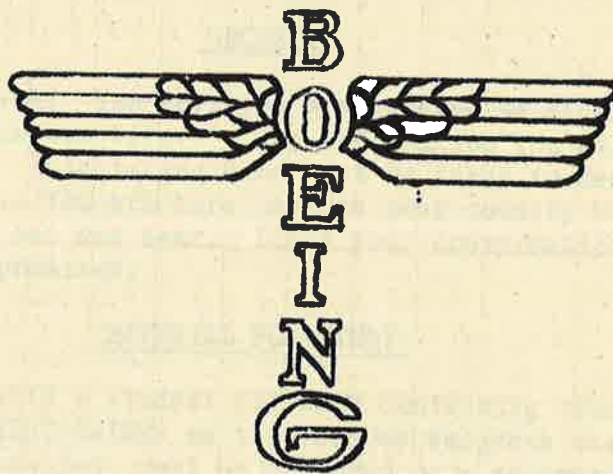


FLYING FORTRESS SCHOOL
INTRODUCTORY PAMPHLET
STUDENT REGULATIONS



FLYING FORTRESS SCHOOL
BOEING AIRCRAFT COMPANY
SEATTLE, WASHINGTON

NAME: Cpl. HARRY YAMKA

BADGE NO: 1179

17. Air Raid Precautions:

- a. See notices on Bulletin Board.

18. Motor Vehicles:

- a. Privately owned motor vehicles must be registered in Detachment Office. Vehicles will not be driven over parade and recreation area. Vehicles will be parked in designated places only.

19. Mail:

- a. The mail will be distributed to Class Leaders from the mail room at all times set forth on Bulletin Board.

20. Daily Schedule:

First call	5:00 AM
Reveille	5:15 AM
Clean-up	5:20-5:40 AM
Breakfast	5:45-6:30 AM
Sick Call	6:45 AM
School Starts	7:00 AM
Recess	8:15&9:40 AM
Dinner	11:00-11:45 AM
School Starts	12:00 PM
Recess	1:15 & 2:40 PM
School Ends	4:00 PM
Exercise	4:15
Sick Call	4:00 PM
Supper	6:00-6:45 PM
Lights Out	9:00 PM
Bed Check	11:00 PM

(All men will be in bed and remain there)

21. Guard:

- a. Every student will do patrol duty. Information concerning patrol duty will be furnished by the Charge of Quarters.

22. Students going to and from the school buildings and barracks will be formed by the class leader and marched in military formation and manner.

23. Emergencies:

- a. In case of an emergency or illness during off duty hours, contact the Charge of Quarters.

24. Fire Arms:

- a. Privately owned fire arms will not be allowed on this Post.

Holton H. Pribble
 HOLTON H. PRIBBLE
 Captain, Air Corps.
 Commanding

HEADQUARTERS TRAINING DETACHMENT
 ARMY AIR FORCES TECHNICAL TRAINING COMMAND
 BOEING AIRCRAFT FACTORY
 6600 Ellis Ave., Seattle, Washington

April 16, 1943

SPECIAL BULLETIN)

TO:) ALL MEMBERS OF THIS DETACHMENT.


1. Beginning FRIDAY, APRIL 16, 1943 the following daily schedule will go into effect:

ALL PRECEDING TIME SCHEDULES ARE REVOKED.

DAILY SCHEDULE:

First Call	5:00	AM
Reveille	5:05	AM
Clean-up	5:05 to 5:30	AM
Breakfast	5:30 to 6:30	AM
Leave for School	6:45	AM
School Starts	7:00	AM
Recess	8:15 & 9:40	AM
Dinner	11:00 to 11:45	AM
Morning Sick Call	11:30	AM
Mail Call	11:30	AM
Leave for School	11:45	AM
School Starts	12:00	N
Recess	1:15 & 2:40	PM
School Ends	4:00	PM
Afternoon Sick Call	4:00	PM
Physical Training	4:15 & 5:30	PM
Mail Call	5:30	PM
Supper	6:00 to 6:45	PM
Lights Out	9:30	PM
Bed Check	11:00	PM

By order of the Commanding Officer:


 HOLTON H. PRIBBLE
 Captain, Air Corps,
 Commanding.

FLYING FORTRESS SCHOOL
BOEING AIRCRAFT COMPANY

B-17F

STUDENT NOTEBOOK

Name Cpl. Harry Yamka
Badge
Group 33-12-2 No. 1179

GENERAL

This booklet contains additional information on the Flying Fortress. Included herein are Trouble Charts, Inspection Guides, Procedure Guides and Study Guides.

INSTRUCTIONS

The Study Guides and reading assignments for the following subjects are for preparation study. The answers to the Study Guide questions must be written on a separate sheet of paper to be given to the Instructor on each subject.

<u>Code No.</u>	<u>Subject</u>	<u>Maintenance Manual Pages</u>	<u>Operation Manual Pages</u>
1.1	Wing, Tail & Nacelle	152-170	---
1.2	Engine & Flight Controls	99,117, 132-134, 264-270 316-321, 542-551	38,44,46,63,101 ---
1.3	Landing & Tail Gear	220-238, 505-519	---
1.4	Fuselage & Equipment	38,41-43, 78-79, 86, 192- 200, 204, 205, 377-386, 464- 472, 496	9-10, 17, 23-24, 26 31-32, 54-55
1.5	Handling	47-79	---
1.6	Loading	---	102, 107
2.1	Engine Operation	239-248	63-101, 112-131
2.3	Induction System	180, 249-263, 482-483 487-489	46, 99, 113
2.5	Fuel System	79, 284-302, 523-535	13, 16, 50, 100
2.6	Oil System	80, 122-124, 247-251 274-284	12-15, 46, 49
3.1	Hydraulic System	82-84, 107-108, 129, 140- 141, 212-215, 323-335, 499, 525-532.	----
3.2	Oxygen System	409-410	----
3.3	Heating & Ventilating	109, 143, 240, 398-404, 491- 495, 616-617	31, 60-61
3.4	Fire Extinguisher System	86, 405-408	----
3.5	Vacuum & Deicer System	343, 387-397	----
3.6	Anti-icer System	387-395	----
4.0	Electrical	336-375, 584-625	----

From the schedule a student may determine when he attends a class on any subject. The answers to the Study Guide questions must be given to the Instructor of the subject at the beginning of the class.

(Note: The above applies only to subjects taught in the classroom. No outside preparation is necessary before going to the Hangar.)

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BOEING AIRCRAFT COMPANY
B-17F

STUDY GUIDE - WING, TAIL & NACELLE

1. Where and how are the engine mounts attached to the airplane?

The engine mounts ARE ATTACHED by means of four $\frac{5}{8}$ inch bolts AT the fire wall, ARE INTERCHANGEABLE.

2. Are all engine mounts interchangeable with each other?

Yes

3. How are the wing flaps operated?

Electricity

4. How is the wing tip attached to the outer wing panel?

Single bolt in each terminal.

5. How is the outer panel attached to the inner panel?

Panel bolts, taper pins.

6. How is the inner wing panel attached to the fuselage?

TAPER PINS.

7. How is the aileron attached to the airplane?

By hinges AT four places.

8. What is the first operation in the removal of the wing flap?

Full downward position.

9. Into how many sections is the anti-drag ring broken?

Three sections.

10. How do these sections fit together?

Plus fasteners

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STUDY GUIDE - FLIGHT & ENGINE CONTROLS

1. Which control system is dual throughout?

Elevators

2. By what means can all of the surfaces be locked?

All the surfaces can be locked by a control handle in the cockpit on the floor between the pilot and co-pilot.

3. What reason is given for using the locking devices only instead of lashing the control?

The locking systems are designed to fail before failure of the controls and then provides protection against unobserved failures.

4. What are the purposes of the messenger cable?

The messenger cable is to complete the circuit of the cable.

5. Give the steps involved in the removal of the flight cables.

1- Release all cable tension by loosening the turnbuckles, then remove the pulleys and fair leads.

2- To remove the cables around the aileron control quadrant, remove the spacer bolt which acts as a stop for the movement. The quadrant may then be moved either way to facilitate cable assembly.

6. Why must the tab drums be taped or clamped during removal?

To prevent unwinding.

7. What 3 cable sizes are used in all of the surface controls? Surface control cables are $\frac{3}{16}$ -inch 7x19 extra flexible preformed steel, with the exception of the servo unit cables which are $\frac{1}{8}$ -inch 7x19 extra flexible. The trim tab cables are $\frac{3}{32}$ -inch 7x7 extra flexible preformed steel.

8. What position should the controls be in during the rigging procedure?

In neutral position.

9. Give the control cable tensions for the B-17F. Cable tensions indicated are based on balanced temperatures condition and applied tension in general must be greater when rigging at higher temperatures and less when rigging at lower temperatures. Correction for temp. will vary with cable size, direction of travel and location in airplane.

11. How are the cowl flaps actuated?

Hydraulically

12. Why do we have a removable section in the fixed cowl?

For access to the cowl flap actuating cylinder and to the carburetor

13. How is the nacelle cowl attached to the airplane?

Deus fasteners.

14. What is the purpose of the gap between the nacelle cowling panel and the closed flap?

To permit continuous cooling of the exhaust collector ring regardless of flap position.

15. What should this gap be?

.26

16. How would you repair deep scratches in the cowling?

Deep scratches should be dressed down carefully and the Alchad coating should be worked over the exposed alloy sheet with a burnishing tool.

17. How are the support ring sections joined?

Draw the top and bottom section together enough to latch the clamping bolts and then tighten hose clamps.

18. Is the "dorsal fin" removable from the airplane?

No

19. How is the vertical stabilizer attached to the airplane?

Steel taper pins.

20. How do you reach the lower spar terminals of the "horizontal stabilizer"?

It is reached from within the plane.

21. List the order of assembly of the tail surfaces.

Carefully level plane, install vertical surfaces first in order to facilitate handling and access

22. What precaution must be taken with the rudder quadrant mount when the rudder is removed?

Secure the lower portion of the tongue tube against the tension of the control cables.

- 10.. Where are the throttle, mixture, supercharger, and propeller pitch controls located in the ship?
On the engine control stand.
11. What form of rust preventive is used on all of the cable in the B-17?
Heavy rust preventive compound, U. S. Army Specification No. 2-82
12. What cable system extends forward of the firewall?
The propeller pitch control cables to the governor.
13. What device is installed to give control in the event of broken cables on all controls except mixture?
Spring-operated devices.
14. What makes it possible to "break" cables for disassembly?
Turnbuckles and adjusting links.
15. Why shouldn't cables and pulleys be cleaned in solvents?
It would remove the rust preventive compound.
16. What cable size is used for all engine controls?
*3/32-inch 7x7 extra flex preformed steel,
Specification AN-RR-C-43.*
17. Where should cable splices be made?
Near a pulley or fairlead
18. Rough adjustments for engine control cables tension are made by what means?
Fine adjustments are made by what method?
Rough adjustments with cable links and final adjustments with turnbuckles.
19. Why will rigging tensions vary slightly in different localities?
Tensions will vary in different localities because of temperature.
20. What type of control do we have forward of the firewall for operation of the throttle and mixture controls?
Rods and bell cranks

3- For access to the silicon pulley bracket in the wing gap at station 1, remove the heating duct section.

4- When cable drum and actuating strut operation is used, it is necessary to lock the cable around the drums with a clamp in order to prevent unwinding of the cable from the drum after disconnection. The cables on the elevator trim tab drums, due to single cable operation for separate drums, should be taped to prevent unwinding. Tape may be used in any case where clamps are inconvenient or impossible to use.

Sept. 4, 1942

FLYING FORTRESS SCHOOL
BOEING AIRCRAFT COMPANY
B-17F

STUDY GUIDE - LANDING & TAIL GEAR

1. What type of landing gear is used on the B-17F?

Electrical retractable landing gear, cantilever type

2. Describe the manual retracting mechanism.

An emergency manual operation is provided for each wheel separately. Hand crank torque connections for the main gear are on each side of the forward wall in the bomb bay.

3. Describe the procedure for removing an oleo. *1- Release AIR from cylinder, 2- disconnect brake hose at BRAKE AND remove torsion link fittings, 3- Remove top bolt of strut, 4- Release retaining plate at torsion link fitting, 5- draw complete Shock Absorber Assembly from strut, 6- Remove AIR valve body, 7- pour oil from cylinder AND remove packing nut.*

4. What is the primary purpose of the neoprene bumpers?

The purpose of the neoprene bumper is to prevent landing gear from creeping.

5. List the steps in a logical order for changing a tire.

1- Deflate tire forcing tire head and side casting ring inward, 2- Remove retaining ring and lift side casting ring from assembly, 3- Then proceed as with any drop center wheel.

6. Why does the landing gear switch have an 'OFF' position?

The landing gear switch has an 'off' position for a safety device.

7. How is the lower limit switch adjusted? *1- Extend the wheel fully with hand CRANK until stops are in contact and note position of CRANK, 2- Retract wheel four turns of hand CRANK, 3- Loosen the four shield mounting screws on lower limit switch and adjust the shield in the slotted holes until the switch opens the circuit at this position of the landing gear.*

8. How does the expander tube type brake operate?
By forcing hydraulic fluid into tubes causing them to expand against brake drum.

9. What clearance must be maintained on the brakes?

.010 - inch.

Sept. 4, 1942

10. Give the complete procedure for replenishing the oleo.

With piston fully compressed in cylinder fill start with hydraulic fluid, Spec. 3586, up to level of AIR VALVE. To insure no AIR is trapped, work piston up and down several strokes. Check level and install AIR valve Assembly.

11. How should the drag link be installed?

When drag link is installed place head of bolt inward.

12. What is the purpose of the torsion links?

To transmit the torsional loads from the cantilever to the landing gear strut.

13. What provision is made to protect the retracting motor if the landing gear should jam?

To protect the motor a slip clutch is used.

14. Why are the trunnion pins not interchangeable?

They are machined for that hole and their key holes are drilled.

15. How is the tail gear retractable?

By an electric motor and screw, manual by hand crank

16. What is the purpose of centering switch?

To make sure tail wheel is in the right position for retraction.

17. How does the anti-shimmy brake operate?

By friction caused by a compression spring.

18. Explain the purpose of the shear bolt.

A safety mean.

19. What would happen if the tail gear should be partially retracted without support?

It would damage the mechanism.

20. How and why is the tail gear locked?

By a pin in the gear for taxiing purposes, landing and take-off.

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STUDY GUIDE - FUSELAGE AND EQUIPMENT

1. What type construction is the fuselage of the B-17?

All metal semi-monocoque design.

2. How would you remove the molded plastic nose? How clean?

A- Slipping the lining from retaining clips and then removing the 32-bolts. B- Soap and water, Kerosene and naphtha.

3. What are silica gel crystals?

Used to draw moisture from windshield.

4. Give the steps in installing a Life Raft. Explain how it is released both from inside and outside the plane.

Roll equipment in raft and roll carrot shape large end toward front of plane so as to fit compartment. The roll is about 40" long, 30" of raft is left unrolled. Push in compartment ahead of roll.

By cable.

5. Give steps in checking the hand fire extinguishers.

Check for leaks, pressure and safety wire.

6. What are the steps followed in removing the Tail Gunner's Compartment?

Remove 12 bolts around periphery of bulkhead and six screws in the skin splices at the fin fairing, disconnect all oxygen tubing and electric wiring before removing compartment.

7. Give location and types of exits from the plane.

One on left side of fuselage below the control cabin (emergency door), right side of fuselage near the stabilizer leading edge (main door), tail gunner on right side of fuselage below stabilizer released by emergency handle.

8. Name and give locations of each compartment of the plane.
Nose-Forward compartment 1+2, bombardier + navigator sta. 3, pilot's compartment 3+4, Bomb bay 4+5, Radio 5+6, Waist 6+01, Rear gunner 11 on.

9. Explain how and what happens when bombs are released by emergency method.

By hinge & link

10. What do you inspect windows for?

Mounting, vision, condition, operation.

11. Name emergency equipment.

5 Fire extinguishers
2 Life rafts
First aid kits

12. Name the general or miscellaneous equipment.

Toilet, ladder, nacelle platforms.

13. What are releasable hinge pins?

Quick Action Releasable pins for all doors.

STUDY GUIDE - HANDLING

1. Give the maximum allowable direct forward and rearward loads that may be applied to the landing and tail gear towing lugs.

10,000 lbs.

2. Explain the procedure for properly mooring the airplane.

1. Tail into the wind.
2. Set the PARKING BRAKES.
3. Lock Rudder and elevators.
4. Allow app. 16 in. slack in line.
5. Align the rod with the point of attachment on the airplane and drive into ground.
6. Turn driving rod 90° and strike a sharp blow to spread the arrow prongs.

3. What are the two principal uses of the nacelle jack?

Jacking at these points is required in order to relieve torsional stresses in the wing while removing or replacing the wing tank doors.

4. What should you do before towing the airplane?

Unlock tail wheel and have a crew member in the plane to operate the brakes.

5. What precautions should be taken when using the nacelle jacks?

For any use of the nacelle jacks, the body should be securely jacked to avoid the possibility of the body weight settling on the jacked nacelle.

6. Explain in detail by describing the fittings, how you would hoist the outboard wing panel. *The outboard wing panel may be hoisted at the rings provided on the upper front and rear spar chords between stations 19 and 20 and at the upper wing tip terminals. When hoisting with tip attached, remove the terminal bolt in each tip terminal at the tip connection, and replace with a bearing bolt of the same diameter but of sufficiently greater length to permit looping the hoist cable around the extended portion of each end of the special bolt. Screw the original nut onto the special bolt to return the cable at the threaded end. The slight lift required at the tip hoist points will permit the loads to be applied.*

7. Why should the parking brakes be released before jacking up the airplane?

Extension of the shock strut tends to force the airplane rearward if the brakes are set and may cause jack failure, airplane damage, or both.

Sept. 3, 1942

8. If you had the proper jacks explain in detail how you would jack up the airplane to change the left tire.

To change the left tire I would put a jack on #5 on bot #3, #1, #7 and then retract the landing gear.
#4, #6

9. What are the nacelle platforms and where are they stored?

They are stored on the left side of the plane aft of the main entrance door and are used for engine servicing operations.

10. Explain why the upper surface of the wing should be protected, when it is walked on. To prevent damage to the skin, a canvas mat, plywood panel, or other suitable material may be used on the walk ways.

11. Describe the location and use of the leveling lugs. Leveling lugs are provided in the bomb bay. The fore and aft lugs are attached to the right side of the carway truss. The lateral leveling lugs are attached to the door frame at the rear of the bomb bay.

12. List protective measures provided for the airplane in areas subject to high winds and extreme temperatures. Canvas protective covers are provided for the cockpit enclosure including the upper turret, the lower ball turret and the tail gun emplacement.

13. Explain how you would hoist the empennage. The empennage may be handled manually because hoisting rings and lugs are not provided for these items.

14. List different types of hoisting fittings found on the B-17F.

Rings, bearing bolts, bolts, lugs and pins.

15. Why should more than one jack be used to change a tire?

For security.

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BOEING AIRCRAFT COMPANY
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Study Guide - Loading

1. What is the purpose of the basic conditions in using the loading chart?
So not to overload the plane and at the same time to balance weight equally over the ship and according to take off conditions.

2. When weight is added in front of the C.G. which way does the C.G. move?

Toward.

3. When weight is added behind the C.G. which way does the C.G. move?

Backwards, not to exceed 32% as directed on C.G. chart.

4. Explain fully how you could tell how much a given weight, at a given station would change the center of gravity of the airplane, by using the C.G. computing chart.

The loading at station 6 would change the C.G. 600", if weighed 250".

5. Sample Loading Problem:

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B-17F

STUDY GUIDE - ENGINE OPERATION

1. Before starting engines, in what position should the following controls be placed?

Cowl Flaps - *Open*
Fuel Transfer valves and pump - *Closed*
Mixture control - *Idle cutoff*
Primer - *off*

2. What is the maximum RPM and manifold pressure permissible in the engine on the B-17F?

2500 R.P.M. 46 Hg.

3. List all the accessories driven from #2 engine on the B-17F.

Starter, generator, fuel pump, vacuum pump, glycol pump, tachometer, prop. governor, Magneto's, oil pump, prop.

4. From the cruising control charts, what is the fuel consumption for all four engines under the following conditions.

A. Gross weight 35,000#, engine RPM 2100, Density altitude 10,000 ft. *264 gals.*

B. Gross weight 40,000#, engine RPM 2000, Density altitude 20,000 ft. *188 gals.*

5. From the long range cruising chart what is the recommended manifold pressure and RPM under the following conditions for the B-17F.

A. Gross weight 50,000#, altitude 15,000 ft.

2000 R.P.M., 28.5 Hg. 188 gals.

B. Gross weight 45,000#, altitude 30,000 ft.

2000 R.P.M. 27.4 Hg. 188 gals.

C. Gross weight 60,000#, altitude 5,000 ft.

2000 R.P.M. 29.3 Hg. 180 gals.

6. List the steps of the procedure to feather #1 propeller.

Stop engine, feather prop., oil warm, sump drained.

7. What are the proper cowl flap settings under the following conditions?

Start Open
Take off Open
Climb Open
Feathered Engine Closed
Landing Closed
Taxi Open

8. If after starting an engine, no oil pressure appears within 30 seconds, what should be done?

Stop engine.

9. Where in the control cabin are the following controls or instruments located?

Inverter switch - left of pilot.
Cowl Flap switches - Central control panel
Manifold pressure gage - Instrument panel
Fire extinguisher control - Forward of co-pilot
Throttles - Central control stand
Battery switches - Pilot's electrical control panel
De-Icer valve - left of pilot
Heating system control - left of pilot
Starter switches - Co-pilot Auxiliary panel
Fuel shut off valve switches - Central control panel

10. What is the number of the engine used on the B-17F and what are its ratings under the following conditions. R-1820-97

- (1) Takeoff 1200
(2) Sea level 1000
(3) 25,000 ft. 1000

FLYING FORTRESS SCHOOL
BOEING AIRCRAFT COMPANY
B-17F

Study Guide -- Induction System

1. Give the locations of the duct inlets and the superchargers for each of the four engines on the B-17F.
2. What is the purpose of the induction system and how does the exhaust system operate the supercharger?
3. Give the complete flow of the carburetor air from the time it enters the wing scoop until it enters the carburetor.
4. What is the purpose of the intercooler?
5. What is the purpose of the supercharger regulator and where are they located?
6. Give the necessary procedure for removing a supercharger from the airplane.

7. What precaution must be taken in removal of an air duct?

8. When installing a new supercharge what cautions must be observed, and what clearance must be carefully checked?

1. How many air tanks are in the airplane?
2. What type of tanks is used in the model B-17?
3. What is the capacity of the main wing tanks, the fuselage tanks?
4. How are the six tanks connected to the four airways?
5. What is the capacity of the pump bay tanks?
6. How would you remove a tank from the airplane and remove the fuel cell from the tank?
7. What are the necessary data for cleaning, flushing, and repair of a fuel tank?
8. What is the purpose of the fuel booster pump?
9. How are the fuel booster pumps located?
10. How is the booster pump operated and what pressure should it maintain at the airway?
11. When is it necessary to use the fuel booster pump?
12. What factors might cause the fuel booster pump to fail?
13. What is the purpose of the emergency fuel shut-off valve and how are they operated?

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BOEING AIRCRAFT COMPANY
B-17F

Study Guide - Fuel System

1. How many wing tanks are in the airplane?

Six

2. What type of tanks is used in the model B-17F's?

Self-sealing cell built integrally with a non-metallic shell.

3. What is the capacity of the main wing tanks, the feeder tanks?

No. 1+4 - 425 gals., No. 2+3 - 213 gals. Feeder - 212 gals.
Each.

4. How are the six tanks connected to the four engines?

Fuel transfer system.

5. What is the capacity of the bomb bay tanks?

410 gallons each.

6. How would you remove a wing tank from the airplane and remove the fuel cell from the tank?

Before removing the tanks, make sure that all master and ignition switches are off and that the airplane is completely grounded. Drain fuel tanks, remove tank access doors, fuel lines and electrical connections to booster pump. Remove tank straps and support outboard end of wing structure. Lower inboard end far enough to permit disconnecting all vent vapor removal lines.

7. Where could you find the necessary data for cleaning, flushing, and repair of a fuel tank?

Tech. Orders.

8. What is the purpose of the fuel booster pumps?

To eliminate vapor locks between the tank and the engine fuel pump, and pump the fuel from tanks.

9. Where are the fuel booster pumps located?

At outlets of four wing tanks.

10. How is the booster pump operated and what pressure should it maintain at the carburetor?

An electric motor, 6 P.S.I.

11. When is it necessary to use the fuel booster pumps?

In starting and high altitudes.

12. What factors might cause the fuel booster pump to fail?

Electrical difficulties.

13. What is the purpose of the emergency fuel shut-off valves and how are they operated?

To shut off fuel in case of fire

- 14. Where are the fuel shut-off valves located?
In the line between the booster pump and fuel strainer.

- 15. Where are the fuel line strainers located and how often should they be checked?
Toward inboard side of firewall. Preflight

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STUDY GUIDE - OIL SYSTEM

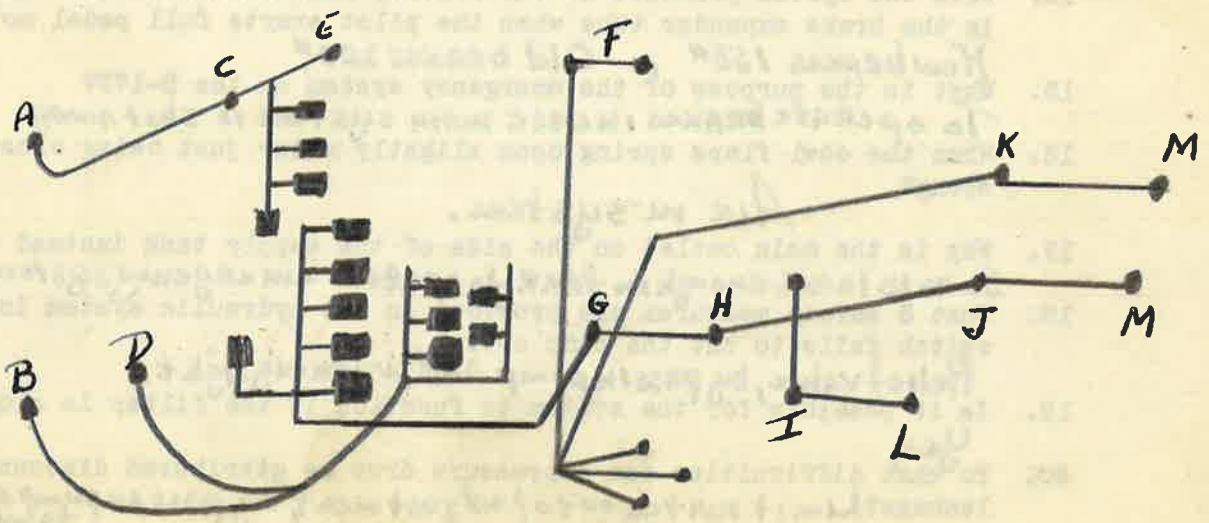
1. Briefly describe the oil supply tanks of B17F giving; capacity, expansion space and vent lines.
4 tanks, 36.9 gallons, 10% expansion vented.
2. What is the maximum capacity of oil necessary for a full load of fuel?
147.6 gallons
3. What is the operating principle of the "hopper" type tank?
To use same oil, allow same amount to circulate, oil dilution.
4. How are the outboard oil tanks removed from the airplane?
Two access doors.
5. Is it necessary to remove an oil tank to repair a damaged accelerating well assembly? *Yes.*
6. Explain the operating principle of the oil cooler stating how adjustments are made within specified ranges. *To keep oil at certain temp., adjust by arm on valve housing, thermostat. 50°C.*
7. How are the oil cooler shutters operated, and how should this operation be checked?
Automatically. Thermostatically.
9. What is the reason the shutters on the oil cooler keep up a continual oscillating action in operation?
10. How is the oil cooler removed?
Scavenger pump does not supply constant flow of oil. Remove access door and tie opening fairing left wing, disconnect hose bonding and straps, remove through front opening of wing.
11. Why does the propeller feathering system have an auxiliary pump, and from what part of the oil system is the oil for feathering taken?
To build up pressure to 400 P.S.I. for feathering, hopper tank.
12. Name three units other than the engine that operate from engine oil pressure. *Supercharger Regulator, oil pressure gage, prop pitch.*
13. What is the purpose of oil dilution?
For easier starting in cold weather.
14. What is the purpose of the pressure relief valve on the oil temperature regulator? *In cold weather to allow oil to return to engine to insure lubrication and warm up remaining oil until able to pass through cooler.*

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BOEING AIRCRAFT COMPANY
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STUDY GUIDE - OXYGEN SYSTEM

- Where are the type F-1 oxygen bottles located in the airplane?
One in each power turret.
- What is the duration of the type F-1 bottle?
Of the type G-1 bottles? *F1 - 2 1/2 hours at 30,000 feet*
G1 - Shows at 30,000 feet
- What type of thread lubricant should be used on connections in the oxygen system?
Lithage or glycerine on fitting. Glydag or equivalent on threads.
- What are the sizes and materials of the tubing in the oxygen system?
3/16" O.D. Aluminum Alloy, 3/16" O.D. Rubber bronze braided covered tubing.
- Referring to the diagram on page 411, in which section of the airplane are most of the bottles located?
Lower Accessory section. Between bulkheads 3 & 4.
- How may the turret bottles be refilled in flight?
From main system.
- How should a bottle be removed from the system?
Be careful that there is no damage to equipment from sudden release of pressure. Release oxygen as slowly as possible.
- How could you pressure test the system to locate leaks?
Coat all connections with a solution of Castile Soap and water test with oxygen at 400 pounds square inch.
- Draw a simple diagram of an oxygen system similar to the one on Page 411, but not a direct copy.

- | | | | |
|----------------------|------------------------|-------------------------|------------------------|
| <i>A - Bombadier</i> | <i>E - Top Turret</i> | <i>I - Ball turret</i> | <i>M - Tail gunner</i> |
| <i>B - Navigator</i> | <i>F - Extra seats</i> | <i>J - Waist gunner</i> | |
| <i>C - Co-pilot</i> | <i>G - Bomb bay</i> | <i>K - Waist gunner</i> | |
| <i>D - Pilot</i> | <i>H - Radio</i> | <i>L - Waist comp.</i> | |



FLYING FORTRESS SCHOOL
BOEING AIRCRAFT COMPANY

B-17F

STUDY GUIDE - HYDRAULICS

1. What jobs are performed by the hydraulic system on the B-17F?
Cowl flaps and brakes.
 2. What type of pump is used and how is it driven?
Gear type pump and driven by an electric motor.
 3. What is the pressure range on the B-17F?
600 P.S.I. to 800 P.S.I.
 4. At what pressures do the warning lights come on?
525 P.S.I. ± 25 P.S.I.
 5. What is the purpose of a check valve in a pressure line?
To hold pressure when pump is shut off.
 6. Where is the accumulator service valve or bleed valve located in the plane?
Mounted on a movable panel in the rear right portion of the control cabin.
 7. What is the initial air pressure in the accumulators?
350 P.S.I.
 8. During pressure testing procedure, how much pressure is the hydraulic system subjected to?
1200 P.S.I.
 9. What are the functions of the return boost valve?
To cut down pressure in fluid going to the brakes.
 10. Why is it necessary to keep the oil level from exceeding the full mark on the supply tank?
To provide room for expansion of fuel.
 11. If the pressure range on a B-17F was found to be 570 to 925, how could this be corrected? What exactly is done?
Limit pressure switch is adjusted.
 12. What are the purposes of the two positions on the selective check valve?
To connect main system to the emergency.
 13. By means of a simple line diagram, show the route of pressure from the pressure line through pilot's and co-pilot's metering valves out to the brakes, and back to tank.
 14. With the system pressure at 600 P.S.I., what would be the maximum pressure in the brake expander tube when the pilot exerts full pedal motion?
New brakes 150#, Old brakes 200#
 15. What is the purpose of the emergency system on the B-17F?
To operate brakes in case main system is shot away.
 16. When the cowl flaps spring open slightly after just being closed, what is wrong?
Air in system.
 17. Why is the main outlet on the side of the supply tank instead of out the bottom?
So as to leave enough in tank to operate emergency system.
 18. What 3 safety measures are provided in the hydraulic system in case the pressure switch fails to cut the pump out?
Relief valve, by pass in pump and warning light.
 19. Is it possible for the system to function if the filter is clogged? Why?
Yes.
 20. To what difficulties can a pressure drop be attributed discounting external leakage?
Limit switch out of adjustment, by pass in pump opening to tank.
- NOTE: As Hydraulics is taught in two 3½ hour sessions, the first ten questions may be answered for the first session and the last ten questions for the second session.

JOHN B. HARTMAN
THASMO PAROLA
VI-2

FLYING FORTRESS SCHOOL
BOEING AIRCRAFT COMPANY
B-17F
STUDY GUIDE - HEATING AND VENTILATION

1. Draw a schematic diagram of the glycol circulation system
2. a. Which is the preferred fluid to be used in this system?
55% diethylene glycol and 45% ethylene glycol.
b. Which is the alternate fluid?
85% ethylene glycol and 15% glycerine.
c. When should the fluid be replaced?
Every 150 hours.
3. What is the proper replenishing procedure for filling the glycol system?
fill tank and run engine #2 until system is full then refill tank.
4. What service does the filter require?
Handle must be turned after every flight and clean every 75 hours.
5. a. What type of pump is used?
Romec glycol pump Positive displacement sliding vane.
b. How is it lubricated?
Self lubricated
c. What is the normal operating pressure and capacity of the glycol pump?
55-60 gals. per hour - 300 pounds pressure
6. a. Why will the relief valve open when starting in cold weather?
To by pass solution until it is warm enough to go through filter.
b. At what pressure will the relief valve open?
300 pounds.
7. Should you repair a heater unit? Why?
No.
8. Describe the complete flushing procedure.
Remove heaters and flush, flush thoroughly both heater and housing.
9. What are the positions to which the restrictors should be adjusted?
The 2 flow valves should be adjusted by inserting the pin in the outer most hole.
10. Under what conditions would you remove the center heater?
Summer operation
11. How do you adjust the damper control?
Rig control cables so that control valves are fully seated and levers are in "hot" position.
12. a. How many splitters are there?
Two
b. Where are they located?
One by pilot and one by navigator.
c. How many vents overboard are there in the fuselage for the ventilating system? Where are they located?
Two
13. How should the pilot's and copilot's air controls be adjusted for best distribution of air?
1/4 open
14. At what temperature does the glycol begin to break down chemically?
177°C. 350°F
15. Can the splitters and restrictors be adjusted in flight?
No

FLYING FORTRESS SCHOOL
BOEING AIRCRAFT COMPANY
B-17F

STUDY GUIDE - DE-ICING SYSTEM

1. Where is pressure taken for the inflation of the de-icer boots?
What causes deflation? *Inflation of the shoes is accomplished by exhaust air from both vacuum pumps and deflation is accomplished by suction from one or the other of the vacuum pumps.*
2. What is the use of the oil separator?
To remove oil from the exhaust air coming from the vacuum pumps.
3. Under what pressure will the system usually operate?
8 P. S. I.
4. What alternately controls the inflation and deflation of the boots?
Distributor valve.
5. How are the boots kept in a deflated position when not in use?
The vacuum line is connected to the distributor valve ports which provide suction for retaining the de-icer shoes in the deflated condition.
6. How is the system controlled by the pilot?
By a control valve located beneath the pilot's floor.
7. Why must the boots be grounded after flight?
To eliminate any static electricity which may have accumulated.
8. What is used as a surface to prevent the rapid accumulation of static electricity in flight on the boots?
Graphite grease (prenite-graphite).
9. Where is the second oil separator found?
Between the de-icer control valve and distributor.
10. Why must the camouflage paint be removed along the edge of the surfaces before installing the boots? *It is extremely granular, and if left on the skin would chafe the shoes to the extent of wearing completely through the rubber.*

FLYING FORTRESS SCHOOL
BOEING AIRCRAFT COMPANY
B-17F

STUDY GUIDE - ANTI-ICING

1. What is the purpose of the anti-icing system?
2. What fluid is used in the de-icing system?
3. What forces the fluid from the tank to the slinger ring?
Give the location of each.
4. What regulates the flow? Give the location.
5. Give the minimum and maximum flow of the anti-icing fluid.
6. How can the flow and operation of the system be checked?
7. What is the tanks capacity?
8. Describe the removal of the tank.
9. Locate toggle switch for anti-icer.

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DIVISION
NAVY CURRICULUM - ENGINEERING

10. How can the tank be drained?

What is the purpose of the anti-siphon system?

11. In case the glycerine settles in the bottom of the tank describe the flushing procedure.

What fluid is used in the de-aerating system?

12. Why must the pumps frequently be checked?

What factors affect the flow rate of the liquid in the system? Give the location of each.

What regulates the flow? Give the location.

Give the minimum and maximum flow of the anti-siphon system.

How often the flow and operation of the system be checked?

What is the tank capacity?

Describe the removal of the tank.

Locate points which for anti-siphon.

FLYING FORTRESS SCHOOL
BOEING AIRCRAFT COMPANY
B-17F

STUDY GUIDE - ELECTRICAL

4.1 INTRODUCTION -- D. C. POWER CIRCUIT

Reference Pages: 336 to 373
584 to 625

1. What type of system does the B-17 use?
24 volt direct CURRENT system, single wire ground
2. How many and what are the ratings of the batteries?
Three, type G1, 24 Volt, 34 AMPERE-HOUR batteries.
3. Where are the battery toggle switches?
*On the auxiliary panel forward of the co-pilot.
Pilot's ^{electrical} control panel.*
4. How many generators are there on the airplane?
Four.
5. Where is the A. C. fuse shield?
Pilot's seat support.
6. How are the wires identified?
Code letter and corresponding numbers.
7. On ships prior to 900 there were five master wiring diagrams. What part of the airplane did each sheet cover? *Sheet #1 - nose to station #4; Sheet #2 - station #4 to tail; Sheet #3 - left wing; Sheet #4 - right wing; Sheet #5 - tabulation.*
8. How many simplified diagrams are there for each ship?
10
9. Where are the electrical diagrams kept in plane?
On the rear of the co-pilot's seat.
10. Name and give locations of six fuse shields? *Shield #305 - lower sidewall Sta. 6 A.L.H. Shield #243 - left front side sta. 4, Shield #146 - left front side sta. 4, Shield #3 - sta. 3 R.C. Receiver supt.; Shield #128 - A.C. Fuse shield under pilot's seat; Shield #78 - nacelle.*
11. On Pages 352 and 203: where in the airplane would you find item #156?
Nacelle junction shield.
12. Where in the airplane are items #215?
*Solenoid, located in voltage regulator in accessory comp.
Relays, in each nacelle and controls the circuit from each generator.
located on voltage regu*
13. How many inverters are there?
Two
14. In what circuit would you find the A. C. voltmeter?
ALTERNATING CURRENT circuit.
15. What is the fuse shield number in each nacelle?
78, 79, 80, 81
16. Where are shields #146 and #305 located? *Shield #146 - Left front side station 4
Shield #305 - lower sidewall sta. 6 A.L.H.*

4.2 No preparation is necessary
4.3 EQUIPMENT SERVICING

Reference Pages: 336 to 373

1. What precaution is necessary in removing any piece of electrical equipment? *Be sure that power is off. By fuse or at least sure it won't come on.*
2. What do you remove to remove a generator? *Remove the AN electrical connector plus at the generator and remove the nuts from studs that hold mounting flange.*
3. What precaution is taken in removing a magneto? *Remove high tension lead before you remove ground.*
4. When installing a battery, how can you help prevent corrosion? *By applying a light coat of heavy grease and Vaseline.*
5. How long should the ground wires be on the autosyn shock mounts? *Allow enough length of wire so there is no strain on the wire or plug.*
6. When replacing a G. E. retraction motor for an eclipse, what changes must be made? *Readjust limit switches.*
7. When should motor brushes be changed? *Worn from new brush 3/16."*

4.4 SECONDARY CIRCUITS

1. The trailing segment of which magneto is fed by the booster coil? *Right magneto*
2. When is the booster coil energized? *Only when the meshing switch on the starter is held down.*
3. Where are the hand crank and extensions carried? *Radio room on the forward side of bulkhead #6.*
4. How is the starter controlled? *Solenoids.*
5. At what pressure does the pressure cutout switch open the circuit? *400 P. S. I.*
6. What circuit does the pressure switch break? *To the holding coil.*
7. Where is the pressure cutout switch? *On the prop governor on nose of engine.*
8. If power was turned on and none of the props would feather, what would the trouble be? *Fuse probably burnt out.*
9. Where would you go to fix this trouble? *Shield #146*
10. If all starters worked but one, where would the trouble more than likely be? *Fuse in nacelle burnt out*
11. Besides the de-icer circuit, what other circuits are included in the "D" circuits? *Anti-icing, fuel system*
12. What is item #127? *Fuel transfer system.*
13. What are the fuel boost pumps used for? *Starting engines and high altitude flying.*

4.5 RETRACTION CIRCUITS

Reference Pages: 336 to 373

1. Where is the landing gear control switch?
Central control panel.
 2. Why is a slip torque clutch used in the retraction motors?
To prevent damage to the motor.
 3. What must be taken into consideration when timing the retracting mechanism?
Clutch slippage and battery voltage.
 4. Where are the limit switches for the main landing gear?
Retracting screw housing.
 5. Do the three landing gear motors have any fuses in the power circuit?
Only the tail wheel.
 6. Do the three landing gear motors have any fuses in the control circuit?
The main landing gear.
 7. On Page 365, if the right hand test lamp attached to R59, which way would the gear be going?
Down.
 8. How is the adjustment of the tail wheel lock lite made in regards as to when it is supposed to come on?
Adjust external bolt near tail wheel locking pin so light is illuminated when tail wheel locking lever reaches midposition of upward travel.
- 4.6 No preparation is necessary

4.7 SECONDARY CIRCUITS

1. What is the purpose of the throttle warning?
To let the pilot know that the landing gear is fully extended.
2. When are the landing gear warning switches closed?
When the landing gear is down.
3. Through what switches does the horn relay get its power?
landing gear limit switches.
4. What switch stops the horn from blowing?
The switch in the top of the cockpit.
5. When is the tail wheel lock lite off?
When it is locked.
6. On what voltage do the bomb warning lamps operate?
Three volts.
7. From what fuse panel do you get power for the fluorescent lites?
From fuse shield on bulkhead #4.
8. How many bomb release lites are there?
Five.
9. Why are there any fuses in the nacelles when they can't be replaced in flight?
So as to have short power leads.

SCHEDULE FOR CLASS 33		FLIGHT 33-1-20	FLIGHT 33-2-20	FLIGHT 33-3-21	FLIGHT 33-4-21	FLIGHT 33-5-20	FLIGHT 33-6-24	FLIGHT 33-7-21	FLIGHT 33-8-26	FLIGHT 33-9-24	FLIGHT 33-10-24	FLIGHT 33-11-26	FLIGHT 33-12-26
DATE	TIME	RM.-SUB.	RM.-SUB.	RM.-SUB.	RM.-SUB.	RM.-SUB.	RM.-SUB.	RM.-SUB.	RM.-SUB.	RM.-SUB.	RM.-SUB.	RM.-SUB.	RM.-SUB.
SAT. APR. 24	7:00 AM 12:00 N	300-4.1 301-5.1	301-5.1 300-4.1	NO CLASS	NO CLASS	206-1.1 206-1.2	206-1.1 206-1.2	NO CLASS	NO CLASS	204-1.8 208-1.5	204-1.8 208-1.5	NO CLASS	NO CLASS
MON. APR. 26	7:00 AM 12:00 N 7:00 PM	208-1.4 204-1.3 200 Study	208-1.4 204-1.3 200 Study	300-4.1 301-5.1 203 Study	301-5.1 300-4.1 203 Study	H#1-1.1 H#1-1.2 200 Study	H#1-1.1 H#1-1.2 215 Study	206-1.1 206-1.2 203 Study	206-1.1 206-1.2 215 Study	H#2-1.7 H#2-1.7 215 Study	H#2-1.7 H#2-1.7 215 Study	204-1.8 208-1.5 215 Study	204-1.8 208-1.5 215 Study
TUE. APR. 27	7:00 AM 12:00 N	H#1-1.3 H#1-1.3	H#1-1.3 H#1-1.3	208-1.4 204-1.3	208-1.4 204-1.3	300-4.1 301-5.1	301-5.1 300-4.1	H#1-1.1 H#1-1.2	H#1-1.1 H#1-1.2	206-1.1 206-1.2	206-1.1 206-1.2	H#2-1.7 H#2-1.7	H#2-1.7 H#2-1.7
WED. APR. 28	7:00 AM 12:00 N	303-5.2 H#2-4.2	H#2-4.2 303-5.2	H#1-1.3 H#1-1.3	H#1-1.3 H#1-1.3	208-1.4 204-1.3	208-1.4 204-1.3	300-4.1 301-5.1	301-5.1 300-4.1	H#1-1.1 H#1-1.2	H#1-1.1 H#1-1.2	206-1.1 206-1.2	206-1.1 206-1.2
THU. APR. 29	7:00 AM 12:00 N 7:00 PM	211-3.5 213-3.7 200 Study	213-3.7 211-3.5 200 Study	303-5.2 H#2-4.2 203 Study	H#2-4.2 303-5.2 203 Study	H#1-1.3 H#1-1.3 200 Study	H#1-1.3 H#1-1.3 215 Study	208-1.4 204-1.3 203 Study	208-1.4 204-1.3 215 Study	300-4.1 301-5.1 215 Study	301-5.1 300-4.1 215 Study	H#1-1.1 H#1-1.2 215 Study	H#1-1.1 H#1-1.2 215 Study
FRI. APR. 30	7:00 AM 12:00 N	202-3.2 202-3.3	202-3.2 202-3.3	211-3.5 213-3.7	213-3.7 211-3.5	303-5.2 H#2-4.2	H#2-4.2 303-5.2	H#1-1.3 H#1-1.3	H#1-1.3 H#1-1.3	208-1.4 204-1.3	208-1.4 204-1.3	300-4.1 301-5.1	301-5.1 300-4.1
SAT. MAY 1	7:00 AM 12:00 N	308-4.3 305-5.3	305-5.3 308-4.3	202-3.2 202-3.3	202-3.2 202-3.3	211-3.5 213-3.7	213-3.7 211-3.5	303-5.2 H#2-4.2	H#2-4.2 303-5.2	H#1-1.3 H#1-1.3	H#1-1.3 H#1-1.3	208-1.4 204-1.3	208-1.4 204-1.3
MON. MAY 3	7:00 AM 12:00 N	200-3.1 200-3.1	200-3.1 200-3.1	308-4.3 305-5.3	305-5.3 308-4.3	202-3.2 202-3.3	202-3.2 202-3.3	211-3.5 213-3.7	213-3.7 211-3.5	303-5.2 H#2-4.2	H#2-4.2 303-5.2	H#1-1.3 H#1-1.3	H#1-1.3 H#1-1.3
TUE. MAY 4	7:00 AM 12:00 N 7:00 PM	H#2-3.0 H#2-3.0 200 Study	H#2-3.0 H#2-3.0 200 Study	200-3.1 200-3.1 203 Study	200-3.1 200-3.1 203 Study	308-4.3 305-5.3 200 Study	305-5.3 308-4.3 215 Study	202-3.2 202-3.3 203 Study	202-3.2 202-3.3 215 Study	211-3.5 213-3.7 215 Study	213-3.7 211-3.5 215 Study	303-5.2 H#2-4.2 215 Study	H#2-4.2 303-5.2 215 Study
WED. MAY 5	7:00 AM 12:00 N	307-5.4 304-4.4	304-4.4 307-5.4	H#2-3.0 H#2-3.0	H#2-3.0 H#2-3.0	200-3.1 200-3.1	200-3.1 200-3.1	308-4.3 305-5.3	305-5.3 308-4.3	202-3.2 202-3.3	202-3.2 202-3.3	211-3.5 213-3.7	213-3.7 211-3.5
THU. MAY 6	7:00 AM 12:00 N	201-2.5 205-2.6	205-2.6 201-2.5	307-5.4 304-4.4	304-4.4 307-5.4	H#2-3.0 H#2-3.0	H#2-3.0 H#2-3.0	200-3.1 200-3.1	200-3.1 200-3.1	308-4.3 305-5.3	305-5.3 308-4.3	202-3.2 202-3.3	202-3.2 202-3.3

(CONTINUED ON OTHER SIDE)

SUBJECT CODE INDEX			
<u>1.0 STRUCTURES</u>	2.5 Fuel System	<u>4.0 ELECTRICAL EQUIPMENT</u>	5.4 Engine Instruments
1.1 Wing, Tail & Nacelle	2.6 Oil System	4.1 Intro. D.C. Power Circuits	5.5 Instru. Trouble Shooting
1.2 Flight & Eng. Controls	<u>2.0 POWER PLANT "B"</u>	4.2 Equipment Familiarization	<u>6.0 INSPECTIONS</u>
1.3 Landing & Tail Gear	2.7 Engine Change	4.3 Equipment Servicing	6.1 Introduction
1.4 Fuselage & Equipment	2.8 Engine Maintenance	4.4 Secondary Circuits	6.2 Pre-flight Inspections
1.5 Handling	<u>3.0 SECONDARY SYSTEMS</u>	4.5 Retraction Circuits	6.3 Daily Inspections
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<u>2.0 POWER PLANT "A"</u>	3.5 Vac. & De-Icer System	5.1 Navigation Instruments	6.7 Misc. Inspec. (Cont'd)
2.1 Engine Operation	3.7 Tubing Repair	5.2 Flight Instruments	6.8 Misc. Inspec. (Cont'd)
2.3 Induction System		5.3 Engine Instruments	

SCHEDULE FOR CLASS 33		FLIGHT 33-1-20	FLIGHT 33-2-20	FLIGHT 33-3-21	FLIGHT 33-4-21	FLIGHT 33-5-20	FLIGHT 33-6-24	FLIGHT 33-7-21	FLIGHT 33-8-26	FLIGHT 33-9-24	FLIGHT 33-10-24	FLIGHT 33-11-26	FLIGHT 33-12-26
DATE	TIME	RM.-SUB.	RM.-SUB.	RM.-SUB.	RM.-SUB.	RM.-SUB.	RM.-SUB.	RM.-SUB.	RM.-SUB.	RM.-SUB.	RM.-SUB.	RM.-SUB.	RM.-SUB.
		↓ ↓	↓ ↓	↓ ↓	↓ ↓	↓ ↓	↓ ↓	↓ ↓	↓ ↓	↓ ↓	↓ ↓	↓ ↓	↓ ↓
FRI. MAY 7	7:00 AM 12:00 N 7:00 PM	H#2-2.5 H#2-2.6 200 Stdv	H#2-2.6 H#2-2.5 200 Stdv	201-2.5 205-2.6 203 Stdv	205-2.6 201-2.5 203 Stdv	307-5.4 304-4.4 200 Stdv	304-4.4 307-5.4 215 Stdv	H#2-3.0 H#2-3.0 203 Stdv	H#2-3.0 H#2-3.0 215 Stdv	200-3.1 200-3.1 215 Stdv	200-3.1 200-3.1 215 Stdv	308-4.3 305-5.3 215 Stdv	305-5.3 308-4.3 215 Stdv
SAT. MAY 8	7:00 AM 12:00 N	302-4.5 H#1-5.5	H#1-5.5 302-4.5	H#2-2.5 H#2-2.6	H#2-2.6 201-2.5	205-2.6 201-2.5	307-5.4 304-4.4	307-5.4 H#2-3.0	304-4.4 H#2-3.0	H#2-3.0 H#2-3.0	H#2-3.0 H#2-3.0	200-3.1 200-3.1	200-3.1 200-3.1
MON. MAY 10	7:00 AM 12:00 N	207-2.3 207-2.3	207-2.3 H#1-5.5	302-4.5 H#1-5.5	H#2-2.5 302-4.5	H#2-2.6 H#2-2.5	201-2.5 205-2.6	205-2.6 201-2.5	307-5.4 304-4.4	304-4.4 307-5.4	H#2-3.0 H#2-3.0	H#2-3.0 H#2-3.0	H#2-3.0 H#2-3.0
TUE. MAY 11	7:00 AM 12:00 N	H#2-2.3 H#2-2.3	H#2-2.3 207-2.3	207-2.3 207-2.3	302-4.5 H#1-5.5	H#2-2.5 302-4.5	H#2-2.6 H#2-2.5	H#2-2.6 201-2.5	H#2-2.5 205-2.6	201-2.5 201-2.5	304-4.4 304-4.4	307-5.4 307-5.4	304-4.4 307-5.4
WED. MAY 12	7:00 AM 12:00 N 7:00 PM	H#2-4.6 203-2.1 200 Stdv	203-2.1 H#2-4.6 200 Stdv	H#2-2.3 H#2-2.3 203 Stdv	H#2-2.3 207-2.3 203 Stdv	207-2.3 207-2.3 200 Stdv	207-2.3 207-2.3 215 Stdv	302-4.5 H#1-5.5 203 Stdv	H#2-2.5 H#2-2.6 215 Stdv	H#2-2.5 H#2-2.6 215 Stdv	H#2-2.6 201-2.5 215 Stdv	201-2.5 205-2.6 215 Stdv	205-2.6 201-2.5 215 Stdv
THU. MAY 13	7:00 AM 12:00 N	H#1-2.71 H#1-2.71	H#1-2.71 H#1-2.71	H#2-4.6 203-2.1	203-2.1 H#2-2.3	H#2-2.3 H#2-2.3	207-2.3 207-2.3	H#2-2.3 207-2.3	207-2.3 207-2.3	302-4.5 H#1-5.5	H#2-2.5 H#2-2.5	H#2-2.5 H#2-2.6	H#2-2.6 H#2-2.5
FRI. MAY 14	7:00 AM 12:00 N	H#1-2.72 H#1-2.72	H#1-2.72 H#1-2.72	H#1-2.71 H#1-2.71	H#1-2.71 H#2-4.6	H#2-4.6 203-2.1	203-2.1 H#2-2.3	H#2-2.3 H#2-2.3	H#2-2.3 207-2.3	207-2.3 207-2.3	207-2.3 207-2.3	302-4.5 H#1-5.5	H#1-5.5 302-4.5
SAT. MAY 15	7:00 AM 12:00 N	H#1-2.8 H#1-2.8	H#1-2.8 H#1-2.8	H#1-2.72 H#1-2.72	H#1-2.72 H#1-2.71	H#1-2.71 H#1-2.71	H#1-2.71 H#2-4.6	H#2-4.6 203-2.1	H#2-2.3 H#2-2.3	H#2-2.3 H#2-2.3	H#2-2.3 207-2.3	207-2.3 207-2.3	207-2.3 207-2.3
MON. MAY 17	7:00 AM 12:00 N	210-1.6 306-4.7	306-4.7 210-1.6	H#1-2.8 H#1-2.8	H#1-2.8 H#1-2.72	H#1-2.72 H#1-2.72	H#1-2.72 H#1-2.71	H#1-2.71 H#2-4.6	H#1-2.71 H#2-2.3	H#2-4.6 H#2-2.3	203-2.1 H#2-2.3	H#2-2.3 207-2.3	H#2-2.3 H#2-2.3
TUE. MAY 18	7:00 AM 12:00 N	204-1.8 208-1.5	204-1.8 208-1.5	210-1.6 306-4.7	306-4.7 210-1.6	H#1-2.8 H#1-2.8	H#1-2.8 H#1-2.72	H#1-2.72 H#1-2.71	H#1-2.72 H#1-2.71	H#1-2.71 H#1-2.71	H#1-2.71 H#1-2.71	H#2-4.6 203-2.1	203-2.1 H#2-4.6
WED. MAY 19	7:00 AM 12:00 N	H#2-1.7 H#2-1.7	H#2-1.7 208-1.5	204-1.8 208-1.5	204-1.8 306-4.7	210-1.6 210-1.6	306-4.7 210-1.6	H#1-2.8 H#1-2.8	H#1-2.8 H#1-2.72	H#1-2.72 H#1-2.72	H#1-2.72 H#1-2.72	H#1-2.71 H#1-2.71	H#1-2.71 H#1-2.71
THU. MAY 20	7:00 AM 12:00 N	206-1.1 206-1.2	206-1.1 206-1.2	H#2-1.7 H#2-1.7	H#2-1.7 208-1.5	204-1.8 208-1.5	204-1.8 306-4.7	210-1.6 210-1.6	306-4.7 210-1.6	H#1-2.8 H#1-2.8	H#1-2.8 H#1-2.8	H#1-2.72 H#1-2.72	H#1-2.72 H#1-2.72
FRI. MAY 21	7:00 AM 12:00 N	H#1-1.1 H#1-1.2	H#1-1.1 206-1.2	206-1.1 206-1.2	206-1.1 206-1.2	H#2-1.7 H#2-1.7	H#2-1.7 208-1.5	204-1.8 208-1.5	204-1.8 306-4.7	210-1.6 210-1.6	306-4.7 210-1.6	H#1-2.8 H#1-2.8	H#1-2.8 H#1-2.8
SAT. MAY 22	7:00 AM 12:00 N	215-6.0 215-6.0	215-6.0 215-6.0	H#1-1.1 H#1-1.2	H#1-1.1 215-6.0	215-6.0 215-6.0	NO CLASS	H#2-1.7 H#2-1.7	H#2-1.7 H#2-1.7	NO CLASS	NO CLASS	210-1.6 306-4.7	306-4.7 210-1.6
MON. MAY 24	7:00 AM 4:00 PM	OFF APR-6.0	OFF APR-6.0	215-6.0 OFF	215-6.0 OFF	OFF APR-6.0	APR-6.0 OFF	215-6.0 OFF	APR-6.0 OFF	APR-6.0 OFF	APR-6.0 OFF	APR-6.0 OFF	APR-6.0 OFF
TUE. MAY 25	7:00 AM 4:00 PM	OFF APR-6.0	OFF APR-6.0	APR-6.0 OFF	APR-6.0 OFF	OFF APR-6.0	215-6.0 OFF	APR-6.0 OFF	APR-6.0 OFF	215-6.0 OFF	215-6.0 OFF	APR-6.0 OFF	APR-6.0 OFF
WED. MAY 26	7:00 AM 4:00 PM	OFF APR-6.0	OFF APR-6.0	APR-6.0 OFF	APR-6.0 OFF	OFF APR-6.0	APR-6.0 OFF	APR-6.0 OFF	215-6.0 OFF	APR-6.0 OFF	APR-6.0 OFF	215-6.0 OFF	215-6.0 OFF
THU. MAY 27	7:00 AM 12:00 N	NO CLASS	NO CLASS	APR-6.0 APR-6.0	APR-6.0 APR-6.0	NO CLASS	APR-6.0 APR-6.0	APR-6.0 APR-6.0	APR-6.0 APR-6.0	APR-6.0 APR-6.0	APR-6.0 APR-6.0	APR-6.0 APR-6.0	APR-6.0 APR-6.0