

HEADQUARTERS
375TH AEROMEDICAL AIRLIFT WING (MAC)
UNITED STATES AIR FORCE
SCOTT AIR FORCE BASE, ILLINOIS 62225

12 November 1971

T-29/C-131A DAILY SYSTEMS EXAMINATION

HYDRAULIC SYSTEMS

HYDRAULIC SYSTEMS

1. The alternator-generator hydraulic system:
 - a. Shares its accumulator with the main hydraulic system.
 - b. Shares its fluid supply with the cabin compressor hydraulic system.
 - c. Is a completely independent system.
 - d. Is connected to the main hydraulic supply system.

2. Why should the alternator-generator hydraulic system switch be turned on before engine start?
 - a. So the #2 alternator and generator will operate during engine start.
 - b. To avoid momentary high pressures associated with turning the system on with the engine running.
 - c. Because it is impossible to turn the switch on with the engine operating.
 - d. It makes no difference where the alternator-generator system switch is positioned prior to starting the engine.

3. What action should be taken if either #2 alternator or generator fails, the system pressure low warning light comes on in flight, or excessive pressure or temperature is indicated?
 - a. Feather the #2 propeller.
 - b. Turn the #1 alternator and #1 generator switches to the off position.
 - c. Turn the alternator-generator hydraulic system switch off.
 - d. Both b and c above.

4. In addition to generator failure procedures, what additional precautions must be taken if the #2 generator fails and cannot be reset?
 - a. Feather the #2 propeller.
 - b. Turn the alternator-generator hydraulic system switch off.
 - c. Set engines at METO RPM and land as soon as possible.
 - d. No hazard exists if the #2 generator switch is placed in the off position.

5. The hydraulic reservoir has a fluid capacity of 6.2 gallons of which 1.3 gallons are reserved for the emergency hydraulic pump.

a. 20 - 5.2	c. 8.8 - 2.6
b. 15 - 3	<input checked="" type="radio"/> d. 6.2 - 1.3

6. If the emergency hydraulic pump has been used for the maximum time (5 min), how long should it cool before it is used again?

- a. 3 min.
- b. 10 min.
- c. 20 min.
- d. 30 min.

7. With the hydraulic by-pass handle in the by-pass (up) position, what hydraulic components may be operated by the emergency pump?

- a. Brakes and nose wheel steering.
- b. Flaps and windshield wipers.
- c. Flaps and brakes.
- d. Landing gear and main entrance door.

8. With the by-pass handle (up) and the hydraulic pumps operating normally, what pressure would you expect to read on the brake hydraulic gauge?

- a. 1450-1650 PSI
- b. 2000-2200 PSI
- c. 2900-3100 PSI
- d. 3400-3600 PSI

9. The wing flaps are activated by:

- a. Two hydraulic actuating cylinders, one on each flap.
- b. A single cylinder connected to the flaps through a cable and bell crank arrangement.
- c. A single hydraulic motor connected to the flaps by torque tubes and cables.
- d. An electric motor.

10. In the event the hydraulic system becomes inoperative, the landing gear up-latches may be released by:

- a. Mechanical linkage.
- b. Hydraulic pressure only.
- c. Compressed air.
- d. Both a and c.

11. The shuttle lockout and fuse valve installed in the hydraulic brake system:

- a. Shuts off brake fluid in the event the brakes overheat.
- b. Allows emergency air operation of the brakes in case of hydraulic pressure loss or line breakage.
- c. Closes off the hydraulic ports and eliminates further loss of hydraulic fluid in case of a break in the line downstream from the valve.
- d. Both b and c.

12. If, due to a line failure, the normal supply of fluid in the hydraulic system and reservoir has been exhausted, the reserve fluid supply permits the lowering of wing flaps, the charging of the accumulators, and approximately _____ brake applications.

- a. 8
- b. 12
- c. 12 to 15
- d. unlimited

13. The minimum and maximum emergency air system pressure is _____.

- a. 1350 - 1500
- b. 1500 - 1800
- c. 1450 - 2000
- d. 1400 - 2200

14. With a fully charged emergency air cylinder, approximately _____ brake applications can be made.

- a. 8
- b. 12
- c. 15
- d. 18

15. The yellow mark at 850 PSI on the emergency air pressure gauge indicates:

- a. One brake application remains.
- b. The minimum limit of the accumulator precharge.
- c. That the system needs charging.
- d. That the pressure is sufficient to blow the uplocks and to make two brake applications.

16. The best airspeed to "free fall" the landing gear is _____ KIAS.

- a. 130
- b. 141
- c. 156
- d. 176

17. If the temperature of the cabin compressor hydraulic system rises above 75°c, the system should be:

- a. Operated in the manual full cold position.
- b. Shut down by placing the cabin pressurization switch in the alternate air flow position.
- c. Monitored for any further increase but no immediate action is required.
- d. Shut down by turning the cabin heat and vent switch to shutoff.

18. When the cabin pressurization switch is placed in the alternate air flow position, the by-pass valve opens to:

- a. Allow the compressor to run at idle RPM.
- b. Block the flow of fluid from the pump.
- c. Allow the fluid to by-pass the compressor and circulate in the system.
- d. Allow the fluid to circulate in the system, by-passing the hydraulic pumps.

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HEAT, ANTI-ICING, AND PRESSURIZATION SYSTEMS

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1. The cabin heat and vent switch is provided to:
 - a. Relieve cabin pressure while the aircraft is on the ground.
 - b. Refrigerate the cabin while the aircraft is on the ground.
 - c. Arm the augmentor vanes for ground checking.
 - d. Prevent the flow of fuel vapors into the fuselage from the augmentor tubes during engine start.

2. The heat anti-ice button should be placed in the push on (down position) at least _____ minutes before icing conditions are anticipated.
 - a. 5
 - b. 10
 - c. 20
 - d. 30

3. If an overheat condition occurs in the augmentors during anti-icing operations:
 - a. The overheat warning bell rings and the vanes trail.
 - b. The heat anti-ice button is disengaged.
 - c. The outboard heat source valves and the tail anti-icing valve close.
 - d. All of the above.

4. Maximum wing and tail temperature for anti-icing operation with the structural override limit switch in the override position is:
 - a. 120^oc
 - b. 150^oc
 - c. 200^oc
 - d. None of the above.

5. The manual heat anti-ice shutoff handles are actuated in flight to manually close the heat source valves. Once the heat source valves have been operated manually, they cannot be operated electrically until the:
 - a. Valves have been manually returned to the on (open) position.
 - b. Valve actuators have been reset on the ground.
 - c. Heat anti-ice circuit breaker has been reset.

6. With the failure of the number one engine, the left manual heat anti-ice handle is placed in the off position (heat source on LH engine closed). Which of the following items are applicable?
- Heated air from the right engine augmentors is allowed to heat both wings.
 - The flow of cold air in the left engine augmentors is kept out of the wing and tail heating ducts.
 - In icing conditions, increase RH engine CHT to 250 - 260^o c.
 - All of the above.
7. During climb, an augmentor vane closure in excess of _____ for T-29B or _____ for T-29C/D may cause serious after-burning in the augmentors.
- 40^o/Mid
 - 60^o/70^o
 - 70^o/60^o
 - Fully closed/fully closed
8. "Nesa Glass" in the windshields is heated by current from the number one alternator bus. To prevent damage to the glass from thermal shock, the "start" (low 115 VAC) position should be used at least _____ minutes before switching to the on (high 325 VAC) position.
- 5
 - 10
 - 20
 - 30
9. There is a danger of carburetor icing when CAT is _____ to _____ degrees centigrade.
- 15/+10
 - 10/+15
 - 15/+38
 - None of the above
10. When should the propeller de-icing heat be turned on?
- Inflight when icing is anticipated.
 - Prior to takeoff if icing conditions are anticipated.
 - Inflight when icing is encountered.
 - Both b and c.
11. A top reading of _____ percent or below on the propeller de-ice loadmeter during the propeller cycle indicates that the blades of one propeller are not being de-iced uniformly.
- 30
 - 60
 - 90
 - 120

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PROPELLER, FIRE DETECTION, AND EXTINGUISHER SYSTEMS

PROPELLER, FIRE DETECTION, AND EXTINGUISHER SYSTEMS

1. Fluid for propeller pitch changing is:
 - a. Supplied by the engine oil system.
 - b. Supplied from a self-contained tank in the propeller dome assembly.
 - c. Not required since the system is mechanical.
 - d. Not required since the system is electrical.

2. The autofeather system will operate to feather a propeller only when:
 - a. The propeller runs away.
 - b. The engine catches on fire.
 - c. The engine sustains a substantial power loss.
 - d. All of the above.

3. One of the most important items to remember in the use of the auto-feathering system is to check that:
 - a. The red feathering button lights go out as the power advances past approximately 25" HG manifold pressure.
 - b. The red feathering button lights stay on as the power advances past 45 PSI torque pressure.
 - c. The red feathering button lights go out after the auto-feathering system is disarmed during the climb check.

4. For the auto-feather system to check out properly during the engine runup:
 - a. The red light in the feather button should come on at 40⁺5 PSI torque pressure.
 - b. There should be a 2 to 3 second time delay from the time the test switch is pressed until the feathering button is drawn into the feather position.
 - c. After the test switch is released, the feathering button should automatically return to the half out (neutral) position and the feathering cycle should stop.
 - d. Both a and b above.

5. _____ operated latch stops prevent moving the throttles into the reverse thrust range when the airplane is airborne.
 - a. Hydraulic
 - b. Manual
 - c. Electrical
 - d. None of the above.

6. Fire detection is available to detect a fire in the:

- a. Power section of engine.
- b. Accessary section of engine.
- c. Main wheel well.
- d. All of the above.

7. To test the fire detection circuits successfully, you should get illumination of the fire warning lights on the circuit being tested within _____ seconds.

- a. 3
- b. 6
- c. 15
- d. 20

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APG AND ELECTRICAL SYSTEMS

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1. What is the designed gross takeoff weight of the T-29/C131A?
 - a. 41,500
 - b. 43,575
 - c. 40,000
 - d. 36,575

2. Control surfaces which contain spring loaded flight tabs independent of trim tabs are:
 - a. Both ailerons
 - b. Rudder and aileron
 - c. Rudder and elevator
 - d. None of the above

3. What is the clearance between the propeller tips and ground?
 - a. 18"
 - b. 24"
 - c. 12"
 - d. 10"

4. When applying the gust lock, the controls are locked:
 - a. Simultaneously
 - b. In sequence: aileron, elevator, rudder
 - c. In sequence: elevator, rudder, aileron
 - d. In sequence: aileron, rudder, elevator

5. If a Dash 6 preflight has been accomplished, it is still necessary for the flight crew to check the tail section during exterior inspection.
 - a. True
 - b. False

6. What causes the control column to go forward when the gust locks have been released?
 - a. Weight of control column
 - b. Counter-balance weight
 - c. Balance weights on control surfaces
 - d. None of the above

7. What type of engines power the T-29 C and D and C-131A aircraft?
- a. 14 cylinder, Pratt/Whitney R-2800-97W
 - b. 18 cylinder, Pratt/Whitney Double Wasp R-2800-99W
 - c. 18 cylinder, Wright Cyclone R-2800-99W
 - d. 18 cylinder, Pratt/Whitney R-2800-52W
8. Where is the only true trim tab located?
- a. Elevator
 - b. Aileron
 - c. Rudder
 - d. Right wing
9. What type of engines power the T-29 A and B?
- a. 14 cylinder, Pratt/Whitney R-2800-52W
 - b. 18 cylinder, Pratt/Whitney Double Wasp, R-2800-97
 - c. 18 cylinder, Pratt/Whitney R-2800-99W
 - d. 14 cylinder, Wright Cyclone R-2600-103
10. What position is the spring loaded flight tab in with flight control locked? (elevator)
- a. Spring loaded approximately 3° up
 - b. Spring loaded to approximately 5° down
 - c. Spring loaded to approximately the neutral position
 - d. Spring loaded to approximately 10° up

ELECTRICAL

1. Select the most correct option regarding the batteries in the DC electrical system.
- a. Two 24 volt batteries in series
 - b. Two 12 volt batteries in parallel
 - c. Two 12 volt batteries in series
 - d. Two 28 volt batteries in parallel
2. What is the minimum battery voltage required to close the battery relay connecting the battery to the bus?
- a. 18
 - b. 28
 - c. 12
 - d. 24

3. All DC circuits are protected by circuit breakers except the:
- Feathering boost pump motors, emergency hydraulic pump, and fire extinguishers
 - Starter motors, emergency hydraulic pump, and fire extinguishers
 - Propeller feathering pump motors and starter motors
 - Inverters
4. Select the correct statement regarding non-trip free (black) type circuit breakers:
- They cannot be made to stay in the reset position until the overheat device within the circuit breaker itself has cooled.
 - All propeller electric circuit breakers are non-trip free.
 - They may be held in the reset position to complete a circuit.
 - All of the above.
5. Automatic devices in the generator control system will cut out either generator if voltage output rises to or above:
- 29.5 volts
 - 18.0 volts
 - 30.0 volts
 - 32.0 volts
6. The load monitor relays:
- Connect only the non-essential DC equipment to the main DC bus and have no control over the non-essential equipment bus.
 - Disconnect the non-essential AC and DC equipment if either generator fails or is inoperative. *IF SWITCH IS NORMAL*
 - Prevents overloading one generator when the opposite generator fails, provided the load monitor switch is in the override position.
 - None of the above.
7. A generator fails and it cannot be reset. You would normally turn that generator switch off. Why?
- To prevent overloading the other generator.
 - To permit the load monitoring switch to disconnect non-essential equipment.
 - To prevent shearing the generator drive shaft.
 - To prevent lowering the voltage output of the operative generator by action of the load equalizer circuit.

8. The inverter failure warning light illuminates when the:
- Spare inverter is selected.
 - Main inverter is selected.
 - Selected inverter fails.
 - Spare inverter is being used and the main inverter is inoperative.
9. Which instruments are operated by the 26 volt regulated AC bus?
- Quantity
 - Flight
 - Pressure
 - Temperature
10. With no load on the alternators, the normal voltage output is:
- 115 ± 2.5
 - 110 ± 2.5
 - 115 ± 5.0
 - 115 ± 2.5
11. With no load on the inverters, the normal voltage output is:
- 110 ± 2.5
 - 115 ± 5.0
 - 115 ± 2.5
 - 110 ± 5.0
12. During a flight the pilot wishes to heat the reserve oil and the #1 alternator is inoperative. In what position must he place the alternator selector switch?
- 2 off - 1 on bus 2
 - 1 off - 2 on bus 1
 - External power on bus 1
 - The reserve oil heater does not require power from the #1 alternator bus.
13. If the electrical power circuit to the fuel quantity gauges fails, the gauges will:
- Go to zero reading
 - Go to a full tank indication
 - Maintain the same reading that was indicated at time of power loss
 - Not be affected by any power loss since it is direct reading gauge