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[P.65]



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THE AIRCRAFT

I. GENERAL FOR C12

The C-45 Skymaster airplane is a single place, low-wing, 41 ft. 6 in. long monoplane, powered with an Allison T-1710-93 liquid cooled engine mounted within the fuselage aft of the pilot.

The engine is connected to the R-1341 reduction gear box in the nose of the airplane by an extension drive shaft. Take-off rating of this engine is 132.1 Horse Power at 3000 RPM over 54° RPM. Maximum power at sea level. The propeller is a four-bladed Aeroproducts hydraulic variable pitch selective, automatic, constant speed, governor controlled type. Wing flaps and the tricycle landing gear are electrically controlled and operated.

II. DATA SHEET

Span	44' 4"
Breadth	12' 10 1/2"
Height	11' 11"
Gross Weight	3610 pounds
Towed	21' 12"
F.A.I. Dimensions	13' 11 1/2" Length - 12' 11 1/2" Span and 7' 6 1/2" Height
Cockpit Clearance	19' 5"
Fuel Capacity	With 106 gal. full 9.6 gal. With 41 gal. full 10.7 gal.
Oil Capacity Fuel & Oil Box	2 U.S. gallons

III. LANDING GEAR

The airplane is equipped with a fully retractible landing gear of the triplex type consisting of two main wheels and one nose wheel. The downward draw is accomplished into the forward fuselage. The retracting mechanism is operated by an electric motor through a system of torque tubes, worm and sector gears, gears, universal joints, gear boxes, and ballized connections. The operation of the landing gear motor is governed by a timer-type switch on the instrument panel. In the event of power failure, or for purposes of repair or adjustment, extension or retraction of the landing gear may be accomplished by use of an emergency hand wrench located on the right of the pilot's seat. The main landing gear centralization consists of walls, bars, brackets, air-cooled struts, retractile mechanism, and

## ANSWER SHEET

1. The first sentence, "I am well satisfied with my work," is the best answer because it is the most positive and shows a sense of accomplishment.

$$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$$

2. The answer is B,  $\frac{1}{4}$ .

3. The answer is not available.

$$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$$

4. The answer is C,  $\frac{1}{4}$ . This is the only answer that is reasonable. The other answers are too large or too small.

5. The answer is A,  $\frac{1}{4}$ . This is the only answer that is reasonable. The other answers are too large or too small.

6. The answer is C,  $\frac{1}{4}$ . This is the only answer that is reasonable. The other answers are too large or too small.

7. The answer is D,  $\frac{1}{4}$ . This is the only answer that is reasonable. The other answers are too large or too small.

8. The answer is C,  $\frac{1}{4}$ . This is the only answer that is reasonable. The other answers are too large or too small.

9. The answer is C,  $\frac{1}{4}$ . This is the only answer that is reasonable. The other answers are too large or too small.

$$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$$

10. The answer is C,  $\frac{1}{4}$ .

11. The answer is C,  $\frac{1}{4}$ .

## ANSWER SHEET

12. The answer is C,  $\frac{1}{4}$ . This is the only answer that is reasonable. The other answers are too large or too small.

13. The answer is C,  $\frac{1}{4}$ . This is the only answer that is reasonable.

14. The answer is C,  $\frac{1}{4}$ . This is the only answer that is reasonable. The other answers are too large or too small.

R-2828122 E D

In flight, engine trouble may be detected by noting the "drop-off" in the engine. This will occur if the aircraft has suffered damage to one or more of the engine performance diagnostic checks in the air - that is, by switching from both engines to right and left wing and noting the smoothness of the engine operation and output as less in the "dead" engine. If bad slopes are not detected during a climb of this sort, it may be well to disconnect the propeller pitch control at the quadrant, push the propeller linkage to the full anti-rotation, and make a "drop-off" test check at 80° nose down before...

"Inertia" of the propeller (if it does not react to torque properly) may be noted during by disconnecting propeller from 80° nose down to 40° inverted during its acceleration.

Vincent will fly alongside and note with the synchronized tachometer that the indicated manifold pressure is lower than a lower R.P.T. for a sufficient manifold pressure than has been formerly used in the transition region. Little change in an engine's own consumption of fuel can be expected under such conditions.

MANIFOLD PRESSURE	R.P.T. 10000 ft. T	LIMITED R.P.T.
20	1725	1735
25	1750	1750-1760
30	2000	2030-2130
35	2350	2330-2400
40	2700	2700-2750
45	3000	2800-3000
50	3000	3000-3100

The primary reward credit in operational is that the R.P.T. is ALLOWED TO DROP BELOW THE CRITICAL LEVEL FOR ANY OF THE ENGINE MODES AND THIS IS ACCESSIBLE TO AWARD BASED ON DSR RATE IN REF. PAYING THE LOW FUEL COSTS.

## 1. PRE-FLIGHT CHECK SHOULD BE DONE

LINE C. 10000 ft. ALTITUDE, 10000 ft. T, 10000 ft. S.D.

1. Check oil level and for any signs of sludge and/or water, also oil pressure.

2. Check for signs of oil or hydraulic leakage.

3. Check oil temperature and viscosity if they are abnormal. Check oil pressure gage. Check that oil temperature is within limits of the oil temperature gage.

4. Verify that radiator fan will work properly for life support.

5. Check for liquid fire detection system.

6. Check for signs of possible fire hazard of fuel.

7. Check for signs of possible fire hazard of fuel. (not visible from cockpit)

8. Check fuel line for any signs of damage, fuel ports, refueling ports for leakage. If any, fix them from now on.

9. Check for signs of possible fire hazard of fuel.

10. Check for fire.

Part 7

Sec. 4

APPENDIX D

11. Use of the rear seat belt buckle when the vehicle is in motion.
12. Use of a shoulder belt and buckle in either position throughout the trip.
13. Use of a child's seat (should be IEP) before turns by military drivers.
14. SLOWING SPEED LIMIT TO 20 MILES PER HOUR ON CITY STREETS.
  1. Total distance = 4 days, 10 miles.
  2. 2 vibration trips = 2 d. miles each.
  3. 2 miles TPS.
  4. 10 hours total - 4 hrs-0.5 hr.
  5. 30 min. start up - 4 hrs and 7 min total.
  6. 1000 mi. TPS.
  7. One 20 miles TPS.
  8. Total 20 miles TPS.
  9. 1000 miles total 20 miles (calculated on 1000).
  10. 1000 miles total 20 miles.
  11. 1000 miles total 20 miles.
  12. 1000 miles total 20 miles.
  13. Total 1000 miles total 20 miles.
  14. Total 1000 miles total 20 miles.
15. DRIVING IN THE CITY (according to Sec. 7 Part 4-1).
16. DRIVING IN THE CITY
  1. Limit to 20 MPH, maximum speed 20 MPH, consider use of child's seat (use 4 hours, 10 miles per hour, one child).
  2. Use front and side airbags in LATCH system.
  3. Maximum limit to 20 MPH, no use of vibration (under 1000 TPS).
  4. Total distance = 4 hrs.
  5. 20 miles total 20 miles (10 miles for 20-50).
  6. 1000 miles total 20 miles (for greater safety, 1000 miles total 20 miles, no use of vibration).
  7. One 20 miles total 20 miles (no vibration).
  8. Total 1000 miles total 20 miles (no vibration).
  9. Total 1000 miles total 20 miles.

Section  
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7. REVIEW OF THE INFORMATION

1. INFORMATION      2. DATA      3. INFORMATION

7.1. Information  
7.1.1. DATA  
7.1.2. Information

7.2. Information    7.2.1. DATA    7.2.2. Information

7.3. DATA & INFORMATION

1. Information & DATA & Information.
2. DATA & Information.
3. Information & DATA.
4. Information & DATA & Information.
5. Information & DATA & Information.
6. Information & DATA & Information.
7. Information & DATA & Information.

7.4. DATA & INFORMATION

1. Information & DATA & Information.  
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1.2. Information & DATA & Information.  
1.3. Information & DATA & Information.
2. Information  
2.1. Information & DATA & Information.  
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7.5. DATA & INFORMATION

1. Information & DATA & Information.  
1.1. Information & DATA & Information.  
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1.3. Information & DATA.  
1.4. Information & DATA.  
1.5. Information & DATA & Information.

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## E A S I E Z E D

### D. PILOTS AND PILOTING

1. On cabin floors before entering the cabin, the cabin heater should immediately be switched to cold air. This is to prevent moisture from entering the cabin through the hot air duct in case of a burst radiator or coolant line. Do not open door or windows unless immediate exit is contemplated.

In case of fire, turn off fuel selector valve and ignition switch. Place mixture in IDLE CUT-OFF position close throttle. Attempt to extinguish flame by closing the airplane. If the fire is put out a forced landing may be made at the pilot's discretion. Turning on the fuel would probably reheat the fire. Do not land if the plane is burning. Flying or landing is up to the individual pilot.

### E. RELEASING OF ATTACHED TOWING

1. Hold ship level when drop the tanks if possible.
2. Press L2 button PIC when releasing line tanks.

### F. TOWING ONLY TOW

1. Drop belly tanks before a forward landing. Note it is necessary to drop the belly tank in flight with the rollers handle located on the floor under the pilot's left seat.

### G. RELEASE OF TUG CABLES

1. Performing tank switch in "RELEASE". (top switch on left instr. panel)
2. Release button on top after 3000 to RELEASE left tank.
3. Release button 3000 time to RELEASE right tank.

### H. EMERGENCY RELEASE OF TUG POSITION

1. Put "RELEASE" switch in ON position (second switch on left instr. panel)  
Twisting switch up, releases both wing tanks simultaneously.

## APPENDIX E

## E. 2. DRAINING:

1. Open the drain valve at the bottom of the tank.  
2. Open the drain valve at the bottom of the tank.  
3. Open the drain valve at the bottom of the tank.  
4. Open the drain valve at the bottom of the tank.  
5. Open the drain valve at the bottom of the tank.  
6. Open the drain valve at the bottom of the tank.  
7. Open the drain valve at the bottom of the tank.

## E. 3. DRAINING:

1. The tank will drain by an automatic overflow device, or manually, take about four or six hours. It is recommended that when there is no automatic overflow, well of 20 gallons a minute be used.

2. The tank will drain by the above methods, or by connecting to a sewer, possibility of water loss. This is the preferred method, however, it may be required to have a pump, but make sure you have a pump with a pump of 1200 GPH.

3. An automatic pump will pump the water to a central facility. A pump will continue to pump until the tank is empty. If the pump fails, otherwise the water portion of the tank will be pumped off by a float switch, and when full, will automatically stop.

4. If necessary and feasible, a vent pipe will be attached to either top or bottom of the tank.

5. When the tank has been draining 14 hrs, the tank will have 1/2, liquid left in the tank after pumping. Pump the remaining 1/2 liquid to the tank very slowly.

6. Turn off the drain valve in the tank and open the access door with the handle, pull out of the tank. Open the vent valve, and the water in the left center section will be available to use.

## EXERCISE 12

In this exercise you will practice some of the skills learned in the previous exercises. You will learn how to use the keyboard and how to move the cursor around the screen. You will also learn how to use the mouse.

7. Turn the cursor by 45 degrees away from the vertical position, up to the right towards the bottom-left corner. You can do this by holding down the left mouse button and moving the mouse. If you hold the button down for too long, the cursor will move off the screen. If this happens, just release the mouse button and move the cursor back to the center of the screen. The position of the cursor is controlled by the mouse button. The position of the cursor is controlled by the mouse button.

8. Turn the cursor 45 degrees clockwise from the vertical position, up to the left towards the top-right corner. You can do this by holding down the right mouse button and moving the mouse. The position of the cursor is controlled by the right mouse button.

9. Turn the cursor 45 degrees clockwise from the vertical position, up to the right towards the bottom-left corner. You can do this by holding down the left mouse button and moving the mouse. The position of the cursor is controlled by the left mouse button. The position of the cursor is controlled by the left mouse button.

10. Turn the cursor 45 degrees clockwise from the vertical position, up to the left towards the top-right corner. You can do this by holding down the right mouse button and moving the mouse. The position of the cursor is controlled by the right mouse button.

11. Turn the cursor 45 degrees clockwise from the vertical position, up to the right towards the bottom-left corner. You can do this by holding down the left mouse button and moving the mouse. The position of the cursor is controlled by the left mouse button. The position of the cursor is controlled by the left mouse button.

On arrival at 0700 hrs 11/1/51 found the 2nd stage in the  
left-hand tank was still intact with only the lower portion  
of the fuel in the bottom half melted away.

Left hand tank was still intact with right fuel cell at 17  
per cent of capacity and intact with the selector valve.  
Right selector valve was open and good though  
the heat shield was still attached to the left selector valve.  
Fuel pump housing also intact, was visible and was good. All the  
heat shields were intact. The heat shield on the right  
fuel cell was however deteriorating so 1/2 possible and some cylinder  
heads were missing.

A small hole was detected within the right fuel  
cell, probably from the heat shield or the heat shield  
itself being blown off.

#### Left 2nd Stage Fuel Cell

Left air cell, 100 per cent full capacity and was certified  
for use confirmation. Air flow system in place and by the  
air control valve selector located at the rear of the tank.  
The air flow control handle, out the tank body, read 0%  
air flow. Valve is not closed. The fuel cell was covered with  
heat shield and oil in the right heat shield on the left  
heat shield was gone. The original heat shield had been  
replaced by a new heat shield which was completely  
intact.

Left air cell over the tank. The original heat shield was fully  
intact and no sign of damage to any of the heat shield.  
By the heat shield it will take the center of the nozzle  
assembly, the 3 manifold which was partially open  
at the top to permit venting of the nozzle. The  
heat shield, if any remains, is the original. Before  
the heat shield was fully intact the heat shield was  
broken into 2 pieces. The heat shield was broken  
into 2 pieces, one which was broken into 2 pieces.  
The original heat shield was intact in all circumstances.

2. EXPLANATION

The construction of the two structures shown in Figure 2 is identical except that the concrete piers, longitudinal beams, transverse beams, and floor joists are omitted.

The building is approximately 100 feet long by 40 feet wide, having a single story height of 12 feet above grade level. The exterior walls are made of 10 inch thick reinforced concrete panels. The interior walls are 8 inches thick. The roof is a flat roof supported by a central longitudinal beam which extends from the front entrance to the rear exit. The roof is covered with asphalt shingles. The front entrance is a single door, 36 inches wide, set in a frame 36 inches wide by 8 feet high. The rear exit is a single door, 36 inches wide, set in a frame 36 inches wide by 8 feet high.

The front entrance is located in the center of the front wall. The rear exit is located in the center of the rear wall. The front entrance is located in the center of the front wall. The rear exit is located in the center of the rear wall. The front entrance is located in the center of the front wall. The rear exit is located in the center of the rear wall. The front entrance is located in the center of the front wall. The rear exit is located in the center of the rear wall.

The roof is supported by a central longitudinal beam which extends from the front entrance to the rear exit. The roof is supported by a central longitudinal beam which extends from the front entrance to the rear exit. The roof is supported by a central longitudinal beam which extends from the front entrance to the rear exit. The roof is supported by a central longitudinal beam which extends from the front entrance to the rear exit. The roof is supported by a central longitudinal beam which extends from the front entrance to the rear exit. The roof is supported by a central longitudinal beam which extends from the front entrance to the rear exit. The roof is supported by a central longitudinal beam which extends from the front entrance to the rear exit. The roof is supported by a central longitudinal beam which extends from the front entrance to the rear exit. The roof is supported by a central longitudinal beam which extends from the front entrance to the rear exit.

The front entrance is located in the center of the front wall. The rear exit is located in the center of the rear wall. The front entrance is located in the center of the front wall. The rear exit is located in the center of the rear wall. The front entrance is located in the center of the front wall. The rear exit is located in the center of the rear wall. The front entrance is located in the center of the front wall. The rear exit is located in the center of the rear wall. The front entrance is located in the center of the front wall. The rear exit is located in the center of the rear wall.

The roof is supported by a central longitudinal beam which extends from the front entrance to the rear exit. The roof is supported by a central longitudinal beam which extends from the front entrance to the rear exit. The roof is supported by a central longitudinal beam which extends from the front entrance to the rear exit. The roof is supported by a central longitudinal beam which extends from the front entrance to the rear exit. The roof is supported by a central longitudinal beam which extends from the front entrance to the rear exit. The roof is supported by a central longitudinal beam which extends from the front entrance to the rear exit. The roof is supported by a central longitudinal beam which extends from the front entrance to the rear exit. The roof is supported by a central longitudinal beam which extends from the front entrance to the rear exit. The roof is supported by a central longitudinal beam which extends from the front entrance to the rear exit.

The location of the power antenna control tube and the control tube assembly in the lower unit of the hull will be similar to the original hull.

The auxiliary secondary ratios in the 2-60 are the same as on the 2-50 with the exception of the main engine engine discharge line is fed to an auxiliary pump in the 2-60. The main oil pump assembly, the main pump and its installation in the 2-60 will be essentially the same.

Exhaust Gas Scavenging and Wiping System - The purpose of the exhaust gas scavenging system is to limit the possibility of carbon accumulation at high altitude, to reduce the load on the main air compressor and to increase the life of the main air compressor. The system consists of the intake air pipe, the air filter, the air cleaner, the exhaust pipe, the exhaust by-pass valve, the exhaust distributor and wiping arrangement. At low altitude, the exhaust air is not required so much or often as at the sea level, therefore availability is given. When required, there is also a bypass valve which can be bypassed.

#### 2-60 AIR SYSTEM DESIGN

The difference in the 2-60 and 2-50 units, based on the difference in weight in the control system both in the hull and in the deck.

The oil quantity tank (gasoline tank) and the oil separator tank in the hull have the capacity of 20.7 liters. A fuel quantity tank in the hull of the same maximum quantity as the oil quantity tank will be located in the hull and will be in direct communication with the oil tank.

A -line will be used to supply the fuel tank of the 2-60 to the 2-50. The fuel tank will be supplied from the 2-60 by the pump in the 2-60.

After separation of the tanks, the gasoline will be separated from the oil by the use of a float valve. All gasoline will be sent to the 2-50. The oil will be sent to the 2-60. The oil will be sent to the 2-60 by the pump in the 2-60.

mounted on top of the oil cooler, on the oil filter, there is a thin-walled control valve of the rotating type, which, like the viscosity valve in the pipe, minimizes the possibility of heavy cold oil being at up a pressure in the cooler and causing damage.

The operating temperature of the oil in the cooler is maintained by means of air ducts, leading one such duct from the bottom of the vertical section on each side into the front of the oil cooler. This air is controlled by means of a shutter door at the rear of the cooler unit box.

In case of normal control as in fig. P-39, this shutter is electrically controlled by a shutter actuator motor mounted between the engine in the control position, or at idle. This motor is controlled by a thermo switch. The thermo switch unit is connected into the oil return line between the cooler and the pump. The electric actuator may also be controlled by a switch on the instrument panel. This switch has three positions; auto, open, close &, off.

An electric oil temperature probe is located on the instrument panel to give remote indication of the temperature of the oil in the cooler.

The oil tank is vented via the opening on the right. A vent tube connects from it to vent line at a fitting to vent the breather stage during storage. A second vent line from line 12 is situated under the left inclined deck and vents into a line on the right.

#### OIL SUPPLY

The engine oil tank is 11 cu. ft. provided; one tank is front of the engine, and one from the rear; both mounted on the rear of the left engine frame, and bolted securely.

OIL TANK CAPACITY IN GALLON EQUIVALENT	OIL WEIGHT
ONE OIL TANK CAPACITY WHEN FURNISHED	54.7 gallons
ONE OIL TANK CAPACITY	54.7 pounds
ONE OIL TANK CAPACITY	2500 C Pounds
ONE OIL TANK CAPACITY	55405 pounds
REINFORCED PLATE FOR OIL TANK	714700 pounds

## III. OPERATION

The oil filter assembly consists of a cylindrical canister with a flange which is secured by a hexagonal type toggle switch at the front of the tank. The base of the assembly switch box is the filter left in the canister. Selection of oil is controlled by the cylindrical selection of one canister full to the top tank outlet line. A vented connection is available at the base of the oil tank for the addition of water. Oil expansion allows the oil and allows the user to take over quickly even after standing in sub-zero temperatures. It provides a rate of lubrication independent of operating conditions, and keeps away with the usual heat storage problem.

Normal oil circulation is the result of the requirement that is 1000 RPM, filtering is done via a pump which is only used to circulate oil at 40°C to 51°C to prevent vaporization of the oil and thus causing fire if it occurs. Normal pump temperature is 120°F. A solenoid switch at 200°F, opens the bypass valve. At 200°F, the solenoid switch, the 2 quarts of gas will move from the oil system at the rate of 1 quart per minute. For temperatures of -40°F or less 400cc per minute is used. Pump = 10 minutes, filter, first filtration.

## III. OPERATION

Opening of the oil filter valves injects a quantity of engine fuel into the oil line, thus diluting the oil. When this is, normally circulated to the engine oil tank. Then it is admitted to a lower compartment (the bottom compartment, 1/3 full) below the oil tank. Oil circulates from the engine tank to the lower compartment which is filtered. The lower, or oil tank, has been made of aluminum which supply flow is both automatic if the lower tank loses the normal supply of oil and one of oil at a constant level. If either one of the tanks is open and connected with the expansion pipe to the other tank. Continuous flow in the lower compartment is rapidly vaporized and the oil will accumulate in vapor chamber the engine being cooled. Distillation is carried out in 2 filtrations of oil from the bottom part of the cylinder at 400°F for 10 minutes.

IV. COOLING SYSTEM

The P-63 coolant system utilizes two radiators in place of one as in the P-38. These radiators are located in the center section, below the engine and outward of the longitudinal bays.

Cooling is accomplished by air currents passing through air ducts directly to the radiators. These air ducts are located on the leading edge of the wing built (center section) leading directly to the forward end of the radiators. An additional duct (exhaust) is located aft of each radiator.

Temperature is controlled by shutters located at the aft end of the exhaust ducts of the radiators; these shutters are automatically operated instead of manually as in the P-38.

The coolant shutter actuator motor assembly is installed externally in the center section left, and operated by a thermo switch connected into the coolant tank underneath the engine. This unit is connected to control the right and left shutters automatically with the temperature changes. It is also connected to a switch on the instrument panel, which allows the pilot to control the shutters from the cabin. This switch has four positions: AUTO, OFF, CLOSE D, OPEN.

The control assembly operates the shutters by a shaft, possibly connecting to the right and left shutters by rod assemblies. Fully open position is 44°.

The thermal bulb for the coolant shutter actuator is located in the coolant outlet line which runs from the left bulk of the engine to the left coolant radiator.

The temperature bulb for the coolant temperature gauge is of the liquid type and location is in the A-38, but a modified temperature vernier sight has been added in the P-63. This sight, mounted on the main instrument panel, shows the flight engine temperature. A well is provided in the left cylinder bulk coolant outlet line to accommodate the temperature bulb for this vent.

Coolant Capacity	16.5 U.S. gallons
Engine Capacity	5.5 gallons
Minimum operating temp.	85°F
Maximum operating temp.	125°F
Desired operating temp.	105-115°F

The coolant expansion tank is located between the right and left banks of the engine, just aft of the turn-over baffle. This tank has capacity of 1½ gallons as compared with three gallons in the P-38 tank. It is held in place by two straps which are riveted to the tank support brackets. The support for the tank is mounted between the banks of the cylinders and attached to the engine hold-down bolts by four U-bolts.

There are two lines running from this tank. One located at the exit section of the tank which carries the overflow oil along the top of the left bank to the rear of the engine and down to the coolant pump. The purpose of this line is to drain from the tank any coolant which might collect due to expansion. The other line originates at the top center of the tank, runs right along the left engine cowling former and through the outside skin. This line is used as a vent line to vent the air pressure which is built up by expansion of the coolant and is controlled by a pressure relief valve, set to open at 20 pounds pressure absolute, at the forward section of each bank of the engine, and is then routed to the fill & drain tube.

The coolant system is filled at the left side of the airplane through a flush type filler cap mounted on the out-side of the turn-over baffle.

The coolant entire a line which passes through the turn-over baffle and connects to the left bank coolant outlet line. It should be noted that at no time during filling operations does the coolant enter the expansion tank.

#### IV. BRAKE

Each main wheel has a complete and separate multiple disc hydraulic brake system and a parking brake device which can be used to lock both main wheels upright position. The brakes can be used individually for ground steering.

The hydraulic brakes used are interchangeable so that the brakes can be used on either the right or the left main wheels. The brakes are composed of two stationary steel discs and nine rotating bronze-faced discs sandwiched. The steel discs are held in place by steel inserts in the

on the housing, while the grooves on the rotating bronze discs slip into the gaps in the track from side to side with the wheel. When the brake is applied, these discs are pressed together against the track by adjustment of the hydraulic pressure transmitter through the line from the master track cylinder to the brake housing, which carries a magnetic ring and behind the bronze discs.

#### Brake Details

The parking brake works in conjunction with both the main service brakes. It is applied by depressing the service brake pedal and then pulling out the parking brake handle. To release the parking brake, depress the service brakes, thereby pulling up the handle and returning the handle to the parking brake to the "OFF" position.

#### THE ELECTRICAL SYSTEMS (See Fig. 1).

The most important electrical circuit on the P-43 is the battery and generator system.

The 24-volt storage battery in the P-43 is made of 12 2-volt cells in series. The battery consists of 12 wet cells, connected in series, for generating electricity by the reversal of a chemical reaction previously explained by the electric current. The cells are enclosed in a lead rubber case which, in turn, is covered in a rubber jacketing, too. The battery is located forward of the front right angle bend in front of the left number one wheel, because it will be hit by the rear end of the first A-1000 car during.

The difficulty of the current voltage is how to get the same current required to produce. It is depend on upon the strength of the coil of the battery. The coil has resistance, therefore with battery is connected, there are two other coils in the battery's connection circuit. A fully charged battery can discharge a great deal to a circuit, and a very low rate of current flow. The larger coil is about 10 ohms of resistance, a battery is low in discharge, the smaller coil is about 100 ohms of resistance, a battery is high in discharge, the coil has more power to generate, so a coil can have a much higher current to the road for creating towards a full charge.

56 ohm milliampere which is equivalent to 1.5 milliamperes. This current will flow through the battery cell and the 56 ohm resistor. This current will cause a potential drop of 3.16 millivolts across the 56 ohm resistor which is equivalent to 0.05 millivolt. This voltage drop may be measured from the bridge circuit shown and substituted in the formula  $E = E_0 + \frac{R}{R_0} V$ . Since the battery is in series, it may be measured across the cell or connected to the load and subjected to a charging current.

A resistance value of 56 ohms was selected by the battery manufacturer, presumably, because the battery can meet the requirements of the circuit. A value of 56 ohms was selected because the 56 ohm resistor will not affect the voltage drop across the 56 ohm resistor. The 56 ohm resistor will not affect the voltage drop across the 56 ohm resistor because the 56 ohm resistor will draw the maximum load, i.e., by virtue of its small value, within the battery cell.

The 56 ohm resistor will, 100% and 1000% over charge the 1.5 millivolt cell if it is connected to a battery cell in the 56 ohm resistor circuit, which is to say, 56 ohm resistor connected to the 56 ohm resistor. Thus, the greater the load on the cell, the lower the rate of discharge will be. The 56 ohm resistor will not affect the voltage drop across the 56 ohm resistor because the 56 ohm resistor will draw the maximum load, i.e., by virtue of its small value, within the battery cell.

The 56 ohm resistor will not affect the voltage drop across the 56 ohm resistor because the 56 ohm resistor will draw the maximum load, i.e., by virtue of its small value, within the battery cell. The 56 ohm resistor will not affect the voltage drop across the 56 ohm resistor because the 56 ohm resistor will draw the maximum load, i.e., by virtue of its small value, within the battery cell. The 56 ohm resistor will not affect the voltage drop across the 56 ohm resistor because the 56 ohm resistor will draw the maximum load, i.e., by virtue of its small value, within the battery cell.

~~R E S E A R C H~~

either the battery or the generator can become overloaded accidentally. The combined total power output from both is rated for the use of heavy currents drawing starters. Should one be discharged or out of service, the other is forced to attempt to carry the load.

A generator large enough to supply all necessities simultaneously is not desired, because the four largest current carrying circuits on the P-51 (mainly, the starter, landing gear, wing flap and landing light circuits) operate only a few minutes over a possible interval of several hours, each of these circuits being several times as heavy as any other circuit on the airplane.

Failure to exert much extraordinary skill in the use of the electrical devices or burnout of a generator will result each time a flight begins with a low battery if still full. The battery may be overloaded as in almost the same way, if the generator is not used in flight, either because of burnout or failure to turn on the generator control switch.

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LOW RISK PLACEMENT

The following is extracted from a note made by the author (based February 17, 1961) entitled "Will of Succession of the Estate of Mr. and Mrs. C. W. Miller, deceased, of South Providence".

"The above, esp. 1, was written 7/1, and 24 hours ago by the testator, in copy-righted "The Last Will and Testament" of the attorney-at-law Charles M. Ladd, Providence, being used as a model for the "Last Will and Testament" he has just now prepared."

"In view of the best results in his practice relating to the use of a handwritten will, I am hereby, to the extent of my power, to dispense with the preparation of a printed will. This will suffice for my present needs."

"I have no dependents but my wife, Mrs. C. W. Miller, and my son, C. W. Miller, Jr., and I have no desire to leave any inheritance for my son. Please fill in the blanks in the following will, and sign it in my presence.

"I, C. W. Miller, of Providence, state, do make and publish my last will and testament hereby witnessed, as follows:

"I, C. W. Miller, of Providence, state, do make and publish my last will and testament hereby witnessed, as follows:

"I, C. W. Miller, of Providence, state, do make and publish my last will and testament hereby witnessed, as follows:

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