C.A.A. APPROVED Super DC-3 Airplane Flight Manual **Emergency Operating Procedures**

2.1. ENGINE FAILURE ON TAKE-OFF.

2.1.1 ENGINE FAILURE BEFORE REACHING SAFE SINGLE-ENGINE AIRSPEED ON THE GROUND.

- 1. Cut Both Throttles
- 2. Firewall shut-off valve controls Pull "CLOSED".
- 3. Mixture controls "IDLE CUT-OFF".
- 4. Ignition, Generator, and Battery Switches "OFF".
- 5. Fuel tank selector valve controls "OFF".
- 6. Apply Brakes.

2.1.2. ENGINE FAILURE AFTER REACHING SAFE SINGLE-ENGINE

SPEED. – If an engine fails after reaching the safe single-engine airspeed, proceed as follows:

- 1. Maintain take-off climb speed V2, as shown in the Performance Data section of the AFM.
- 2. Feather propeller on inoperative engine when auto-feather is not used.
- 3. Adjust power controls of the remaining engine to ensure safe single-engine performance.
- 4. Maintain the cowl flaps on the operating engine in the climb position. Close cowl flaps on feathered engine.
- 5. Retrim the airplane as required.
- 6. If a subsequent attempt is made to start the engine, follow the procedure in paragraph 2.2.2, following.

2.2. ENGINE ISOLATION.

2.2.1. PROPELLER FEATHERING PROCEDURE – If it becomes necessary to shut an engine down in flight, feather the propeller as follows. The feathering procedures are grouped into Phases, the individual steps of which may be preformed in a sequence suitable to the operator. All operations in Phase I, however, must be accomplished prior to any operations in Phase II, etc.

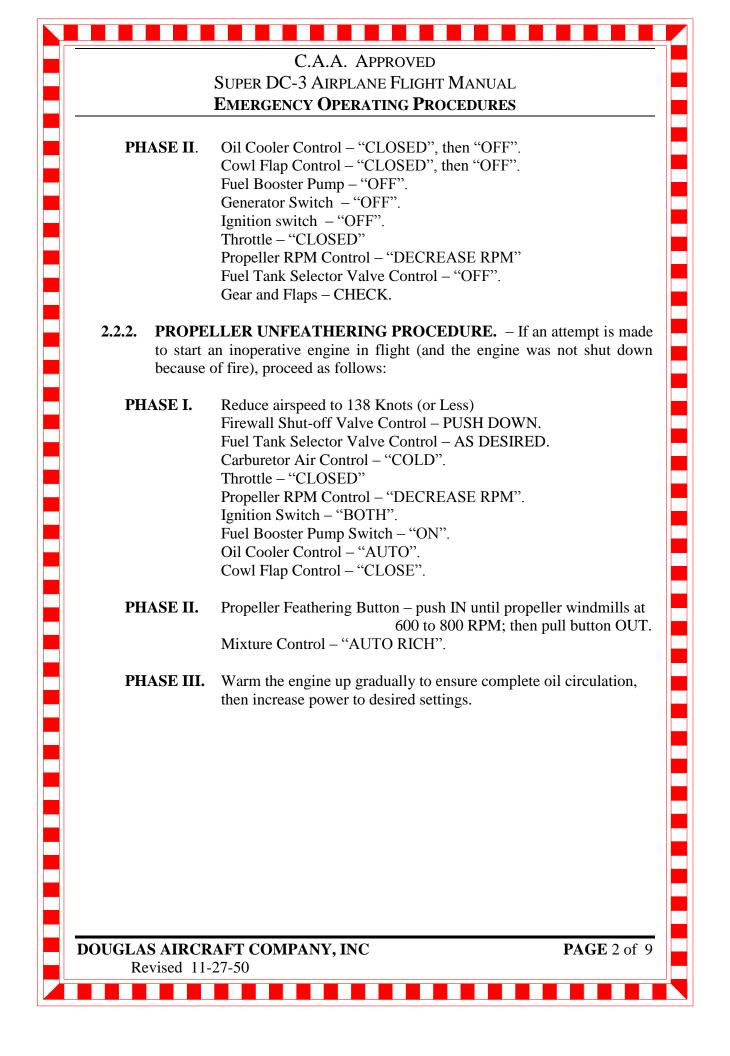
PHASE I. Mixture Control – "IDLE CUT-OFF". Feathering Button – push IN.

Note:

If there is any evidence of fluid supply line failure ahead of the firewall or of fire in the nacelle area, pull up the firewall shut-off valve handle to shut off the oil, fuel, and hydraulic fluid to that engine at the firewall.



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2.3 FIRE CONTROL

2.3.1 ENGINE SECTION FIRE – The engine section is divided into two zones: the power section, forward of the inner ring, and the accessory section, aft of the inner ring and forward of the firewall. Both zones are equipped with the fire detectors, but only the accessory section is protected by CO₂. If an engine section fire occurs in flight, immediately perform the following operations on the affected engine. These are grouped into phases, the individual steps of which may be performed in any suitable sequence. All operations in Phase I, however must be accomplished prior to any operations in Phase II, etc.

PHASE I: Propeller – feather.

- Mixture control "IDLE CUT-OFF."
- Firewall shut-off valve control PULL UP. CO₂ selector control select area for discharge.
- CO₂ discharge handle PULL (LH handle—straight pull; RH handle – push button on handle, then pull. Push button on RH handle provides a different kind of action to release to reduce possibility of pilot discharging both CO₂ charges in rapid sequence inadvertently).

Cowl flaps – full "OPEN," then "OFF."

PHASE II: Booster pumps – OFF Generator – OFF Ignition – OFF Throttle – CLOSED Propeller rpm – "DECREASE RPM." Fuel tank selector valve control – "OFF."

PHASE III: Cowl flaps (after fire is out) "CLOSED," then "OFF." Oil cooler doors – "CLOSED," then "OFF." Carburetor air control – "COLD." Vacuum selector control – "CAPT. INST. LIVE ENGINE."

DO NOT RESTART ENGINE IN WHICH A FIRE HAS OCCURRED. LAND AS QUICKLY AS PRACTICABLE.

Note: Do not extend the landing gear or flaps until the last possible moment before landing to prevent extensive fire damage to the landing gear system or flaps. If a second fire occurs in the same area, or the first fire is not extinguished with the first discharge of CO_2 , pull UP the second discharge handle. However, do not release the second CO_2 discharge until the first discharge has proved ineffective to avoid wasting CO_2 . See paragraph 2.4. for emergency descent procedures.

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2.3.2. FUSELAGE FIRE. – In the event of smoke or fire in the cockpit, cabin, or heater compartment, perform the following steps immediately before taking any fire control action. After these preliminary steps have been accomplished, subsequent operations will depend on the various types of fire, as detailed in the applicable paragraphs immediately following.

PHASE I.

- 1. Combustion heater OFF
- 2. Ventilating air check valve control "OPEN"
- 3. Cockpit and windshield temperature control "COLD"
- 4. Cabin temperature control "COLD."

PHASE II.

- 1. Fuel booster pumps OFF
- 2. Alcohol de-icer system OFF
- 3. Passenger oxygen system OFF
- **2.3.3. HEATER COMPARTMENT FIRE.** If a fire occurs in the heater or the heater compartment, proceed as follows after completing the preliminary steps in paragraph 2.3.2.
 - 1. Start descent to lowest safe altitude.
 - 2. Fire extinguisher selector control "HEATER COMPT."
 - 3. CO₂ discharge handle pull UP (LH handle straight pull; RH handle-push button on handle, then pull. (Push button on RH handle provides a different kind of action to release to reduce possibility of pilot discharging both CO₂ charges in rapid sequence inadvertently).
 - 4. Land as soon as practicable.

Note: If a second discharge of CO_2 is required, do not release the CO_2 until three minutes after the first discharge.



- **2.3.4. ELECTRICAL SYSTEM FIRE.** If smoke or fire is definitely determined as being of electrical origin, and the source is found, proceed as follows after performing the preliminary steps in paragraph 2.3.2 preceding.
 - 1. Battery and generator switches "OFF."
 - 2. Use hand fire extinguishers to combat fire.

WARNING

ALTHOUGH NOT TOXIC HALON PRODUCES AN ATMOSPHERE FREE OF OXYGEN THAT WILL NOT SUPPORT LIFE – USE OF ONBOARD OXYGEN OR OPENING A WINDOW FOR VENTILATION IS REQUIRED FOR THE FLIGHT CREW.

3. Make certain the circuit breaker for the involved electrical circuit is tripped before restoring power.

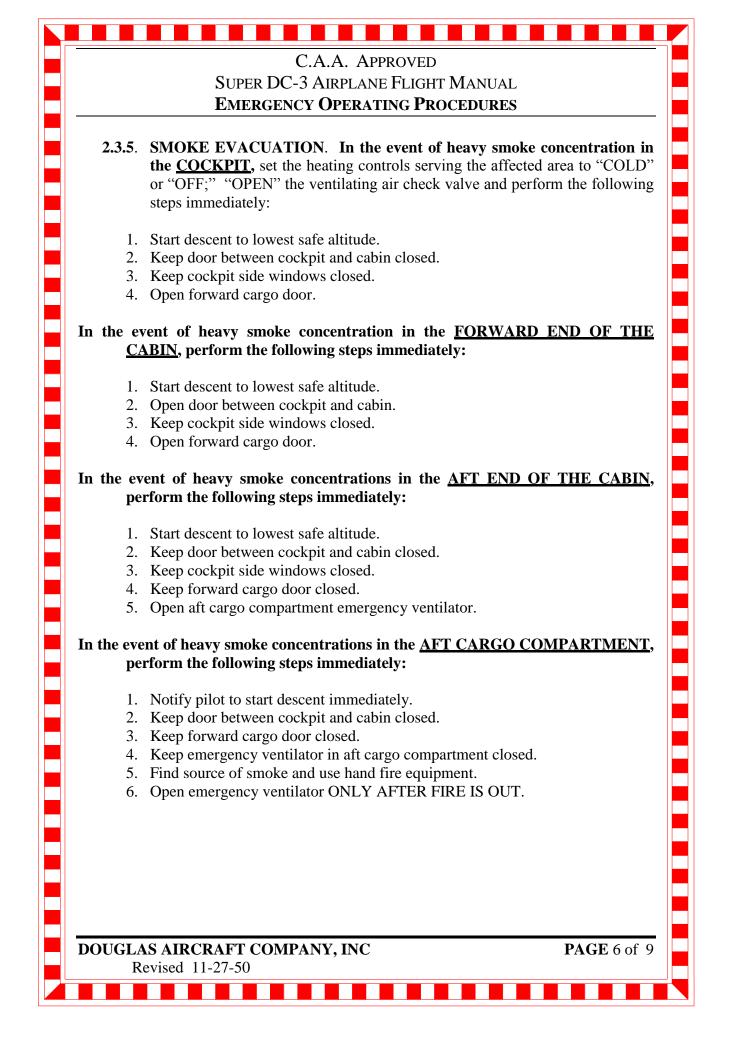
If the source of the electrical fire is not determined, proceed as follows:

- 1. All circuit breakers (except those bordered with red) "TRIPPED."
- 2. Generators and field circuit breakers (one circuit breaker at a time) "SET."
- 3. Battery switch "ON."
- 4. Inverter switch "ON."
- 5. Other circuit breakers (one at a time) "SET."
- 6. When the source of fire or smoke has been determined, leave that circuit inoperative and restore power to the remaining circuits.

Note:

If the involved circuit cannot be determined, trip circuit breakers except those with red borders, and land as soon as practicable.





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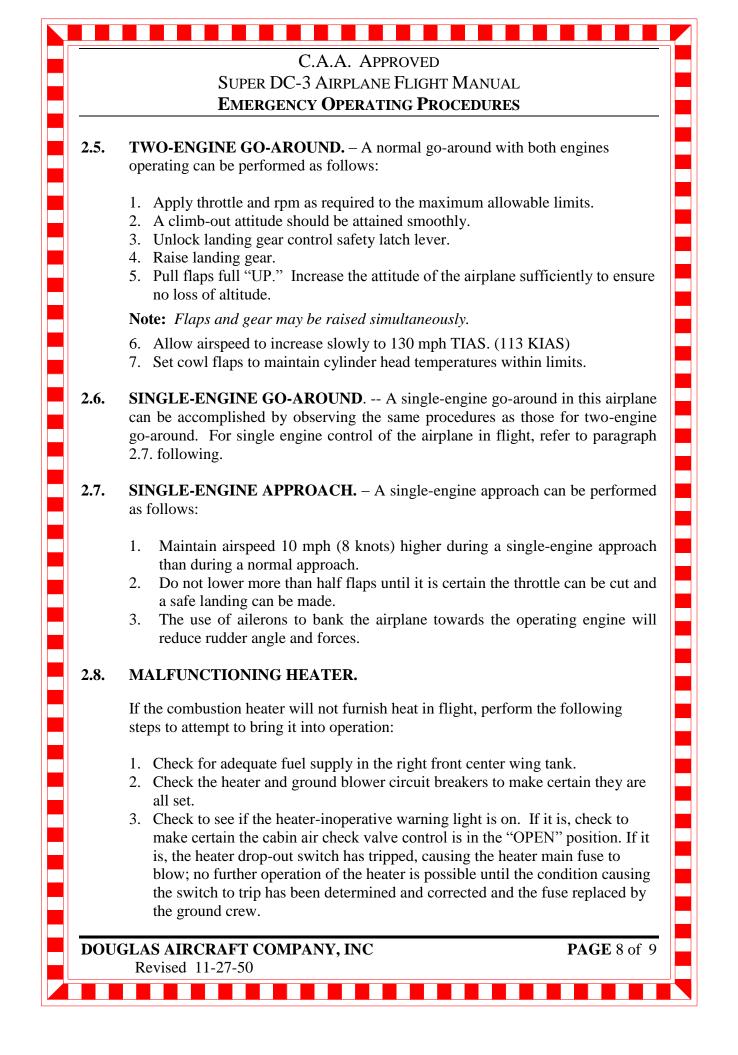
- **2.3.6 VENTILATION SYSTEM SMOKE.** If smoke is evidenced in the ventilating system by discharging from the ventilating outlets, proceed as follows after performing the preliminary steps in **paragraph 2.3.2**.
 - 1. Descend to lowest safe altitude.
 - 2. Ventilating air check valve control "OPEN."
 - 3. Cabin temperature control "COLD."
 - 4. Cockpit and windshield temperature controls "COLD."
 - 5. Forward cargo door OPEN.
 - 6. Door between cockpit and cabin OPEN.
 - 7. Emergency ventilator "OPEN."
- **2.3.7 MISCELLANEOUS FIRE EQUIPMENT.** Hand fire extinguishers are located in the cabin and cockpit to be used on localized fires at the crew's discretion. Operating instructions for each extinguisher are attached to each extinguisher. In the event of a localized fire in the cabin or cockpit, the following steps are to be taken immediately:
 - 1. Start descent to the lowest safe altitude
 - 2. Fight the fire with a portable fire extinguisher or any other non-inflammable liquid available.
 - 3. If fire or smoke is severe, follow the smoke evacuation and/or emergency descent procedure.

2.4. EMERGENCY DESCENT PROCEDURE. - When an emergency demands a descent from altitude at the highest possible speed, use the following procedure:

- 1. Descend at a maximum of 250 mph TIAS, (217 KIAS) gear and flaps "UP."
- 2. If this procedure cannot be used, descend as rapidly as possible, observing flap and gear down speed restrictions.

Note: Consider a turning descent to minimize negative "G" loading and afford better forward visibility for maintaining traffic watch and locating suitable emergency landing fields.





2.9. HYDRAULIC SYSTEM FAILURE.

The following procedures can be used to operate the hydraulic system units in the event of main system failure. Failure of the normal hydraulic system will usually be indicated by the loss of both system pressure and of fluid in the sight gage on the reservoir (the hydraulic fluid reserve of 3.2 quarts does not show on the sight gage). In the event of system failure, reduce airspeed, place the controls of all hydraulically operated units to the "OFF" or "NEUTRAL" positions, and proceed as follows:

- 1. To lower the landing gear, reduce airspeed below 166 mph TIAS (144 knots), place the landing gear control lever down, and operate the hydraulic hand pump to extend and lock the gear. If the green landing gear lights do not come on, indicating the gear is down and locked, the gear can then be snapped down and locked by applying 1.4 to 1.6 "G" acceleration to the airplane (this is equivalent to the force resulting from a normal 30-degree turn).
- 2. To lower the wing flaps, reduce airspeed below 125 mph TIAS (108 knots), place the wing flap control "DOWN" and operate the hydraulic hand pump. It will require approximately 11 cycles of the hand pump to fully extend the wing flaps.
- 3. To operate the brakes, make a normal landing and operate the hydraulic hand pump for the required braking action. Avoid pumping the brake pedals, as pressure will be lost with each pump.

2.10. AIR BRAKE OPERATION. – If no hydraulic pressure is available to the brakes, stop the airplane with the air brake system. Apply the brakes slowly and intermittently after ground speed has been reduced by an extended roll, gradually increasing the braking power rather than applying it suddenly.

2.11. USE OF FUEL BOOSTER PUMPS. - It is recommended that the fuel booster pumps be operated under the following conditions:

- 1. For engine start.
- 2. For take-off at any time the ground temperature is above 100 degrees F.
- 3. For take-offs above 2500 feet pressure altitude.
- 4. During climb after reaching 10,000 feet (if take-off was made with the booster pumps on, leave them on throughout climb to cruising altitude).
- 5. When selecting a new fuel supply.
- 6. At any time that fuel pressure falls below 17 PSI or fluctuates.

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