SECTION 3
EMERGENCY PROCEDURES

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INTRODUCTION

Section 3 provides the operational checklists and amplified procedures to deal with abnormal circumstances and emergencies which may occur on the ground or during flight. Emergencies due to airplane or engine malfunctions are very rare especially if proper preflight inspections, operating procedures, and airplane maintenance and care are adhered to. Other emergencies caused by enroute weather conditions can be avoided by careful planning of the flight, and by using good judgement should unfavourable weather conditions be encountered.

In any event, in order to be prepared for any such emergency, pilots should familiarize themselves with the basic guidelines of this section. Emergency procedures associated with the Emergency Locator Transmitter (ELT) and other optional systems will be found in Section 7 and 9 respectively.

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AIRSPEEDS FOR EMERGENCY OPERATION

CONDITION	KIAS
Engine Failure after Takeoff (Flaps 20^{o})	72
Maneuvering Speed	118
Precautionary Landing with Engine Power	70
Best Glide Speed	90
Landing Without Engine Power:	
Wing Flaps Up	90
Wing Flaps Down	70

EMERGENCY PROCEDURES CHECKLISTS

ENGINE FAILURES

ENGINE FAILURE DURING TAKEOFF RUN

1. Throttle ..... IDLE
2. Brake ..... APPLY AS REQUIRED

If time permits:

3. Flaps ..... RETRACT
4. Mixture ..... IDLE CUT-OFF
5. Ignition Switch ..... OFF
6. Master Switch ..... OFF
7. Alternator Switch ..... OFF

ENGINE FAILURE IMMEDIATELY AFTER TAKEOFF

1. Land ..... LAND straight ahead
   Straight ahead turning only to avoid obstacles.
2. Airspeed ..... 72 KIAS (Flaps 20°)

   If time permits:
3. Mixture ..... IDLE CUT-OFF
4. Fuel Shutoff Valve ..... OFF
5. Ignition Switch ..... OFF
6. Master Switch ..... OFF
7. Alternator Switch ..... OFF
8. Flaps ..... AS REQUIRED

ENGINE FAILURE DURING FLIGHT (Restart Procedures)

1. Airspeed ..... 90 KIAS (Flaps 0°)
2. Throttle ..... FULL BACK
3. Propeller ..... COARSE (full back)
4. Fuel Selector Valve ..... TO TANK WITH MOST FUEL
5. Auxiliary Fuel Pump Switch ..... ON
6. Mixture ..... RICH
7. Alternate Induction Air ..... OPEN
8. Ignition Switch ..... BOTH (or START if propeller stopped)
9. If engine does not start, proceed to *Forced Landings* checklist, as required.

ROUGH RUNNING ENGINE OR PARTIAL LOSS OF POWER

1. Mixture ..... RICH
2. Auxiliary Fuel Pump Switch..... ON
3. Ignition Switch..... BOTH
   Check OAT and look for evidence of possible icing conditions.
   If problem persists after several minutes:
4. Mixture ..... Progressively LEAN
   (Do not exceed Max EGT)
5. Alternate Induction Air..... OPEN

If smooth operation is not possible, ensure the mixture is in the RICH setting and proceed to the nearest suitable airport. Monitor engine temperatures and pressures and be prepared for an engine failure or possible need to shut down the engine.

MAXIMUM GLIDE

Conditions:	
Power	Off
Propeller	Windmilling, Pitch Full Coarse
Flaps	0 degree
Wind	0 knot

Example:	
Altitude	10000 ft
Airspeed	90 kias
Glide Distance	18.4 NM

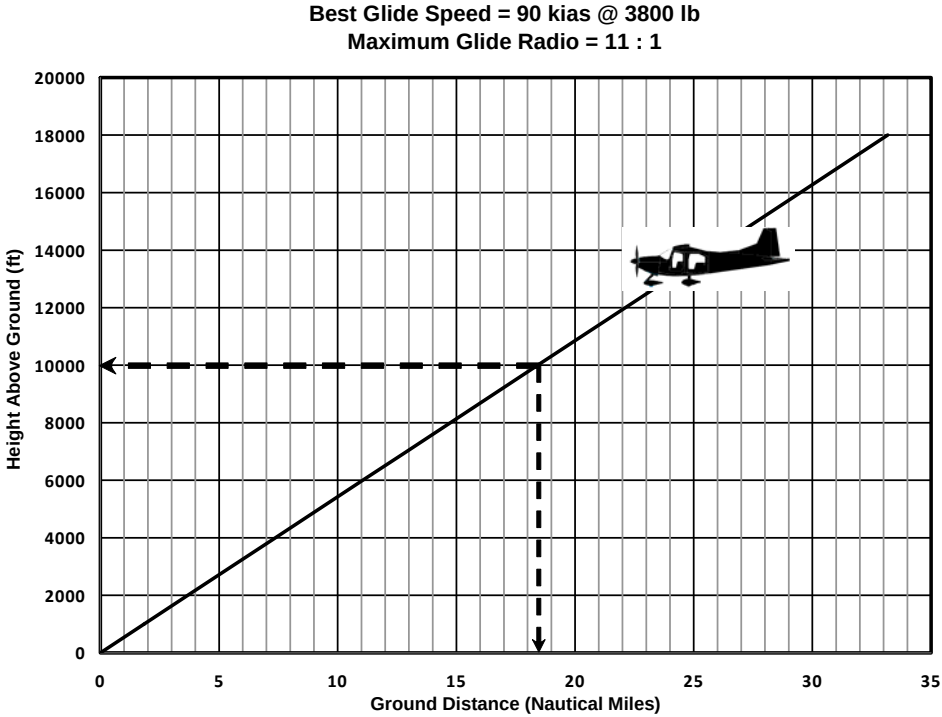

Figure 3-1 Maximum Glide

FORCED LANDINGS

EMERGENCY LANDING WITHOUT ENGINE POWER

1.	Seats	SECURE
2.	Seat belts	FASTENED
3.	Loose Articles	SECURE
4.	Airspeed	90 KIAS (Flaps UP) 70 KIAS (Flaps 30°)

Before touchdown:

5.	Mixture	IDLE CUT-OFF
6.	Auxiliary Fuel Pump Switch	OFF
7.	Fuel Shutoff Valve	OFF
8.	Ignition Switch	OFF
9.	Master Switch	OFF
10.	Alternator Switch	OFF
11.	Doors	UNLATCH PRIOR TO TOUCHDOWN

After touchdown:

12.	Brakes	APPLY AS REQUIRED

PRECAUTIONARY LANDING WITH ENGINE POWER

1.	Seats	SECURE
2.	Seat Belts	FASTENED
3.	Loose Articles	SECURE
4.	Airspeed	80 KIAS Minimum
5.	Flaps	UP
6.	Selected Field	FLY OVER

Note terrain and obstructions.

7.	Radio and Electrical Switches	OFF
8.	Flaps	20^{o} (or 30° for steep approach)
9.	Airspeed	70 KIAS
10.	Propeller	HIGH RPM
11.	Doors	UNLATCH PRIOR TO TOUCHDOWN

After touchdown:

12. Ignition Switch..... OFF
13. Master Switch ..... OFF
14. Alternator Switch..... OFF
15. Brakes ..... APPLY AS REQUIRED.

DITCHING

1. Radio..... TRANSMIT MAYDAY
   (on 121.5 MHz giving LOCATION and INTENTIONS and Squawk 7700)
2. Heavy Objects, Loose Articles ..... SECURE
3. Seats..... SECURE
4. Seat Belts ..... FASTENED
5. Flaps..... 30^{o}
6. Doors ..... UNLATCH PRIOR TO TOUCHDOWN
7. Power..... 3 deg Approach
   Establish 350 FPM descent at 70 KIAS
8. Approach ..... as follows
   High Winds Heavy Seas - INTO WIND
   Light Winds Heavy Swells - PARALLEL TO SWELLS
9. Touchdown ..... LEVEL ATTITUDE at ESTABLISHED RATE OF DESCENT
10. Airplane ..... EVACUATE through the doors
11. Life Vests and Raft ..... INFLATE when clear of the airplane

FIRES

DURING START ON GROUND

IF ENGINE STARTS

1. Power ..... IDLE
2. Engine ..... SHUTDOWN AND INSPECT

IF ENGINE FAILS TO START

3. Mixture ..... IDLE CUTOFF
4. Throttle ..... BACK
5. Engine ..... SECURE
    a. Master Switch ..... OFF
    b. Alternator Switch ..... OFF
    c. Ignition Switch ..... OFF
    d. Fuel Shut-Off Valve ..... OFF
    e. Auxiliary Fuel Pump Switch ..... OFF
6. Fire Extinguisher ..... OBTAIN
7. Fire ..... EXTINGUISH
8. Fire Damage ..... INSPECT

ENGINE FIRE IN FLIGHT

1. Mixture ..... IDLE CUTOFF
2. Throttle ..... BACK
3. Fuel Shutoff Valve ..... OFF
4. Auxiliary Fuel Pump Switch ..... OFF
5. Master Switch ..... OFF
6. Alternator Switch ..... OFF
7. Cabin Heat and Air ..... OFF
8. Airspeed ..... 100 KIAS
   If fire not extinguished, increase glide speed to find an incombustible mixture, within airspeed limitations
9. Forced Landing ..... EXECUTE (as described in Emergency Landing Procedures Without Engine Power)

ELECTRICAL FIRE IN FLIGHT

1. Master Switch ..... OFF
2. Alternator Switch..... OFF
3. Vents, Cabin Air, Heat..... CLOSE
4. Fire Extinguisher ..... ACTIVATE
5. Avionics Master Switch..... OFF
6. All Other Switches (except Ignition) ..... OFF
7. Vents/Cabin Air/Heat ..... OPEN, when fire is completely extinguished.

WARNING

AFTER DISCHARGING FIRE EXTINGUISHER AND VERIFYING THAT FIRE HAS BEEN EXTINGUISHED, VENTILATE THE CABIN AIR. IF IT CANNOT BE DETERMINED VISUALLY THAT THE FIRE HAS BEEN EXTINGUISHED, LAND IMMEDIATELY.

If fire has been extinguished and electrical power is necessary for continuance of flight to nearest suitable airport or landing area:

8. Master Switch ..... ON
9. Alternator Switch..... ON
10. Circuit Breakers ..... Check for Faulty Circuit DO NOT RESET
11. Radio Switches ..... OFF
12. Avionics Master Switch..... ON
13. Radio/Electrical Switches ..... ON one at a time as required, with delay after each until short circuit is localized. If short circuit is localized turn switch off.

CABIN FIRE

1. Master Switch ..... OFF
2. Vents, Cabin Air, Heat..... CLOSE
3. Fire Extinguisher ..... ACTIVATE
4. Vents/Cabin Air/Heat ..... OPEN, when fire is completely extinguished.

WARNING

AFTER DISCHARGING FIRE EXTINGUISHER AND VERIFYING THAT FIRE HAS BEEN EXTINGUISHED, VENTILATE THE CABIN AIR. IF IT CANNOT BE DETERMINED VISUALLY THAT THE FIRE HAS BEEN EXTINGUISHED, LAND IMMEDIATELY.

5. Land the airplane as soon as possible to inspect for damage.

WING FIRE

1. Navigation Light Switch..... OFF
2. Strobe Light Switch ..... OFF
3. Pitot Heat Switch ..... OFF

NOTE

Perform a sideslip to keep the flames away from the wing fuel tank and cabin. Land as soon as possible using flaps only as required for final approach and touchdown.

ICING

INADVERTENT ICING ENCOUNTER

Flying into known icing conditions is strictly prohibited and extremely dangerous. However an inadvertent encounter with icing conditions may possibly occur. The checklist procedures for this emergency should be adhered to and turning back and/or changing altitude to escape icing conditions is highly advisable.

1. Turn pitot heat switch ON.

2. Turn back or change altitude to obtain an outside air temperature that is less conducive to icing.

3. Cabin heat to maximum and defrost full open to obtain maximum windshield defroster airflow.

4. Open Alternate Induction Air.

5. Watch for signs of engine related icing conditions. An unexplained loss in engine speed could be caused by ice blocking the air intake filter. Change the throttle position to obtain maximum RPM. This may require either advancing or retarding the throttle, dependent on where ice has accumulated in the system. Adjust the mixture as required for maximum RPM.

6. Plan a landing at the nearest airport. With an extremely rapid build-up of ice, select a suitable off-airport site.

7. With ice accumulation of 1/4-inch or more on the wing leading edges, be prepared for a significantly higher stall speed.

8. Leave flaps retracted. With a severe build-up of ice on the horizontal tail, the change in wing wake airflow direction caused by the extension of the flaps could result in loss of elevator effectiveness

9. Approach at **80 to 90 KIAS** depending upon the amount of ice accumulation.

10. Perform a landing in level attitude.

STATIC SOURCE BLOCKED
(SUSPECTED ERRONEOUS INSTRUMENT READINGS)

1. Alternate Static Source Switch ..... ON
2. Pitot Heat ..... ON
3. Airspeed ..... Consult appropriate calibration table in Section 5.

NOTE

In an emergency, on airplanes not equipped with an alternate static source, the cabin pressure can be supplied to the static pressure instruments by breaking the glass in the face of the vertical speed indicator. The vertical speed indication will be reversed in this case (i.e. the needle will indicate DOWN for climb and UP for descent).

ABNORMAL LANDINGS

LANDING WITH A FLAT MAIN TIRE

1. Approach ..... NORMAL
2. Flaps..... 30°
3. Airspeed..... 70 KIAS
4. Touchdown ..... GOOD MAIN TIRE FIRST
   (hold the airplane off flat tire as long as possible using ailerons)
5. Directional Control ..... MAINTAIN using brake on good wheel as required.

LANDING WITH A FLAT NOSE TIRE

1. Approach ..... NORMAL
2. Flaps..... 30°
3. Airspeed..... 70 KIAS
4. Touchdown ..... ON MAIN TIRES FIRST
   (hold the nose wheel off the ground as long as possible)
5. Elevator Control..... MAINTAIN full up as airplane slows to a stop.

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS

OVER VOLTAGE LIGHT ILLUMINATES DURING FLIGHT (Ammeter Indicates Excessive Rate of Charge)

1. Alternator Switch..... OFF
2. Non-essential Electrical Equipment..... OFF
3. Flight..... Land as soon as practical.

UNDER VOLTAGE LIGHT ILLUMINATES DURING FLIGHT (Ammeter Indicates Discharge)

NOTE

Illumination of the UNDER VOLTAGE LIGHT may occur during low RPM conditions with an electrical load on the system such as during a low RPM taxi. Under these conditions, the light will go out at higher RPM.

1. Avionics Power Switch..... OFF
2. Master Switch ..... OFF
3. Alternator Switch..... OFF
4. Alternator Circuit Breaker ..... CHECK IN
5. Master Switch ..... ON
6. Alternator Switch..... ON
7. Under Voltage Light..... CHECK OFF
8. Avionics Master Switch..... ON

If UNDER VOLTAGE LIGHT illuminates again:

9. Alternator Switch..... OFF
10. Non-essential Electrical Equipment..... OFF
11. Flight..... Land as soon as practical.

ELECTRICAL SYSTEM FAILURE

In the event of the total failure of the electrical system it may be possible to recover some electrical power by activating the Backup Power Switch. This switch bypasses the main bus and feeds electrical power directly to the engine monitor and overhead crew light.

Along with the engine monitor and overhead crew light the following instruments are still operable without primary electrical power:

Airspeed Indicator	(Pitot-Static System)
Altimeter	(Pitot-Static System)
Vertical Speed Indicator	(Pitot-Static System)
Attitude Indicator	(Vacuum System)
Heading Indicator	(Vacuum System)

1. Backup Power Switch..... ON
2. Crew Light Switch..... ON as required
3. Alternator Switch..... OFF
4. Land as soon as practical

NOTE

Flap angle cannot be changed under this condition.

ENGINE MONITOR FAILURE

In the event of the loss of the engine monitor display the position of the engine controls shall be used to establish engine condition.

1. Mixture ..... PUSH FULL RICH
2. Pitch..... PUSH FULL FINE
3. Throttle ..... AS REQUIRED
4. Land as soon as practical

VACUUM FAILURE

(Indicated by a reading below 4.5 psi. The digital readout on the monitor will change colour from green to white when this occurs)

1. Vacuum Indicator ..... CHECK to ensure vacuum within normal operating limits.

WARNING

FAILURE OF THE VACUUM SYSTEM WILL RESULT IN ERRONEOUS AND UNRELIABLE INDICATIONS ON THE ATTITUDE INDICATOR AND THE HEADING INDICATOR. IT WILL BE NECESSARY TO USE THE MAGNETIC COMPASS FOR DIRECTIONAL INFORMATION.

READ THIS COMPASS WITH THE AIRCRAFT IN STEADY STRAIGHT FLIGHT AND APPLY THE NECESSARY CORRECTION. THE COMPASS WAS SWUNG WITH THE FOLLOWING TURNED OFF:

- PITOT HEAT

THESE ITEMS SHOULD BE TURNED OFF TO GET A VALID HEADING.

ELECTRIC TRIM FAILURE

Any failure or malfunction of the electric rudder trim can be easily overcome by use of the opposing rudder input. If runaway trim is the problem, de-energize the circuit by pulling the circuit breaker and land as soon as conditions permit.

1. Airplane Control ..... MAINTAIN MANUALLY
2. Circuit Breaker..... OFF (Pull Out)
3. Control Yoke/Rudder Pedal..... HOLD PRESSURE
4. Land as soon as practical.
5. Conduct a normal descent, approach and landing.

AMPLIFIED EMERGENCY PROCEDURES

The following amplified emergency procedures provide further insight upon the information contained in the emergency procedures checklists of this section. These amplified emergency procedures also include information which cannot be adapted into a checklist format and which is not practical to refer to during a specific emergency. As such, this information should be reviewed in detail before flying the airplane and should also be reviewed on a regular basis to maintain pilot proficiency on the procedures.

ENGINE FAILURE

If an engine failure occurs during the takeoff roll, the most important thing to do is stop the airplane on the remaining runway, if possible. The additional items shown on the checklist will provide added safety after a failure of this type.

Prompt lowering of the nose in order to maintain safe airspeed and to establish a glide attitude is the first response to an engine failure immediately after takeoff. In most cases, the landing should only be planned straight ahead as there is often not enough altitude and airspeed to attempt safely a 180 degree turn and return to the airfield. Only small changes in direction should be taken to avoid obstructions. The checklist procedures do assume, however, that there is adequate time to secure the fuel and ignition systems of the airplane prior to touchdown.

The most important course of action following an engine failure in flight is to continue flying the airplane. The Best-Glide-Speed (90 KIAS) should be established as quickly as possible. Having selected a suitable landing area, the pilot should try to identify the cause of the failure and attempt an engine restart. If time permits, this engine restart should be conducted as shown in the checklist. If the engine cannot be restarted, a forced landing without power will inevitably occur. Follow the procedures for an *Emergency Landing without Engine Power* as shown in the emergency procedures checklists.

FORCED LANDINGS

The first step to executing a successful forced landing is to select a suitable field as early as possible. After choosing a suitable field, preparations for the landing can begin, as outlined in the emergency procedures checklist for *Emergency Landing without Engine Power*. Ensure that a Mayday message is transmitted on 121.5 MHz giving your location and intentions and that you squawk 7700 on your transponder.

In precautionary landings with engine power, the pilot should first fly over the landing area at a safe but low altitude and inspect the ground features for obstructions and surface conditions. The pilot can then proceed as shown in the *Precautionary Landing with Engine Power Checklist.*

In the event of a ditching attempt over water, collect items such as a folded coat to protect the occupants' face at touchdown. A Mayday transmission on 121.5 MHz giving location and intentions should be effected and the transponder should be set to squawk 7700. A landing flare prior to touchdown should be avoided because of the difficulty in judging height over the water surface. When ditching with no engine power, the airspeeds associated with minimum flap extension allow for a more favourable attitude during a power off ditching.

To prevent disabling the airplane's electrical systems prematurely during a forced landing, the avionics master and master switches should not be turned off until a landing is assured. For more detailed information on the ELT and its operation, refer to Section 9 "Supplements" in this Pilot's Operating Handbook.

LANDING WITHOUT ELEVATOR CONTROL

Loss of elevator control during flight requires use of the throttle and pitch (stabilizer) trim to maintain control. A touchdown with power on will likely be required, especially when at maximum forward C.G. position, and a landing site which provides a longer than normal landing run should be selected if available. With air speed of approximately 80 KIAS and flaps up, adjust the pitch trim and throttle to maintain horizontal flight.

Airspeed and rate of descent can be controlled by small corrections in throttle position and pitch trim.

During a flare out, power reduction will cause a significant nose down pitching moment. Coordination of pitch trim with throttle position reduction is required to perform the flare and to reduce airspeed. If the pitch trim is at full nose up position, a slight increase in engine power will provide a nose up pitch if required.

WARNING

AT EXTREME FORWARD CG POSITIONS, INSUFFICIENT NOSE UP PITCH TRIM MAY BE AVAILABLE FOR A LANDING FLARE WITH PITCH TRIM ALONE. A SLIGHT INCREASE IN ENGINE POWER WILL PROVIDE THE REQUIRED NOSE UP PITCHING MOMENT.

FIRES

If an engine fire occurs during flight, the checklist procedure outlined for *Engine Fire in Flight* should be followed. Having extinguished the fire, execute the *Forced Landings* procedure and do not attempt to restart the engine.

Electrical fires can often be detected from the obvious odour of burning insulation. Immediate action of the checklist procedure for this emergency should result in quick elimination of the fire.

STATIC SOURCE BLOCKED
(SUSPECTED ERRONEOUS INSTRUMENT READINGS)

If erroneous readings of the static source instruments (airspeed, altimeter and vertical speed) are suspected, the alternate static source switch should be turned on. The alternate static source switch opens the static pressure line to the cabin and the cabin static pressure is supplied to the static pressure instruments.

NOTE

In an emergency, on airplanes not equipped with an alternate static source, the cabin pressure can be supplied to the static pressure instruments by breaking the glass in the face of the vertical speed indicator. The vertical speed indication will be reversed in this case (i.e. the needle will indicate DOWN for climb and UP for descent).

When the alternate static source is on, adjust indicated airspeed during climb or approach according to the Airspeed Calibration (Alternate Static Source) in section 5 as appropriate for the configuration.

SPINS

Although intentional spins are not approved for this aircraft, recovery from an inadvertent spin is performed as follows:

1. Retard the throttle to the IDLE position.
2. Centralize/Analyze. Place the ailerons in NEUTRAL position.
3. Apply and HOLD FULL RUDDER OPPOSITE to the direction of rotation.
4. Just after the rudder reaches the stop, move the CONTROL WHEEL BRISKLY FORWARD far enough to break the stall. Full down elevator may be required at aft center of gravity loadings to assure optimum recovery.
5. HOLD these control inputs UNTIL ROTATION STOPS. Premature relaxation of the control inputs may extend the recovery.
6. As rotation stops, NEUTRALIZE RUDDER and make a smooth RECOVERY from the resulting dive.
7. Retract the flaps.
8. Pull from dive NOT exceeding 3.8g.

ROUGH ENGINE OPERATION OR LOSS OF POWER

IMPROPER MIXTURE / FUEL STARVATION

Although rough running due to fouled spark plugs is more likely to occur after extensive idling on the ground, a rough running engine during cruising flight may be caused by an improper fuel/air mixture or other problems which can be associated with fuel starvation. Fuel starvation can be attributed to clogged fuel injector nozzles, lack of fuel in the collecter tanks and main tanks, or low fuel pressure. In such a case, the mixture control should be adjusted to the RICH position and the auxiliary fuel pump switch placed in the ON position. These actions will maximize the amount of fuel into the engine. Verify that the ignition switch is in the BOTH position and also check the fuel quantities in each tank.

If the problem does not clear up within a few minutes, check the OAT temperature gauge and look for evidence of possible icing conditions. A blocked air intake will not cause the engine to stop but may be the cause of a rough running engine as well as a possible indicator of icing conditions. Open the alternate induction air source. This will bypass the normal air induction source and allow warm unfiltered air into the engine.

If icing conditions are present, attempt to get out of them. If the problem persists, follow the procedure for lean burn-off.

SPARK PLUG FOULING

Fouling of the spark plugs by carbon or lead deposits may often lead to slight engine roughness during flight. Assuming that the problem is in fact fouling of the spark plugs, adjusting the mixture to the recommended lean setting for cruising flight can help clear the spark plugs. After several minutes, if the problem does not clear up, a richer mixture may produce smoother operation. If this still does not remedy the problem, set the mixture to FULL RICH and land at the nearest airport for repairs using the BOTH position on the ignition switch.

LOW OIL PRESSURE

If the oil pressure gauge indicates low pressure but the oil temperature remains normal, it is possible the pressure sending unit or the relief valve is malfunctioning. However, land at the nearest airport to inspect the source of trouble.

If a total loss of oil pressure occurs together with a rise in oil temperature, it is reasonable to suspect an engine failure is imminent. Reduce engine power immediately and select a suitable forced landing field. Use only the minimum power needed to reach the desired touchdown spot.

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS

Malfunctions in the electrical system are often difficult to determine. Periodic monitoring of the AMPS/VOLTS indicators on the engine monitor and under/over voltage lights can alert you to a problem. Problems with the alternator constitute an electrical emergency and should be dealt with immediately. Typical causes of alternator failure are the drive belt, wiring or control unit. In general, there are two types of alternator emergencies; an alternator producing an excessive rate of charge, and; an alternator producing an insufficient rate of charge.

EXCESSIVE RATE OF CHARGE

An excessive rate of charge can be indicated by the ammeter (AMPS) and/or the OVER VOLTAGE light. After starting the engine and placing heavy electrical loads on the battery at low engine speed (such as extended taxiing), the depleted condition of the battery can accept an above normal charging rate during the initial part of a flight. However, after thirty minutes of cruising flight, the charge (AMPS) indicator should be indicating less than 5 amps of charging current. If the charging rate were to remain high for a prolonged period of time, the battery would overheat and the electrolyte would evaporate creating a hazard.

A higher than normal voltage on the electrical system can also damage other sensitive electronic components. The alternator control unit contains an over-voltage sensor which automatically shuts down the alternator if the voltage reaches approximately 31.5 volts. If this safety device fails to operate, the ammeter would show an excessive rate of charge and the alternator switch should then be turned OFF. Since charging of the battery ceases when the alternator is not in operation, all non-essential electrical equipment should also be turned OFF to conserve electrical power. The flight should be terminated as soon as possible.

INSUFFICIENT RATE OF CHARGE

NOTE

Illumination of the UNDER VOLTAGE light and ammeter discharge indications may occur during low RPM conditions with an electrical load on the system, such as during low RPM taxi. Under these conditions, the light will go out at higher RPM.

Should a higher than normal voltage cause the over-voltage sensor to trip the alternator field circuit breaker (ALT) and shut down the alternator, or if the alternator output is insufficient, the UNDER VOLTAGE light will illuminate and a discharge rate will be shown on the ammeter. Since the over-voltage sensor may occasionally trip the circuit unnecessarily, an attempt should be made to reactivate the alternator system. This is accomplished by first turning the avionics master switch OFF to protect the equipment. Then, the alternator is reconnected by resetting the alternator circuit breaker (ALT). Both the master switch and the alternator switch should be turned OFF and then ON again to resume normal alternator charging. If the problem no longer exists, the UNDER

VOLTAGE light will go out and the avionics power switch may be turned on again.

If the problem persists and the UNDER VOLTAGE light illuminates again, a malfunction is confirmed and the flight should be terminated as soon as possible. All non-essential electrical loads should be removed from the system to conserve battery power. The battery can supply the electrical system for only a limited period of time.

ALTERNATOR FAILURE
(AT NIGHT OR DURING IFR FLIGHT CONDITIONS)

The under-voltage light will illuminate and the alternator voltage can be checked by the AMPS/VOLTS indicators. If the voltage shows 24 volts or less, the alternator has failed.

1. Turn Alternator Switch **OFF**
2. Shut down all unnecessary lights and non-essential equipment as dictated for continued safe flight. Equipment may be activated or de-activated as procedures require.
3. Land the aircraft as soon as practical.

OTHER EMERGENCIES

WINDSHIELD DAMAGE

In the rare event that a bird strike or other incident should damage the windshield to the point of creating an opening, a significant loss in performance should be expected. A landing should be attempted at the nearest airport. If the airplane performance or other condition prevents safe landing at an airport, an off-airport landing executed in accordance with the *Precautionary Landing with Engine Power* or *Ditching Checklist* should be attempted.