EMERGENCY PROCEDURES

Engine Failure In Flight and Feathering Procedure 1
Engine Failure During Take-Off 1
Unfeathering 2
Emergency Landings 3
Emergency Landing Gear Extension 3
In-Flight Cabin Door Closing Procedure 4
Emergency Exit Window 4
Emergency Descent 4

EMERGENCY PROCEDURES

1. Engine Failure In Flight And Feathering Procedure:

As the engine loses power, a slight yaw in the direction of the dead engine will occur, which can be corrected easily with the rudder or the rudder trim tab. While the plane is slowing down to the single engine cruising speed of about 138 MPH at low altitudes and at moderate power settings, the propeller on the dead engine should be feathered by pulling the throttle to idling position and the prop pitch control back fully; then the mixture should be set at idle cut-off, cowl flap closed and the ignition off. The cowl flap on the operative engine should be adjusted to maintain proper cylinder head temperature. Best single engine performance will be obtained with the dead engine wing held up about 5 degrees higher than level. This helps counteract the tendency to turn in that direction.

NOTE

If vacuum operated copilot gyros are installed, turn copilot gyro switch off during single engine operation or in event of vacuum pump failure.

CAUTION

If the left engine has failed, the hydraulic pump will not be functioning. If it is necessary to lower the landing gear or flaps with the left engine dead, the hydraulic hand pump located in the pedestal is used. (See 5, this section.)

2. Engine Failure During Take-Off:

The Hartzell feathering propellers can only be feathered while the failed engine is rotating, and not if the engine drops below 1000 RPM. The loss of centrifugal force due to slow RPM count will activate a stop pin that keeps the propeller from feathering each time the engine is shut down on the ground. If an engine freezes up, it will be impossible to feather its propeller. Single engine flight can be maintained with the dead engine propeller unfeathered, although a noticeable decrease in single engine performance will take place.

If an engine failure occurs during take-off run, the power on the good engine should be cut and the airplane stopped straight ahead. If it occurs after leaving the ground, but with sufficient landing area still ahead, a landing should be effected immediately. If no landing can be made directly after the failure, the following steps should be followed:

a. Apply full power to good engine.
b. Feather dead engine.
c. Retract landing gear and flaps, if extended (using hand pump if left engine is out). If enough altitude has been reached for reaching the airport with the gear extended, leave the landing gear in the down position.
d. Maintain a best rate of climb airspeed.
e. Trim directionally with rudder trim.
f. As the airport is approached for landing, reduce power on the good engine and gradually retrim with the rudder tab. When it is obvious that the airport can be reached easily, lower the landing gear and check the indicators to make sure it is down and locked. Maintain a little extra altitude and speed during the approach, keeping in mind that the landing should be made right the first time, and that either undershooting or overshooting may require the use of full power on the good engine, making control more difficult. Lower the flaps at the last moment if desired.

NOTE

The aircraft may not climb at speeds below best single engine rate of climb speed.
If the left engine is inoperative, operation of the gear and flaps is limited to the use of the hand pump (refer to Emergency Landing Gear Extension).

3. Unfeathering:

It is not recommended that propeller feathering and unfeathering be practiced on the ground because of the excessive vibration that occurs in the engine installation. In flight, feathering should be practiced only to familiarize the pilot with the proper procedures. To unfeather a propeller in flight, the following technique is recommended:

a. Turn main fuel valve "ON."
b. Turn ignition switches "ON."
c. Prime engine if necessary, then turn electric fuel pump off.
d. Open throttle 1/2 inch.
e. Advance propeller control to high RPM position.
f. Advance mixture control to full rich.
g. Engage starter.
h. As RPM passes 1000 coming out of feather, retard propeller control to maintain 1800-2000 RPM for warm-up. Adjust manifold pressure to 15" and maintain this low power until oil temperature begins to rise and oil pressure can be maintained within limits.
i. Re-synchronize engines.

If the engine has been inoperative for several minutes, particularly in low temperatures, prime by turning the boost pump "ON" and moving the mixture control forward until the first indication of fuel pressure; then return to "IDLE CUT-OFF." Leave boost pump "ON" and continue start as in (d) above.

Operating at gross weight under optimum conditions of turbulence and pilot technique, and under standard conditions of temperature and altitude, the Turbo Aztec has a single engine absolute ceiling of 16,700 feet at 5200 pounds and maximum attainable power. The normally aspirated Aztec has a single engine absolute ceiling of 6,400 feet at 5200 pounds and maximum attainable power.

Under ideal conditions, the Aztec can be expected to maintain approximately the stated maximum altitudes. When adverse conditions of turbulence, temperature, altitude, pilot technique, or airplane condition or equipment is encountered, the absolute ceiling will be reduced. These factors must be taken into consideration in the single engine operation of any twin engine airplane.

Pilots of this airplane should remain reasonably proficient in single engine flight. In many cases, "simulated" single engine operation (zero thrust condition, approximately 11 inches of manifold pressure and 2175 RPM) will be preferable, but actual single engine operation should be practiced occasionally. The following precautions should be exercised in actual single engine flight:

a. Do not feather a propeller if there is reason to suspect that the starting characteristics of the engine are not normal and that restarting in the air may be difficult or impossible.

b. Do not feather a propeller in conditions of temperature, altitude, weight or turbulence which may prevent single engine flight at altitudes well above the local ground elevation.

c. Do not feather a propeller at any time when conditions of terrain or other conditions may prevent the airplane from reaching an airport easily, in case the dead engine cannot be restarted.

d. Do not practice single engine operation without a well qualified pilot in one of the forward seats. The pilot must hold a multi-engine rating and have familiarity with Aztec procedures and characteristics.

4. Emergency Landings:

On a wheels-up landing, the airplane will tend to settle down at the rear when the landing speed is decreasing, and full forward control wheel pressure should be used to hold the tail up as long as possible. The flaps should not be extended because they may contact the ground first, causing damage to the flap and the wing. The propellers should be feathered and stopped in a horizontal position. Fuel valves and electrical switches should be turned to off position.

A wheels-up landing should only be made during an emergency when the surface is too soft or too rough to permit a gear-down landing, or when an emergency water landing is necessary.

5. Emergency Landing Gear Extension:

If the left engine or engine driven hydraulic pump fails, extend the landing gear or flaps by supplying hydraulic pressure with the manual hydraulic pump. With the gear or flap control in the desired position, about 50 strokes of the pump handle will raise or lower the landing gear. An additional 15 strokes will raise or extend the flaps. Manual pumping is increasingly difficult as the gear draws closer to full extension or retraction. Note position of the gear by the position lights and left cowl mirror and not by the gear control knob alone, as hydraulic pressure may cause the control handle to flip into neutral before the gear is in position and locked.

In the event of hydraulic system failure caused by a line breaking or the power pack malfunctioning, the landing gear can be lowered by using the Emergency Gear Extender. The control for the extender is located beneath a small cover plate under the pilot's seat. When this control is pulled, CO_2 flows from a cylinder under the floorboards through separate lines to shuttle valves adjacent to the gear extension cylinders. The gas pressure opens the shuttle valves, allowing CO_2 to enter the gear cylinders, extending the gears.

The Emergency Gear Extender should only be used when all other means of lowering the landing gear have failed, and only when the gear can be left down for landing.

NOTE

The landing gear control on the selector valve must be in the "down" position when the gear extender control is pulled, in order to allow the gear to be extended properly.

CAUTION

When the extender has been used, the landing gear or flaps must not be actuated hydraulically in any way until the extension system has been returned to its normal condition.

6. In-Flight Cabin Door Closing Procedure:

In the event the cabin door is inadvertently unlocked in flight or the handle is not pushed forward and locked before take-off and becomes dislodged from its latching position, the following procedure has been determined to be practicable for closing the cabin door while in flight, assuming adequate altitude has been attained.

a. Retard throttles.
b. Reduce airspeed to 90 MPH or less.
c. Open storm window (left of pilot).
d. Close door.
e. Recover power and airspeed.

Other conditions, take-off, landing approach, and general low altitude flight will require action at the discretion of the pilot.

7. Emergency Exit Window:

Provided in the left side of the fuselage adjacent to the left center seat is an emergency exit window. The window is sealed when installed and should be removed only in case of emergency.

To remove window:

a. Remove plastic placard.
b. Turn handle.
c. With hands apart on bottom sill, apply a steady sustained pressure outward until window is dislodged.

8. Emergency Descent:

In the event of an oxygen system failure or some other condition dictating a rapid descent to 10,000 feet or below, close the throttles, move propellers to full increase RPM, close cowl flaps, retract gear and flaps and maintain 198 IAS. Speeds to VNE are permissible in smooth air.