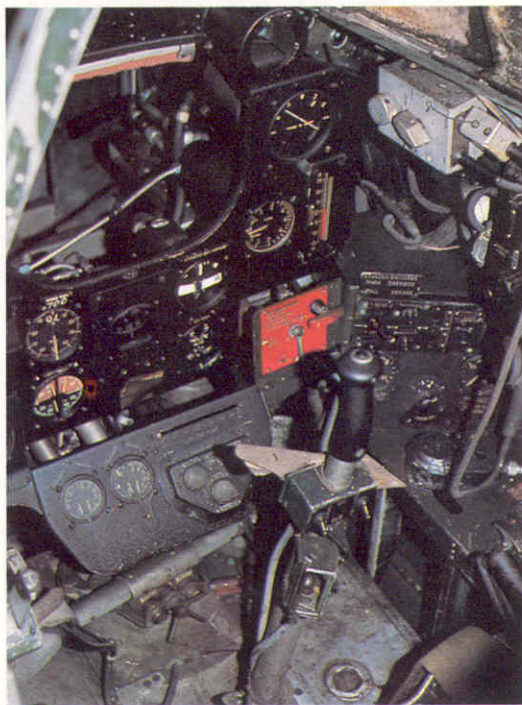


One P1Y1 FRANCES survives and is in the collection of the National Air and Space Museum. This airplane is complete but not restored or assembled. Two views of the pilot's cockpit are above and right, with a view of the rear cockpit looking forward in the photo below. The tip of the seat is just visible at the lower left. For more pictures of FRANCES see page 32.



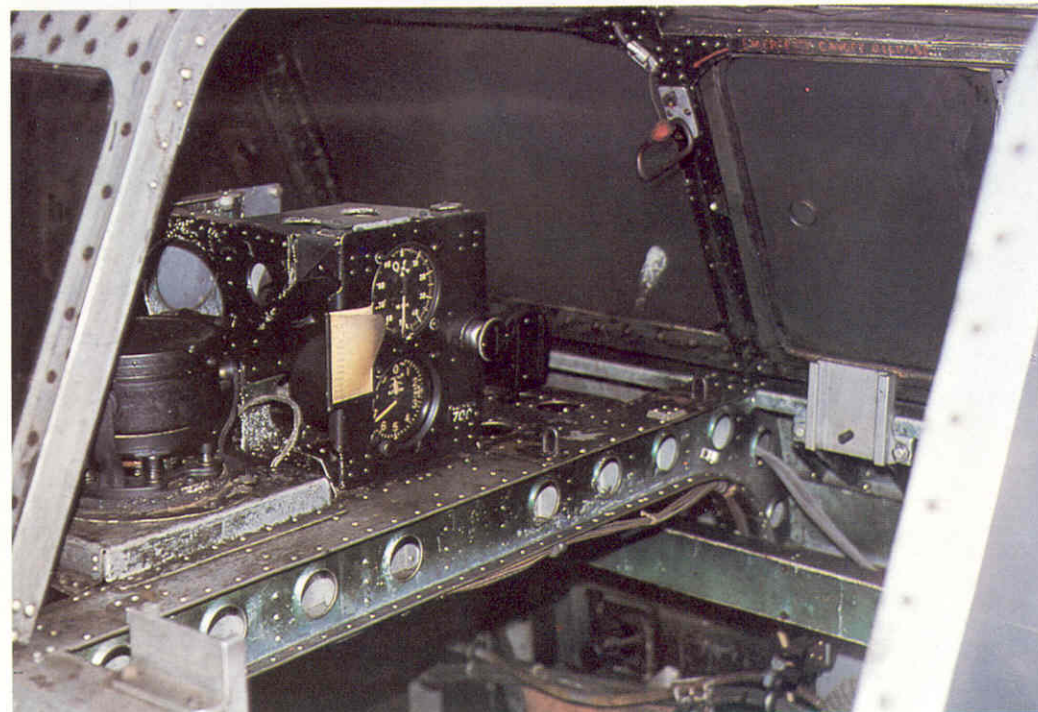
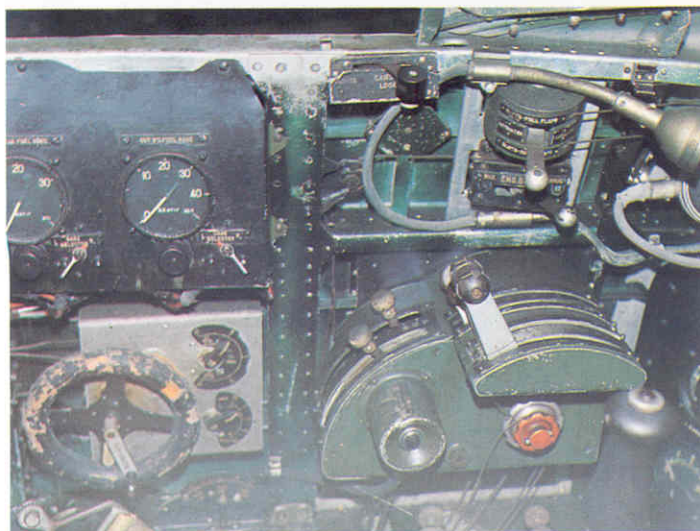
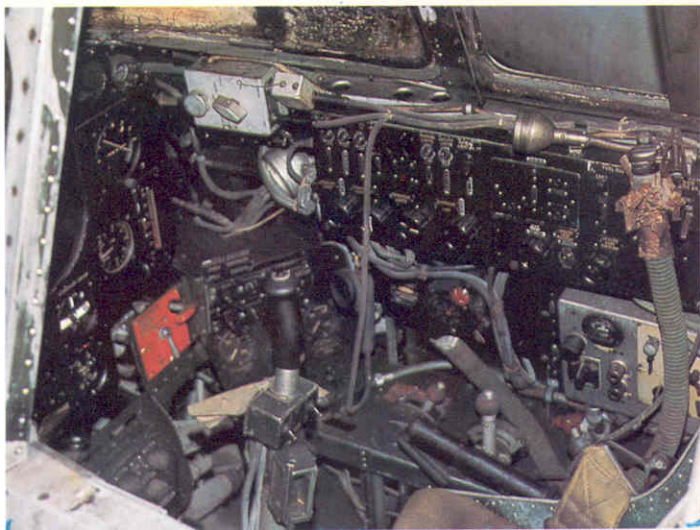
Nose cone is removed and this view shows the nose station looking aft. Back side of instrument panel can be seen. Rusty bevel gear is hand cranked to rotate nose cone to reposition flex gun mount location.

IRVING, Nakajima J1N1-Sa

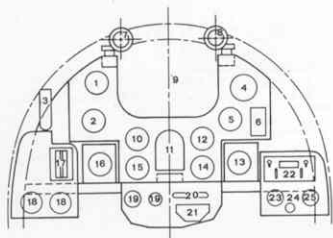


The cockpit of IRVING has a feeling of narrowness, more so than that of the notoriously cramped cockpit of the Zero. Being of comparable size to DINAH, IRVING was about 3,000 pounds heavier. Since it was a fighter, it had the traditional control stick arrangement.

IRVING's rear cockpit may not be configured as it was used by the Japanese. Instruments are an American airspeed indicator and altimeter with remote compass transmitter at the left. Use of the translucent blue/green protective coating shows well in this picture.

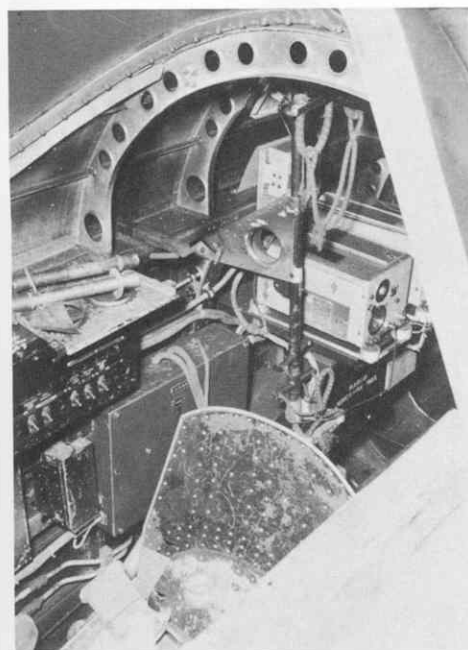


The extensive use of black throughout IRVING's cockpit added further to its cluttered appearance. Top picture is of right side and above view is of left side showing power quadrant, fuel gauges and elevator trim wheel.

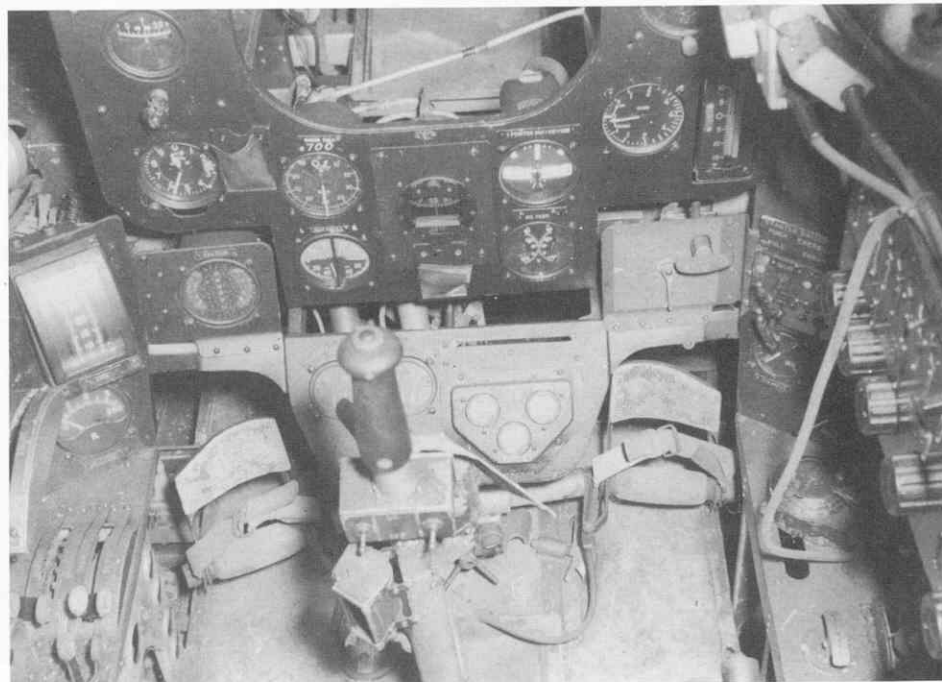


1. Directional Gyro
2. Altimeter
3. Accelerometer
4. Artificial Horizon
5. Rate Of Climb Indicator
6. Inclinometer
7. Electric Circuit Breaker
8. Clock
9. Radar Presentation Panel Location
10. Airspeed Indicator
11. Compass
12. Turn and Bank Indicator
13. Engine Fire Ext. (U.S.)
14. Oil Temperature Gauge
15. Dual Manifold Pressure
16. Carburetor Air Temperature
17. Dual Tachometer
18. Cylinder Head Temperature
19. Fuel and Oil Pressure
20. Flap Position Indicator
21. Landing Gear Position Ind.
22. Engine Electrical Panel
23. Pressure Gauge, Model 3
24. Vacuum Selector Valve
25. Pressure Gauge, Model 3

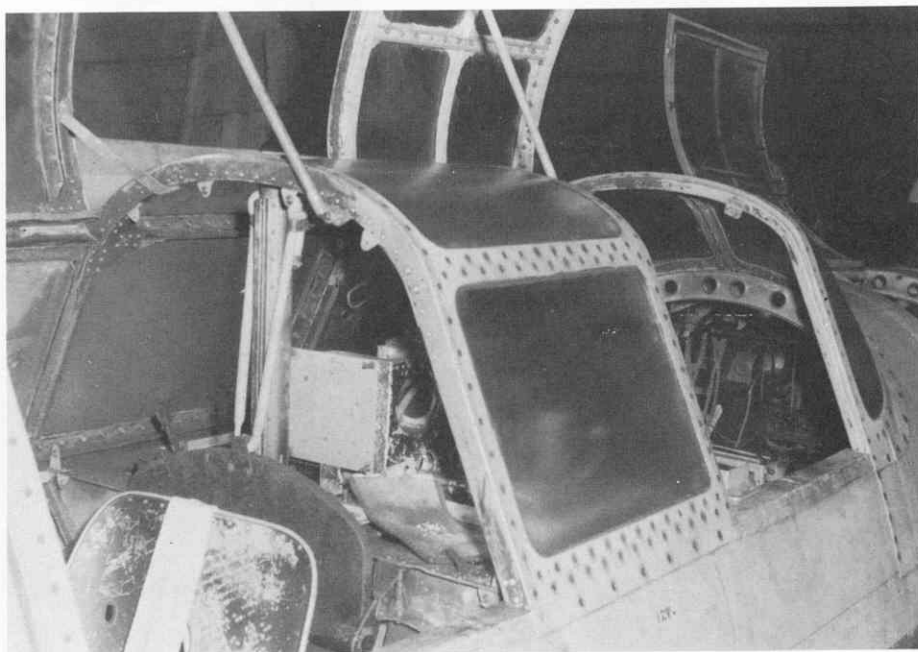
Back of rear seat with American radio in background. Seats were painted with exterior Navy dark green 10 G 3/2 (no FS equivalent) with generous use of translucent blue/green and unpainted areas.



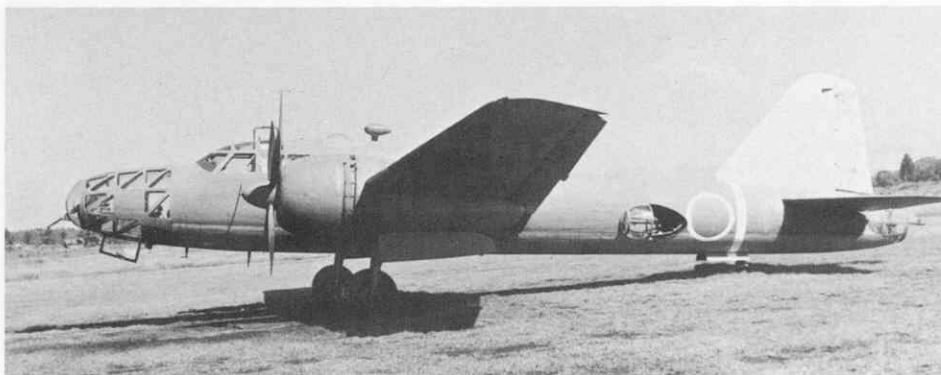
This is the sole surviving IRVING which is retained by the National Air and Space Museum. All internal photographs are of this aircraft. Note the four nose radar antenna of this night fighter.



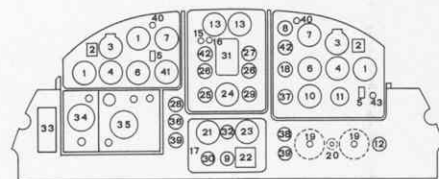
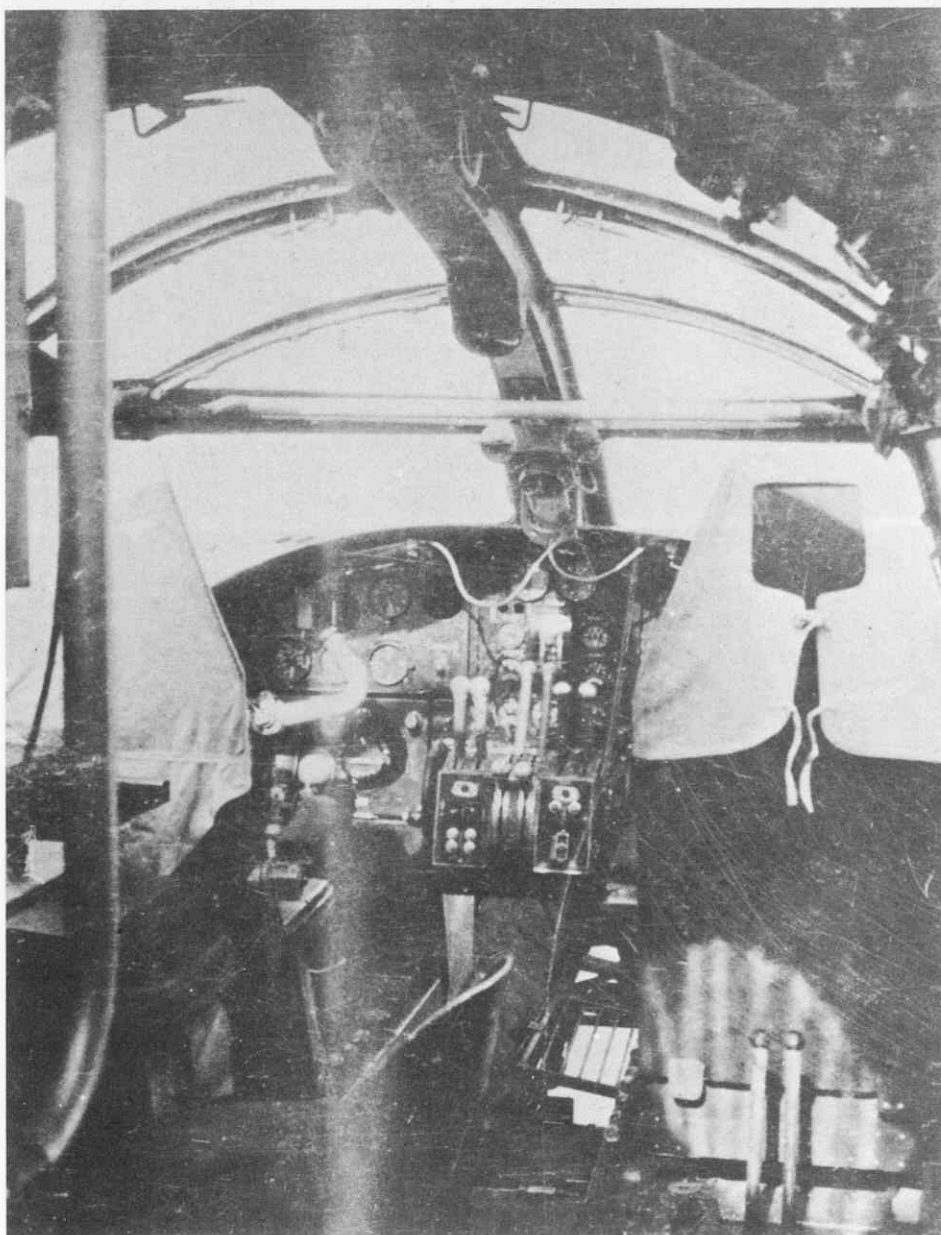
Opening in center of instrument panel was for radar intercept display of unknown configuration. Rear view with open hatches is pictured below.



PEGGY, Mitsubishi Ki.67



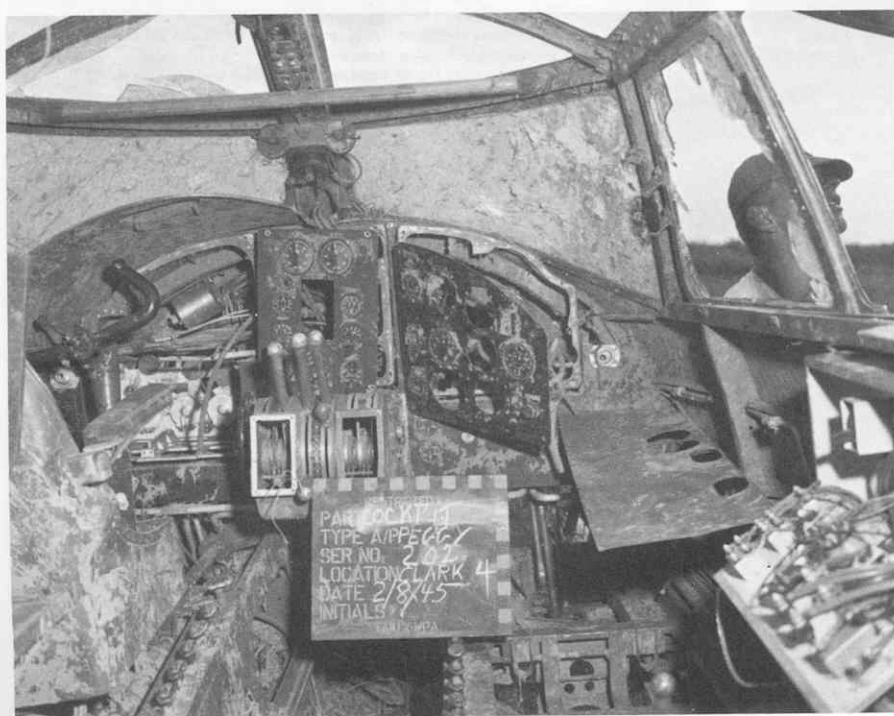
The Mitsubishi Ki.67 Hiryu, code named PEGGY was the best and most versatile Japanese Army bomber of the war. In addition it served as a torpedo bomber, assault troop transport, and specially configured models had a built in explosive warhead for suicidal missions. The Navy also adopted the bomber, naming it Yasukuni. Crew compartment below was laid out well with good visibility forward due to unobtrusive instrument panel and raised seats.



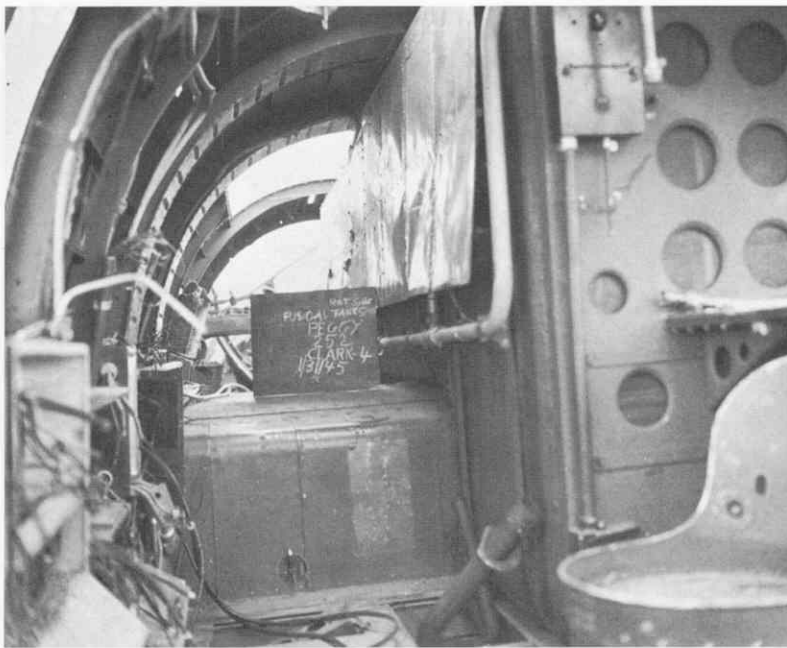
1. Airspeed Indicator, Type 98
2. Compass Correction Card
3. Compass, Type 98B
4. Turn and Bank Indicator
5. Vacuum Control Valve
6. Rate Of Climb, Type 95, Mod. II
7. Altimeter, Type 97
8. Radio Direction Finder
9. Flight Clock, Type 100
10. Artificial Horizon, Type 98
11. Directional Gyro
12. Vacuum Gauge
13. Manifold Pressure Gauge
14. Dual Fuel Pressure Gauge
15. Left Fuel Press. Warn. Light
16. Right Fuel Press. Warn. Light
17. (Located above Control Quadrant)
18. Carburetor Air Temperature
19. Vacuum Pressure Control
20. Vacuum Selector Valve
21. Fuel Quantity Gauge
22. Fuel Quantity Comparison Chart
23. Fuel Gauge Selector Switch
24. Exhaust Gas Indicator, Model II
25. Exhaust Gas Temperature, Type II
26. Oil Temperature Gauge
27. Oil Pressure Gauge
28. Supercharger Oil Pressure Gauge
29. Cylinder Head Temperature Gauge
30. Propeller Synchronizing Gauge
31. Tachometer, Type 98
32. Oxygen Flow Indicator
33. Automatic Pilot Control Panel, T-95
34. Automatic Pilot Directional Control
35. Automatic Pilot Attitude Control
36. Pressure Gauge, Type "su"
37. Hydraulic Accumulator Pressure
38. Hydraulic Pump Pressure Gauge
39. Wheel Brake Pressure Gauge
40. Fire Warning Light
41. Landing Gear and Flap Indicator
42. Outside Air Temperature Gauge
43. Pitot Static Line Drain Valve



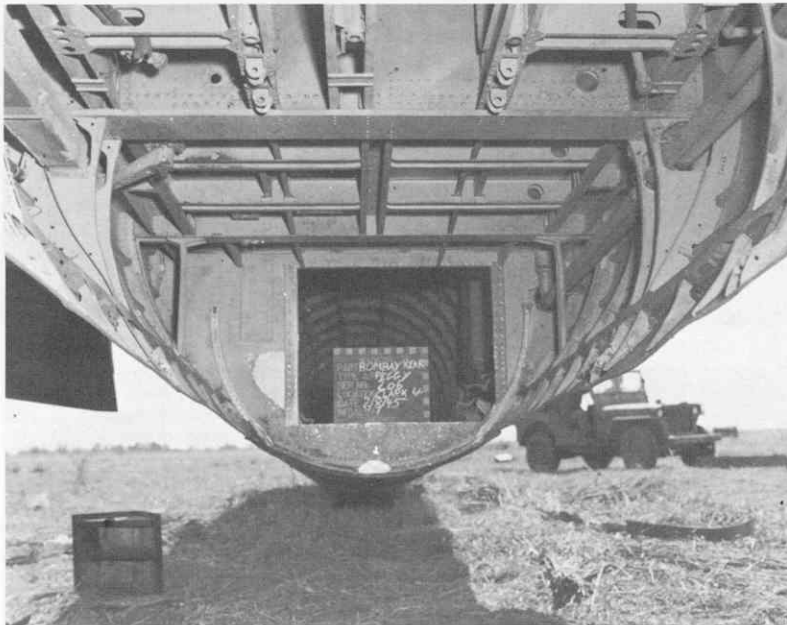
The above Japanese photograph of an early production model PEGGY shows the well grouped cockpit and instrument panel. Controls on either side appear to be reachable by either pilot, a feature not necessary, but convenient. The control wheel had a sturdy appearance.



The PEGGY at left has seen better days, but after its capture at Clark Airfield in the Philippines in early 1945, it was perhaps one of the best examples to be evaluated by the Americans. Many components had been stripped by the Japanese, including the right seat. Positioning of the automatic pilot, off center at the left, was an unusual configuration for a side-by-side pilot arrangement. Note engine magneto switches and some electrical controls overhead. An awkward feature for pilots getting into and out of their seats would be stepping across structural member running fore and aft at seat rail.

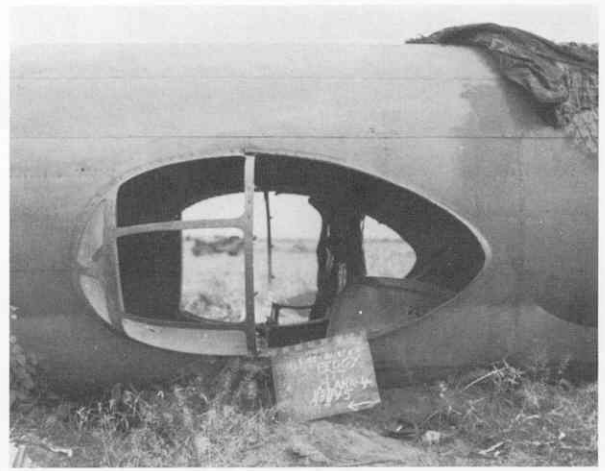


This interior view of PEGGY looks aft from the pilot's location. Much of the rear fuselage is missing. Main wing spar runs through center of the fuselage and fuel cells are constructed around it. Large structure at right appears to be an additional fuel tank with a very large capacity.

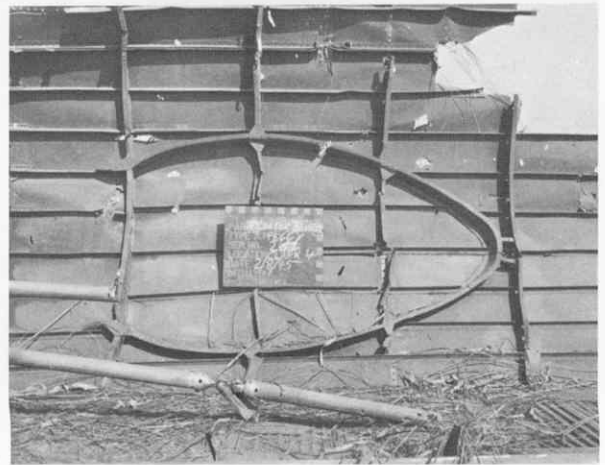


The bomb bay of this PEGGY is clean of all bomb racks and bomb bay doors. Sliding tracks for the door can be seen on the rear bulkhead and in the foreground. Open doors would, therefore, be inside and not inducing drag in the slipstream. Access to rear compartment through the bomb bay was exceptionally large.

Noticeably lacking in this aft view of PEGGY are various pieces of equipment that clutter the inside walls of most bombers. Only the tail wheel retracting assembly is present. The cover for this device is hinged and laid open. Window in cover provides in-flight visual check of tail wheel position by crew members.



Gun blisters on PEGGY were unusual in that they were low on the fuselage side rather than midpoint or high. Gunners were seated for observing as well as firing, which was a more stable position than standing in an airplane evading enemy fire.



Inside view of a gun blister that has been skinned over. PEGGYs configured for special one-way attacks normally had these positions removed. A priming paint has been used throughout, presumably a color close to 34151.



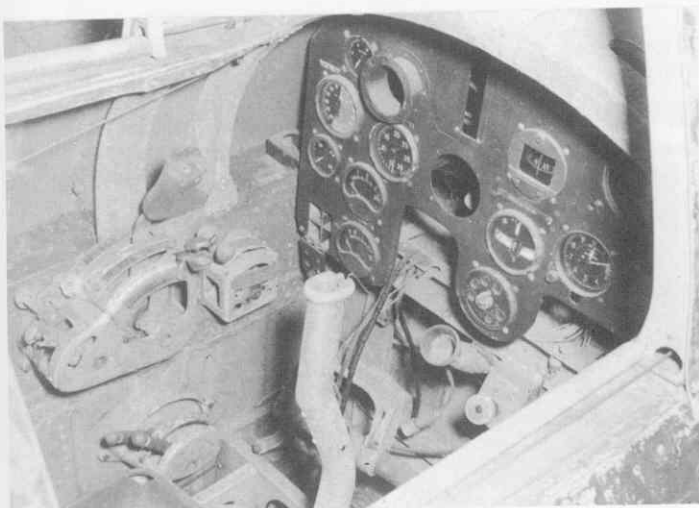
Kyushu J7W1, Shinden



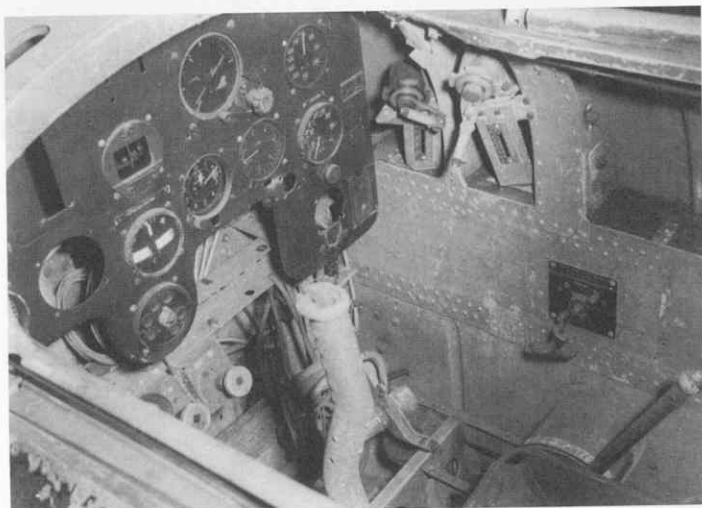
Close-up details of Shinden's open canopy are disclosed in this view of the J7W1 in storage at the National Air and Space Museum. It too is a one-of-a-kind airplane. Its growth potential made it adaptable to a jet engine which would have eliminated its problem of having too much torque on takeoff. Engine was Ha.43 which also powered SAM.



The Shinden canard design had a strong resemblance to the Curtiss XP-55 Ascender. Of the two, only the Shinden was ordered into production. When the war ended, three flights had been made with the first of two prototypes. Despite the deteriorating war situation, production was aimed at 30 per month that would be aided by simplified construction and modernised production methods.



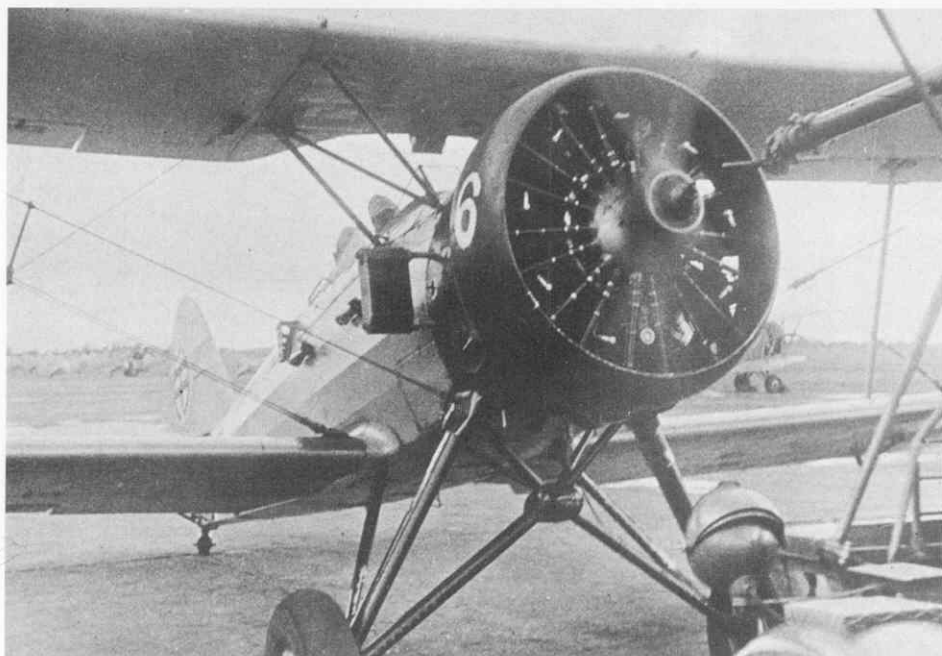
The cockpit of this radical fighter was as basic as all others for that period. Instrumentation and systems were planned to be considerably more advanced. Cooling by fan of the imbedded 18-cylinder air-cooled radial engine was a major problem. Top and lower views are right side of cockpit. Throttle has large grip, while all other knobs appear undersize. Missing instrument is engine boost gauge.



Flight testing in the U.S. may have been considered, for some flight instruments were substituted for American types. Instrument panel was black with 14255 on inside antiglare panel. Rest of interior is 34151. Below shows back of cockpit. Pilot accommodations were comfortable in size due to the large cross-section of the engine. Metal sheeting on cockpit walls was unusual construction.



SPRUCE, Tachikawa Ki.9



Tachikawa Ki.9 Medium-grade (Basic) trainer SPRUCE, cranks up with the aid of a truck-mounted starter unit.

The Tachikawa Ki.9 was the Japanese Army's equivalent to the American Stearman trainer during World War II. Code named SPRUCE by the Allies, the Japanese nickname was "Akatombo", meaning red dragonfly, an appropriate name since they were painted a fiery-orange-yellow. They were powered by a 350 hp engine, compared to 220 hp for the Stearman. Its speed was considerably higher than the Stearman but its flying and handling qualities were reported to be sluggish and heavy.

The photos shown here are part of a sequence of flight and ground training activities at Kumagaya Airfield north of Tokyo. They include partial views of the instrument panel which features the turn and slip indicator in center with bubble compass directly below.

Student flight training included firsthand experience in using starter unit which was accepted standard method for starting most Army aircraft.



Army flying student above gives signal for engine start in ground training phase of flying, while below, instructor briefs student before flight. Winter flying clothes include a cotton hood covering the neck and chin under leather helmet.

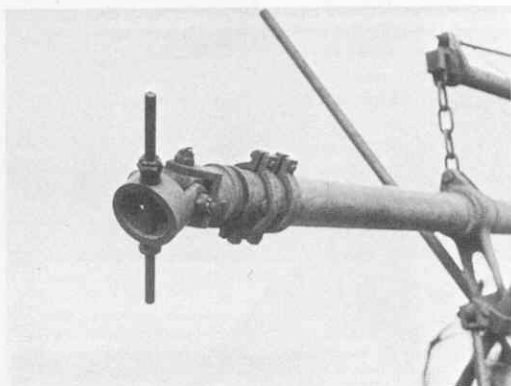


Aircraft Ground Equipment

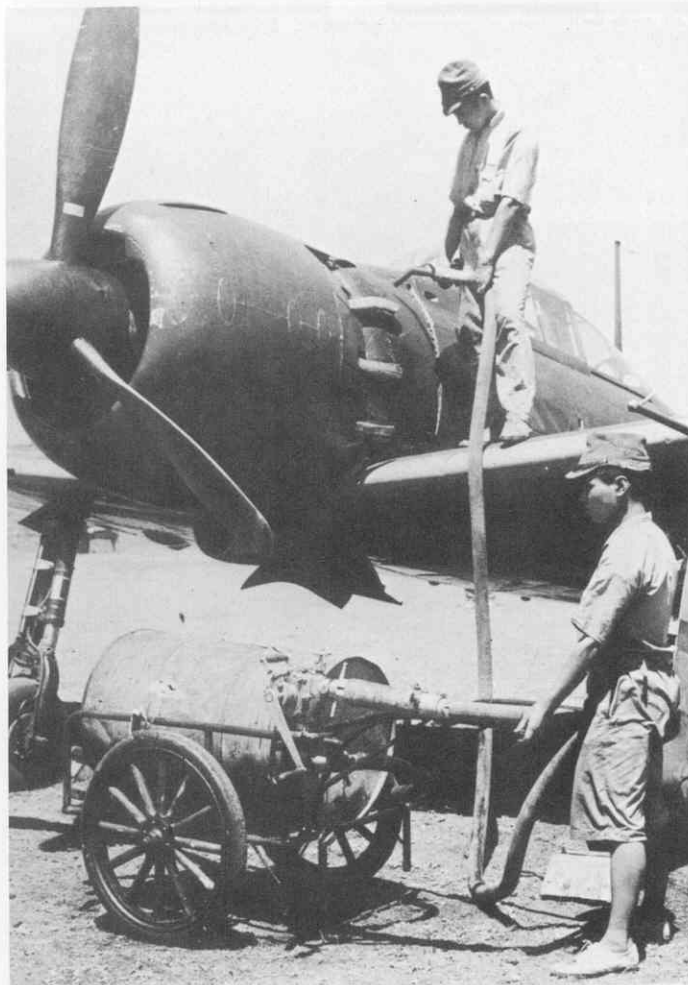
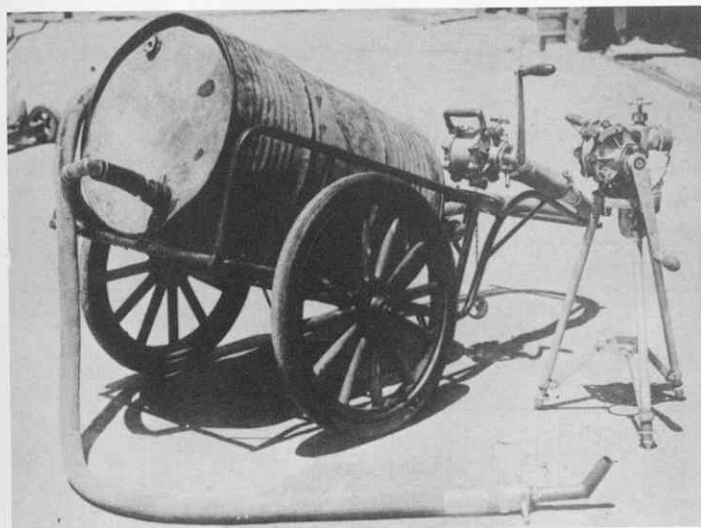


This Toyota GB Starter Truck, complete with palm tree branch and camouflage netting, was photographed in July 1944 at some Pacific Island air strip. Cross

posts in front were for steadying and height adjustment. Below left is close-up of universal joint and connector for propeller dog.



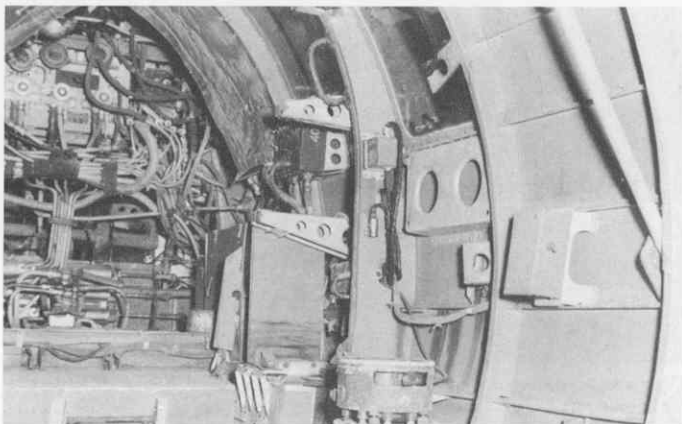
Below and right is two wheel cart and hand pump for aircraft reservicing from 55 gal drums.



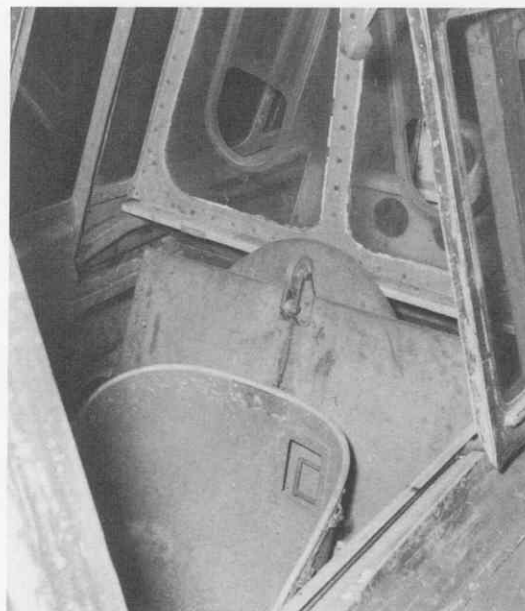
FRANCES, Yokosuka P1Y1



This radar equipped FRANCES is the only one of its kind that remains. It is presumed to have been built by Nakajima as a P1Y1c.

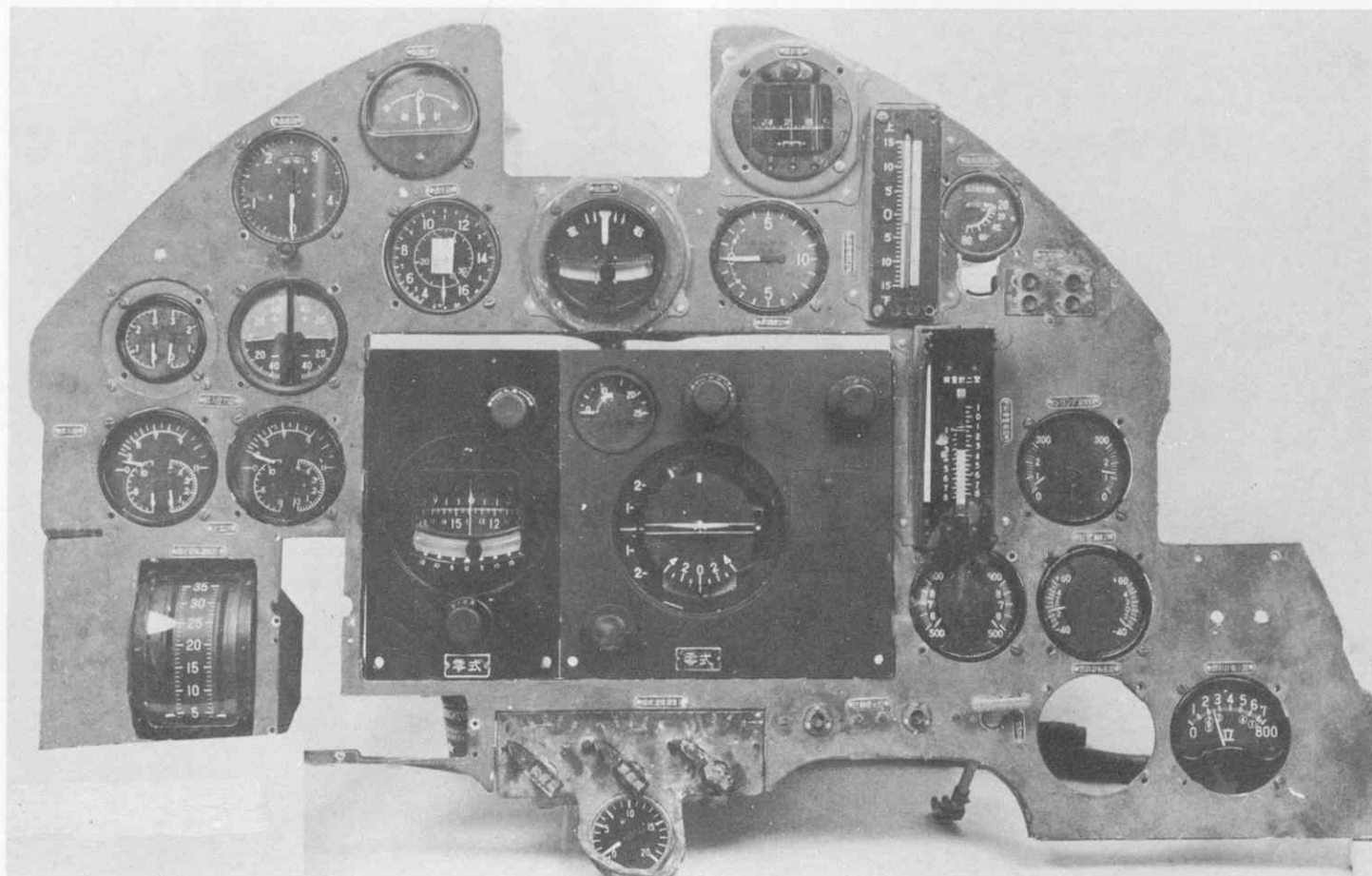


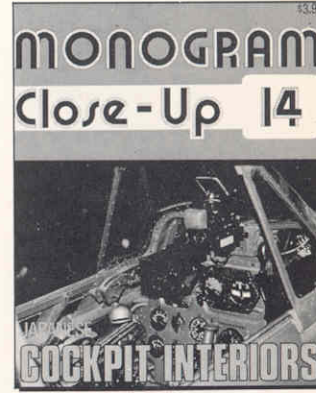
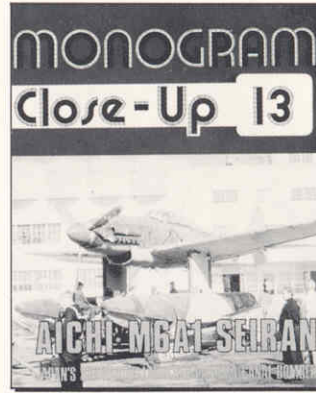
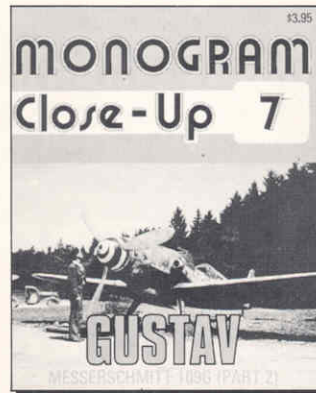
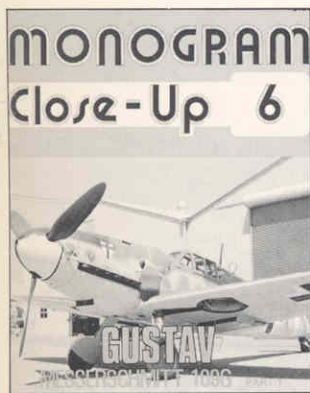
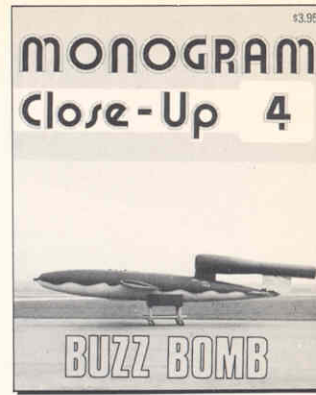
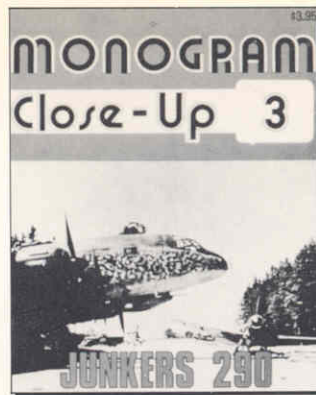
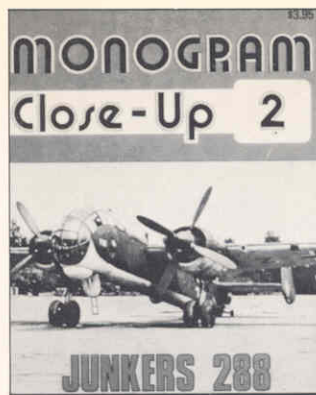
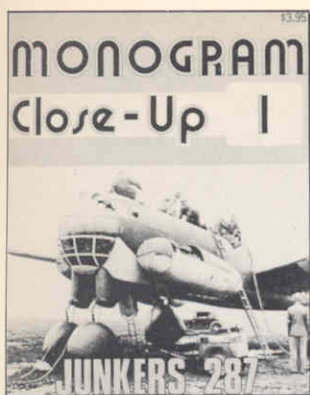
Left inside wall of nose compartment looking aft. Color approximates 34151.



Above: Typical of many Japanese tandem seated aircraft is this type of windscreen behind pilot's seat of FRANCES. This reduces flow of air when both fore and aft hatches are open in flight. Pulley wheel is for a spring loaded cable to assist with seat adjustment.

Below is an exceptionally clear photo showing instrument panel of FRANCES. Panel is interior green 34151 with black instruments and automatic pilot is Navy Type-O, manufactured by Tokyo Koku Keiki. For more pictures of FRANCES see page 23.





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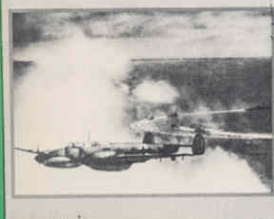
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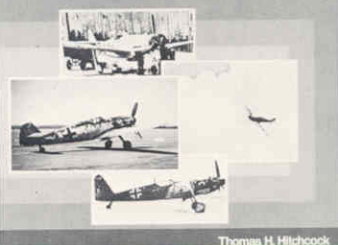
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