SECTION VI

FLIGHT CHARACTERISTICS

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GENERAL FLIGHT CHARACTERISTICS

Control forces are light. Adequate stability and control are available throughout the operating speed range. When properly trimmed, in the clean configuration, the aircraft will remain in straight-and-level flight with little attention from the pilot.

D The pilot may notice the T-41D has a heavier nose during rotation for takeoff and in the flare. It is more difficult to hold the nosewheel off the runway during a touch-and-go.

STALLS

The stall characteristics of the aircraft are conventional in all configurations. Stall warning is provided by a stall warning horn between 5 and 10 mph above the stall, and in some instances, by a noticeable aircraft buffeting. In a power-on situation the aircraft may or may not buffet prior to stalling. If recovery is not initiated at this point, the nose will fall abruptly even if full aft elevator is held. One wing may drop before the other if the aircraft is in uncoordinated flight when it stalls. The factors that affect the stalling characteristics are: weight, load factor, airspeed, flap setting, power setting, and coordination (slips or skids). Refer to figures 6-1 and 6-2 for stall speeds.

When the aircraft approaches a stall, the control surfaces lose some, if not all, of their effectiveness. As the angle of attack increases, the order in which the loss of control surface effectiveness occurs is: ailerons, elevator, and rudder. During the recovery from a stall, the control surfaces will regain their effectiveness in the reverse order. The aircraft is constructed so that the wing will stall progressively outward from the wing root to the wingtip. This is called "washout" and provides aileron control effectiveness as long as possible.

STALLING SPEEDS
POWER OFF MPH, CAS
2200 POUNDS GROSS WEIGHT

Condition	Angle of Bank			
	0°	20°	40°	60°
Flaps Up	60	61	68	80
Flaps 20°	55	57	63	78
Flaps 40°	49	51	56	70

Figure 6-1

STALLING SPEEDS
POWER OFF MPH, CAS
2500 POUNDS GROSS WEIGHT

Condition	Angle of Bank			
	0°	20°	40°	60°
Flaps Up	64	66	73	90
Flaps 20°	58	60	67	83
Flaps 40°	53	55	60	75

Figure 6-2

D The stall characteristics of the aircraft are conventional in all configurations and are identical to the T-41C.

SPINS

The T-41 is inherently resistant to spins; however, an inadvertent spin may occur if the aircraft is mishandled during a stall or stall recovery. Normally neutralizing all controls will recover the aircraft.

If the aircraft continues to spin, use the following recovery technique:

1. Check the throttle in idle and the ailerons are neutral.

2. Apply and hold full rudder opposite to the direction of rotation.

NOTE

If disorientation precludes a visual determination of the direction of rotation, refer to the turn needle. The needle deflects in the direction of rotation.

3. After the rudder reaches the stop, briskly move the control wheel far enough forward to break the stall.

NOTE

Full down elevator may be required at aft center of gravity loadings to ensure optimum recovery.

4. Hold these controls until rotation stops.

WARNING

Premature relaxation of the control inputs may delay the recovery, resulting in additional altitude loss.

5. As the rotation stops, neutralize the rudder and make a smooth recovery from the resulting dive.

Application of this recovery technique will produce prompt recoveries (within 1/4 turn).

FLIGHT CONTROLS

Elevator control forces are relatively light in cruising flight at all aircraft weights and CGs.

Aileron control forces are light. The ailerons are effective at all speeds up to the actual stall. Rudder forces are comparatively light and only slight rudder pressure is required when rolling into and out of turns.

Elevator trim is effective throughout most of the speed range of the aircraft. At very low airspeeds, sufficient trim may not be available to relieve all control pressures.

TAKEOFF RUN

D The T-41D accelerates faster and becomes airborne in less distance than the T-41C. At sea level this amounts to a 16% shorter take-off roll while at 10,000 feet it would result in a 6% reduction. Refer to the appendix for specific climb performance.

CLIMB PERFORMANCE

The best rate-of-climb airspeed has been determined to vary with altitude. At sea level, the best rate-of-climb airspeed is 100 mph, while at 10,000 feet MSL the airspeed is 91 mph. (These airspeeds apply at 2500 lbs gross weight. Refer to Appendix for airspeeds at lighter weights.) The best angle-of-climb can be achieved with either a clean configuration and 85 mph, or 10 degrees of flaps and 70 mph. (The latter configuration and airspeed is the recommended procedure for obstacle-clearance takeoffs.)

These airspeeds apply at 2500 lbs gross weight. Refer to Appendix for airspeeds at other weights

D Climb performance for any given set of conditions is improved over the T-41C. The pilot can expect an average of 6% higher rate of climb in the T-41D. Refer to the appendix for specific climb performance.

CRUISE PERFORMANCE

D The T-41D generally cruises faster than the T-41C, particularly at low pressure altitudes. It is also slightly more fuel efficient at high altitude, but not significantly so. Refer to the cruise performance charts in the appendix for specific information.

CAUTION

Failure to lean the mixture to the appropriate fuel flow setting as specified in the appropriate cruise performance chart may result in very high fuel consumption and exhaustion in less than 3.5 hours of flight.

D IDLE DESCENT

Due to a significant increase in parasite drag during idle operations with the propeller at FULL INCREASE low blade angle (such as the descent from downwind to touchdown in the pattern), the T-41D can develop a very high sink at approach speeds. This makes it possible to fly a much tighter pattern at idle. For the same reason, the T-41D will decelerate much faster than the T-41C.

SECTION VII

ALL-WEATHER OPERATION

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INTRODUCTION

This section discusses special all-weather procedures and techniques which either emphasize or add to procedures and techniques presented in Sections II and III.

INSTRUMENT FLIGHT

IMC flight in the T-41C is prohibited.

ICE AND RAIN

Ice

WARNING

Do not take off with any ice, snow or frost on the wings, windows or tail (including all control surfaces). Ice, snow or frost may reduce forward visibility, change the lift and stall characteristics of the aircraft, and cause possible binding of the control surfaces.

CAUTION

Taxiing through snow drifts or over accumulation of ice may result in propeller damage.

Rain

A full flap landing is recommended. Raising the flaps on landing roll will increase the aircraft weight on the main landing gear and decrease the possibility of hydroplaning. When landing on a wet runway, expect a longer landing roll as braking effectiveness is reduced. Use caution as the possibility of hydroplaning exists on a wet runway.

WARNING

Crosswinds present more directional control difficulty on a wet runway than on a dry runway. Maintain proper crosswind control inputs throughout the landing roll to aid in directional control.

TURBULENCE AND THUNDERSTORMS

WARNING

Flights through thunderstorms or areas of severe turbulence must be avoided. Particularly at low pressure altitudes, the T-41D may cruise at airspeeds well above maneuvering speed. If unexpected turbulence or vertical air currents are encountered, reduce throttle (manifold pressure) and then RPM if necessary to slow to a maximum of 127 MPH (maneuvering speed). The combination of very high airspeed and severe turbulence may result in overstressing the aircraft and possible structural failure.

Penetrating a thunderstorm is not recommended under any circumstances. Remain VFR and land at a suitable field where a safe landing can be made.

If unexpected turbulence is encountered, use smooth, positive control inputs. Extreme up and down drafts can cause large attitude, airspeed,

and altitude deviations. Do not chase airspeed or altitude; maintain aircraft attitude and attempt to exit the area of turbulence as soon as possible.

COLD WEATHER OPERATIONS

The T-41 engine is considered cold soaked when the ambient temperature is below 35°F and the engine has not been operated for an extended period.

Engine Start

1. Mixture - RICH.
2. **D** PROPELLER - FULL INCREASE.
3. Throttle - IDLE.
4. Manual Primer - 2 to 6 strokes. Leave primer charged and ready for stroke.

NOTE

After pulling the primer out, wait a few seconds to allow sufficient fuel to enter the primer. If properly primed, some resistance will be felt when pushing the primer in.

5. Master Switch - ON.
6. Navigation Lights - ON.
7. Throttle - IN (1/4 to 1/2 inch).
8. Auxiliary Fuel Pump Switch - LOW (if required).

CAUTION

Limit use of the auxiliary fuel pump to prevent overpriming and flooding. Excessive cranking will rapidly drain battery power.

9. Propeller Danger Area - CLEAR.
10. Ignition Switch - START (release when engine starts).
11. Auxiliary Fuel Pump Switch - OFF and GUARDED.
12. Throttle - 1000 RPM minimum.
13. Manual Primer - IN and LOCKED.
14. Engine Instruments - CHECK.

NOTE

Below 0°F the oil pressure gauge should show a positive indication within 1 minute of engine start.

Engine Warmup

If the engine is cold soaked, no indication will be apparent on the oil temperature gauge and the oil pressure gauge will read low. Engine warmup may require up to 10 minutes for the oil pressure to indicate in the normal operating range. Takeoff will be delayed until normal oil pressure, 30 to 75 psi, is indicated. If no oil temperature is noted, accelerate the engine several times to higher engine RPM. If the engine accelerates smoothly and the oil pressure remains normal and steady, the aircraft is ready for takeoff.

HOT WEATHER OPERATIONS

For hot weather operations; use normal procedures and note the following: Avoid prolonged engine operation on the ground as the heat from the engine may cause vapor lock to develop in the fuel lines. If the engine quits or will not start and vapor lock is suspected, the system may be purged by checking the mixture control knob at full lean, throttle at idle, and holding the auxiliary fuel pump switch in HIGH for 5 to 10 seconds or more to flush the vapor through the fuel lines. Turn the pump off and proceed with the normal starting procedures.