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SUMMARY OF BRITISH MODIFICATIONS TO BOEING B17-C AIRCRAFT.

A. MODIFICATIONS INCORPORATED AS A RESULT OF THE ORIGINAL B17-C CONFERENCE HELD AT BOSCOMBE DOWNS ON APRIL 28, 1941.

1. Install Very Pistol firing socket in roof of cockpit.

The bracket for this socket was incorporated by Boeing Co.; sketches of the bracket are available there. If the Air Corps selects this as a desirable modification, the top power turret may require its re-location.

2. Install Very Pistol holster in cockpit.

No modification work is necessary on this item.

3. Install Top and Bottom Identification Lights and Wing Tip formation Lights.

Mounting provisions were incorporated at Boeing Co.; sketches are available to cover these provisions and the wiring necessary.

4. Install British R3002 Radio.

Provision only to the extent of one bracket was made at Boeing Co. The British are able to install this item with very little modification work.

5. Oxygen System.

(a) Incorporation of British Mark X central regulator with manifolded high-pressure piping between bottles and manifolded low-pressure distribution system between crew members. This requirement came sometime after the Boscombe Downs Conference.

U.S. Army Air Corps Materiel Division Representatives were in attendance at the meetings in which oxygen system deficiencies and new requirements were decided upon. Since oxygen system equipment is U.S. Government furnished, the policies relative to this equipment for later B-17 aircraft will be specified by the Materiel Division.

(b) Wire-Winding of Oxygen Bottles and Strengthening of Bottle Mountings.

Bottles have been wire wound but practically no revision work has been done on bottle mountings - these have proven adequate for operational purposes thus far.

It is believed that desirable equivalents or alternates of the above modification will have been initiated for Model B-17-E by those who have carried back to the U.S. the information concerning difficulties experienced thus far in England.

6. Incorporation of Portable Oxygen Equipment.

No aircraft modification work is required.

The latest British oxygen mask has a connection for the emergency bottle carried by the crew member located just above the bayonet fitting where the extension hose from the airplanes supply is hooked on. A feed pipe from this emergency connection passes inside the main hose to the mask where it can feed oxygen to the wearer irrespective of flow in the main hose. The wearer has only to turn on the emergency bottle to utilize flow of emergency oxygen.

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7. Incorporation of external Glycol Spray Equipment for Pilots' Windshields and Bombsight Window.

Photographs of the installation of this equipment have been forwarded to Boeing Co.

8. Stowages for Lap-Type Parachute Packs.

Photographs of these stowages have been forwarded to Boeing Co.

B-17-E stowages, if required by the Air Corps, will no doubt be made to suit the redesigned airplane and the type of parachute to be carried by its crew members.

9. Provisions for Sutton Pilots Harness.

Such provisions were incorporated by the Boeing Co. but no harness has been installed on any B-17 airplane in England. The Air Corps Safety Belt has proven entirely satisfactory for all operations thus far conducted.

In view of the adequacy and simplicity of the U.S. type seat belt it would appear inadvisable to incorporate further provisions for Sutton type pilots harness as such an installation would result in considerable work on Model B-17-E.

10. Addition of fireman's axe in Radio Compartment.

No modification work is necessary. The axe is considered a very desirable item of equipment.

11. Addition of First Aid Kits.

No modification work necessary. Air Corps kits are no doubt being installed on model B-17-E.

12. Addition of Small Graviner fire extinguishers at each crew station.

No modification work is necessary. In view of the limited amount of inflammable material in the model B-17-E airplane, it would appear reasonable to retain the standard air corps hand fire extinguishers now being installed on these aircraft.

13. Incorporation of Electrical Wiring for heated flying clothing at all crew stations.

Photographs of plug-in points and information on electrical load requirements of this clothing have been forwarded to Boeing Co.

14. Camouflage of Aircraft Exterior Drawings to cover the painting scheme required are available at the Boeing Co.

15. Addition of ground starting plug-in socket in #3 <sup>NACELLE</sup> ~~model~~.

Provisions and wiring were incorporated at Boeing Co. Sketches of these provisions are available at Boeing Co. Air Corps Representatives have commented on the convenience and desirability of this item of equipment.

B. MODIFICATIONS INCORPORATED IN ADDITION TO THOSE COVERED BY SECTION "A". THESE ITEMS HAVE RESULTED FROM TRAINING OR OPERATIONAL EXPERIENCE AND, FOR THE MOST PART, HAVE BEEN INCORPORATED BY THE PERSONNEL OF 90 SQUADRON, POLEBROOK.

1. Revision of Mounting of Pilots' Seat Armor.

This difficulty has been anticipated; hence the necessary revision is incorporated in B-17-E.

2. Revision of Camera Mount and Door, Incorporation of Camera Heat Wiring and Camera Remote Control.

No drawings of this change or drawings of British camera equipment have been forwarded. General information has been kept to cover the changes made. The camera equipment is U. S. Government furnished; hence no production line changes will result unless specified by Materiel Division.

This modification is not difficult or extensive; it should be reasonable to leave standard air corps equipment in all aircraft on the production line.

3. Add floating ration packs and stowage.

This modification is very simple - no drawing information is necessary.

4. Addition of Gun Heater Units and Wiring for their Supply.

Information covering this change has been carried to the U. S. by the Air Corps Ordnance Section Representative.

Most of those concerned have agreed that gun heating is desirable as a means of eliminating a marginal condition.

5. Stowage for Aldis Signal Lamp.

No information is necessary for the duplication of this modification should it be required later.

6. Addition of Auxiliary Clamps and Sleeves in Engine Exhaust Systems.

These modifications are being incorporated in model B-17-E aircraft as a result of previous service experience.

7. Installation of "Sandwich Panels" on windshields, Sliding Panels and Bombsight Window.

These items are being incorporated in Model B-17-E. Materials and workmanship on British-installed sandwich panels have been so poor that it has not been reliably determined whether this means of eliminating frost formation is dependable under all flight conditions.

8. Addition of Stops on Transfer Selector Valves.

Information covering this change has been forwarded to Boeing Co. The change is a very simple one to incorporate.

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9. Installation of Astrograph Mounting Bracket above Navigator's Table.

This change has been very recently initiated; photographs have been taken of the bracket installation for forwarding to Boeing Co.

10. Installation of British Electro Magnetic Microphones and Amplifiers at All Crew Stations.

Information covering interphone system requirements was taken to the U. S. by Air Corps Representatives.

11. Addition of Sea Anchor and Jackknife in dinghy rafts.

No modification work necessary.

12. Installation of Gun Slide Stops.

This change is not applicable to B-17-E.

13. Addition of Cold Air Anti-Frost Piping in Commander's Dome.

This change is not applicable to Model B-17-E.

14. Addition of Fire Controller's Seat below Commander's Dome.

This change is not applicable to Model B-17-E.

15. Addition of "Rototherm" and "Accosin" Thermometers in Rear L. H. Window of Navigators Compartment.

Photos of this installation have been taken for purposes of forwarding to Boeing Co.

The British claim the Air Corps thermometers are as much as 260. in error at low temperatures. Whether this is true and whether the new thermometers they are installing are more accurate is not known.

16. Addition of Quick-Release Pins in Navigators Seat.

This change is not applicable to Model B-17-E.

17. Addition of "Shell" Dressings and Medical Kits.

No modification work is required.

18. Stencilling of Fuel and Oil Specification Numbers on Doors Covering Tank Filler Caps.

It appears very desirable that the name and specification of all required fluids be stencilled on filler cap doors or near filler caps of all fluid tanks on the Airplane. Considerable confusion results among ground crews and much chance for error exists when this information is not available.

19. Replacing of Bomb Door Limit Switch Bracket Rivets with Bolts.

This change will be forwarded to the Boeing Co.

of Drain Holes in Starter Cases.

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21. Raising of Rear Hand Rail Ropes in Bomb Bay to Clear 1100 lb. Bomb Fins.

The rear guide ropes are raised to within about 8" of the top body skin. Crews consider this a very desirable change.

22. Move Airspeed and Altimeter Instruments.

This change is not applicable to B-17-E.

23. Replacing of U. S. Army Navigators Compass with P-4 Observers Compass.--Bubbling.

No modification work is required for this exchange. The British claim the U. S. Compass bubbles at high altitude. No information on its reliability was given by them.

24. Drain and Flush Bomb Door Drive Gear Boxes and Repack with Anti-Freeze Lubricants.

This change has been transmitted to the Boeing Co. Experience has proven that the gear boxes of this system must be filled with a very freeze-proof grease and that drive screws must be very lightly lubricated with freeze-proof thin oil or malfunction will result.

25. Replacing of U. S. Air Corps Pilot's Compass with Air Ministry Compass, Ref. 6A/1079, leaving bottom dial and reflecting mirror.

Photographs of this installation have been forwarded to the Boeing Co.

26. Incorporation of Auxiliary Engine Oil Pump Scavenge Lines.

Air Corps and Wright Co. representatives have been advised of the difficulties which caused decision to make this change. It is believed that this matter is being dealt with on B-17-E.

All operational flying thus far conducted has been without this modification. The first installation of this modification appeared questionable from the standpoint of having the flexible oil line pass so near the exhaust collector ring. The tachometer drive also appeared very questionable.

27. Addition of an Armor Plate Bulkhead at Station 8 of the Body.

(This change may be considered not applicable to Model B-17-E.)

28. Extension of turbo Control Livers and Readjustment of Control Linkage Adjacent to Regulator.

British operational crews have complained of the sensitivity of this control.

The above list covers changes which the British have made to date. A number of other changes have been mentioned in various British modification lists. Most of these were of a minor nature and were not considered important by the squadron.