

CESSNA 172S
including
G1000 Avionics

**NORMAL & EMERGENCY
PROCEDURES CHECKLIST**

This checklist must not be taken as authoritative and should only be used to supplement the Cessna Model 172S Pilots Operating Handbook

The Avionics and instrumentation fitted to C172 aircraft has evolved over many years, the aircraft operated by the Ulster Flying Club are fitted either with conventional flight instruments and King Avionics (the Cessna **NAV11** Pack) or with the Cessna **NAV 111** option which replaces conventional flight instruments and avionics with the Garmin **G1000** electronic displays.

This checklist may be used for aircraft fitted with Cessna Nav 11 or G1000 (NAV 111) options. Items which are specific to a particular option will be preceded by a note:

“**G1000**” means that the check item is specific to G1000 equipped aircraft and should be ignored when operating the conventional aircraft.

“**N11**” means that the check item is specific to aircraft fitted with conventional instrumentation and avionics and should be ignored when operating the G1000 equipped aircraft.

All other items are common to both types of aircraft.

The checklist is organized by phase of flight; it should be used in a methodical manner to ensure no items are missed.

A dotted line between the checklist item and the appropriate action, indication, switch or control position is used to verify aircraft configuration for phase of flight.

Non memory items are annotated in REGULAR font

Conditional items are BOXED

Memory Recall items are annotated in *ITALIC* font.

Emergency procedures are printed on colored pages.

References to the Performance section are to the Pilots Operating Handbook

List of effective pages 1st September 2012

Page	Issue	Page	Issue
1	3	11	3
2	3	12	3
3	3	13	3
4	3	14	3
5	3	15	3
6	3	16	3
7	3	17	3
8	3	18	3
9	3	19	3
10	3	20	3

AIRSPEEDS FOR NORMAL OPERATION

The following indicated speeds in knots (KIAS) are based on a maximum weight of 2550 pounds & may be used for any weight below this figure.

TAKE OFF

Rotate	55 Kts
Initial Climb	70 Kts
At 500 feet	75 Kts
Short Field – Flap 10°	56 Kts @ 50 feet AGL

ENROUTE CLIMB (Sea Level, Flaps Up)

Normal	80 Kts
Best Rate of Climb	74 Kts
Best Angle of Climb	62 Kts

LANDING APPROACH

Normal – Flaps 30°	65 Kts
Flaps Up	70 Kts
Short Field – Flaps 30°	61 Kts
Best Glide – Flaps Up	68 Kts

GO AROUND

Max Power – Flaps 20°	60 Kts
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CROSSWIND VELOCITY

Maximum Demonstrated	15 Kts
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PRE-FLIGHT INSPECTION	INTERNAL
Aircraft Position	CHECK OBSTRUCTIONS
Park Brake	SET ON
Control Wheel Lock	REMOVE AND STOW
Ignition Switch	OFF, KEY REMOVED
Avionics Switch (BUS 1 & BUS 2)	OFF
Static Pressure Alternate Source Valve	OFF
Fuel Selector	BOTH
Fuel Shutoff Valve	ON (PUSH FULL IN)
Elevator Trim	CHECK, SET NEUTRAL (full movement nose up/down)
Master Switch	ON
G1000 – PFD	CHECK ON
G1000 – Low Oil Pressure <i>Annunciator on PFD</i>	CHECK ON
G1000 – Low Vacuum <i>Annunciator on PFD</i>	CHECK ON
Fuel Quantity Indicators	CHECK QUANTITIES
Low Fuel Annunciators	EXTINGUISHED
Avionics Master Switch (BUS 1)	ON
Forward Avionics Cooling Fan (on Instrument Panel) .	CHECK OPERATION
G1000 Aviation Master Switch (BUS 2)	ON
G1000 Aft Avionics Cooling Fan (in luggage locker) ..	CHECK OPERATION
Avionics Master Switches	OFF
N11 Annunciator Panel Switch	TEST POSITION (amber & red illumination)
N11 Annunciator Panel Switch	RELEASE (check appropriate annunciators remain on)
Anti Collision Beacon	ON – CHECK OPERATION
Flaps	EXTEND
Pitot Heat	ON for 30 sec then OFF
Master Switch	OFF
Fire Extinguisher	CHECK (pressure & date)
First Aid Pack	CHECK (sealed & date)

PRE-FLIGHT INSPECTION	EXTERNAL
<u>PORT WING</u>	
Pitot	WARM, CLEAR, UNOBSTRUCTED
Flap	CHECK (tracks, linkage & float)
Aileron	CHECK (hinges, linkages, full free movement)
Wing & Control Surfaces	UNDAMAGED
Inspection Panels	SECURE
Navigation Light, Strobe & fairing	UNDAMAGED
Landing & Taxi Lights	CHECK (condition & clear)
Stall Warning Opening	CHECK OPERATION
Fuel Tank Vent	UNOBSTRUCTED
Fuel Drain Valves	CHECK
Fuel Quantity	CHECK WITH DIP STICK (Adequate for flight plus reserve)
Fuel Filler Cap	SECURE (cap vent unobstructed)
Undercarriage	CHECK (strut, fairing & no hydraulic leak)
Tyre	CHECK (undamaged, inflation, creep mark)
<u>NOSE</u>	
Static Source	UNOBSTRUCTED
Cowlings	SECURE
Tyre	CHECK (undamaged, inflation, creep mark)
Nose Wheel Strut	CHECK (oleo extension 2” – 3”, torque linkage secure)
Nose Wheel Fairing (if fitted)	CHECK UNDAMAGED
Air Filter	UNOBSTRUCTED
Engine Cooling Inlets	UNOBSTRUCTED
Alternator Drive Belt	SECURE
Propeller & Spinner	CHECK (leading edge & tips undamaged, spinner secure)

PRE-FLIGHT INSPECTION**EXTERNAL cont****NOSE cont**

Engine Oil CHECK
 (oil level min 5 quarts, extended flight 8 quarts)

Oil Filler Cap SECURE
 Windscreen CLEAN
 Fuel Strainer Drain Valve CHECK
 Fuel Reservoir & Selector Drain Vales CHECK

STARBOARD WING

Fuel Quantity CHECK WITH DIP STICK
 (Adequate for flight plus reserve)

Fuel Filler Cap SECURE
 (cap vent unobstructed)

Fuel Drain Valves CHECK
 Inspection Panels SECURE
 Wing & Control Surfaces UNDAMAGED
 Navigation Light, Strobe & fairing UNDAMAGED
 Aileron CHECK
 Flap CHECK
 Undercarriage CHECK
 (strut, fairing & no hydraulic leak)

Tyre CHECK
 (undamaged, inflation, creep mark)

FUSELAGE & TAILPLANE

Antennas CHECK SECURITY
 Tailplane & Elevator CHECK
 (hinges, linkages, full free movement)

Trim Tab CHECK NEUTRAL
 Rudder & Fin CHECK
 (gust lock removed, hinges, linkages, full free movement)

Tie Down Ring UNDAMAGED
 Navigation Light UNDAMAGED
 Static Source (Autopilot if fitted) UNOBSTRUCTED

PRE-ENGINE START

Aircraft Documentation CHECKED
 Flight Authorization COMPLETED
 Weight & Balance WITHIN LIMITS
 Fuel Quantity CHECK
 (Adequate for flight plus reserve)

Pre-flight Inspection COMPLETE
 Passenger Brief COMPLETE
 (exits, seats & seatbelts, first aid kit, extinguisher, life jackets, mobile phones off)

Seats & Seatbelts ADJUSTED & SECURE
 Cabin Doors CLOSED & LATCHED
 Park Brake SET ON
 Fuel Selector Valve BOTH
 Fuel Shutoff Vale ON
 Circuit Breakers IN
 Autopilot (if fitted) OFF & SERVOS NOT ENGAGED
 Avionics Master Switch (BUS1 & BUS2) OFF

G1000 PRE START – SYSTEM CHECKS

Throttle OPEN ¼ INCH
 Mixture IDLE CUT OFF

STBY BATT Switch
 TEST Hold for 20 seconds, verify green Test Lamp does not go out
 SET TO “ARM” Verify that PFD comes on

Engine Indicators CHECK
 (no red Xs through ENGINE page indicators)

BUS E Volts CHECK (24 Volts)
 M BUS Volts CHECK (less than 1.5 Volts)
 BATT S AMPS CHECK (discharge shown)
 STBY BATT Annunciator CHECK ON
 Master Switch ON
 AMP Readings CHECK (M Batt supplying load)
 Anti Collision Beacon ON
 Navigation Lights (Night Only) ON

N11 PRE START – SYSTEM CHECKS

- Throttle OPEN ¼ INCH
Mixture IDLE CUT OFF
Master Switch ON
AMP Readings CHECK (M Batt supplying load)
Anti Collision Beacon ON
Navigation Lights (Night Only) ON

STARTING ENGINE – NAV11 & G1000

****IF ENGINE IS COLD**

- Aux Fuel Pump Switch ON
Mixture ADVANCE until fuel flow just starts to rise
then return to IDLE CUT OFF
Aux Fuel Pump Switch OFF

- Propeller Area CLEAR ALL AROUND
Ignition Switch START
RELEASE when engine starts
Mixture (when engine fires) ADVANCE smoothly to RICH

****IF ENGINE FLOODS**

- Aux Fuel Pump Switch OFF
Mixture IDLE CUT OFF
Throttle OPEN HALF FULL
Ignition Switch START
RELEASE when engine starts
When engine fires..... MIXTURE FULL RICH
RETARD THROTTLE

AFTER ENGINE START

- Throttle SET 1200 RPM
Starter Warning Light EXTINGUISHED
Oil Pressure CHECK
VAC WITHIN LIMITS
AMP CHARGING
LOW VOLTS Annunciator EXTINGUISHED

AFTER ENGINE START cont

- Magnetos CHECK FOR LIVE MAG
Aviation Master Switch (BUS 1 & BUS 2) ON
Flaps UP (Check no asymmetry)
G1000 MFD CHECK & ACCEPT
Radio & Avionics SET
NAV11 only NAV/GPS SWITCH SET
G1000 CDI SELECT NAV SOURCE
Radio OBTAIN AIRFIELD DATA
Flight Instruments CHECK & SET
(Check/set heading, set pressure on main altimeter, standby altimeter and autopilot if fitted)
Taxi Light ON (if required)

TAXI

- Lookout* CHECK ALL ROUND
Throttle CLOSE
Brakes RELEASE & CHECK
Throttle AS REQUIRED
Rudder CHECK FULL & FREE
Instruments / ADF CHECK

ENGINE POWER CHECK

- Location AREA CLEAR IN FRONT & BEHIND
Park Brake SET ON
****ENSURE ENGINE WARM UP PERIOD**
Throttle SET 1800 RPM
Engine Temperature & Pressure WITHIN OPERATING LIMITS
Magnetos LEFT – BOTH – RIGHT – BOTH
(max drop on each mag 150 RPM)
(max difference between mags 50 RPM)
VAC WITHIN LIMITS
Voltmeter(s) CHECK (nominal 28 volts)
AMP CHECK (charging or neutral)
Annunciators CHECK ALL EXTINGUISHED
Throttle CLOSE (500 – 600 RPM)
(check engine runs smoothly at correct tick-over speed)
Throttle SET 1200 RPM

PRE TAKEOFF

Throttle Friction Lock	ADJUST FINGER TIGHT
Elevator Trim	SET FOR TAKEOFF
Mixture	RICH
Fuel Quantity	SUFFICIENT FOR FLIGHT
Fuel Shutoff Valve	ON (PUSH FULL IN)
Fuel Selector Valve	BOTH TANKS
Magnetos	BOTH
Seats & Seat Belts	SECURE
Doors & Windows	CLOSED & LOCKED
Annunciators	ALL EXTINGUISHED
Pitot Heat	ON (If Required)
Instruments (main & standby)	SET & CHECK
Gauges	CHECK
Flaps	AS REQUIRED
COM Frequencies	SET
NAV Frequencies	SET
Transponder	SET
Autopilot	OFF (See Note below)
Flight Controls	FULL & FREE MOVEMENT & CORRECT SENSE
Strobe Lights	ON (Before entering runway)

NOTE – IF AUTOPILOTS is found to be switches ON then switch OFF and recheck TRIM position before takeoff

AFTER TAKEOFF

<i>Flaps</i>	<i>Up at 300' AGL</i>
<i>Engine Instruments</i>	<i>CHECK</i>
<i>Landing & Taxi Light</i>	<i>OFF</i>

CRUISE

<i>Fuel Quantity & Selection</i>	<i>AS REQUIRED</i>
<i>Radios</i>	<i>CHECK</i>
<i>Engine Instruments & Mixture</i>	<i>CHECK</i>
<i>Direction Indicator</i>	<i>CHECK</i>
<i>Altimeters</i>	<i>CORRECT SETTING</i>

PRE LANDING

<i>Brakes</i>	<i>OFF</i>
<i>Mixture</i>	<i>RICH</i>
<i>Fuel Selector Valve</i>	<i>BOTH</i>
<i>Fuel</i>	<i>SUFFICIENT</i>
<i>Flaps</i>	<i>AS REQUIRED</i>
<i>Seats & Seat Belts</i>	<i>SECURE</i>
<i>Taxi & Landing Lights</i>	<i>ON (If required)</i>
<i>Autopilot</i>	<i>OFF</i>

AFTER LANDING**VACATE RUNWAY & BRING AIRCRAFT TO A STOP**

Pitot Heat	OFF
Landing Light	OFF
Taxi Light	AS REQUIRED
Transponder	OFF
Flaps	UP
Strobes	OFF Before entering parking area)

SHUTDOWN

Location	INTO WIND & SAFE
Throttle	SET 1200 RPM
Park Brake	SET ON
Taxi Light	OFF
Magnetos	CHECK FOR LIVE MAG
Electrical Equipment	OFF
Anti Collision Beacon	ON
Avionics Master (BUS 1 & BUS 2)	OFF
Throttle	CLOSED
Mixture	IDLE CUT OFF
Ignition Switch	OFF – KEYS OUT
Master Switch	OFF
Tacho & Hobbs	RECORD
G1000 – STBY BATT	SWITCH OFF
Control Lock	INSTALL

SHORT FIELD TAKEOFF DISTANCE AT 2550 POUNDS

CONDITIONS

- Flaps 10°
- Paved, level, dry runway
- Lift Off: 51 KIAS
- Full Throttle Prior to Brake Release
- Zero Wind
- Speed at 50 Ft: 56 KIAS

Press Alt In Feet	0°C		10°C		20°C		30°C		40°C	
	Grnd Roll Ft	Total Ft To Clear 50 Ft Obst	Grnd Roll Ft	Total Ft To Clear 50 Ft Obst	Grnd Roll Ft	Total Ft To Clear 50 Ft Obst	Grnd Roll Ft	Total Ft To Clear 50 Ft Obst	Grnd Roll Ft	Total Ft To Clear 50 Ft Obst
S. L.	860	1465	925	1575	995	1690	1070	1810	1150	1945
1000	940	1600	1010	1720	1090	1850	1170	1990	1260	2135
2000	1025	1755	1110	1890	1195	2035	1285	2190	1380	2355
3000	1125	1925	1215	2080	1310	2240	1410	2420	1515	2605
4000	1235	2120	1335	2295	1440	2480	1550	2685	1660	2880
5000	1355	2345	1465	2545	1585	2755	1705	2975	1825	3205
6000	1495	2605	1615	2830	1745	3075	1875	3320	2010	3585
7000	1645	2910	1785	3170	1920	3440	2065	3730	2215	4045
8000	1820	3265	1970	3575	2120	3880	2280	4225	2450	4615

NOTES:

1. Short field technique as specified in Section 4.
2. Prior to takeoff from fields above 3000 feet elevation, the mixture should be leaned to give maximum RPM in a full throttle, static runup.
3. Decrease distances 10% for each 9 knots headwind. For operation with tail winds up to 10 knots, increase distances by 10% for each 2 knots.
4. For operation on dry, grass runway, increase distances by 15% of the "ground roll" figure.

SHORT FIELD LANDING DISTANCE AT 2550 POUNDS

CONDITIONS:

- Flaps 30°
- Maximum Braking
- Zero Wind
- Power Off
- Paved, level, dry runway
- Speed at 50 Ft: 61 KIAS

PRESS ALT FT	0°C		10°C		20°C		30°C		40°C	
	Grnd Roll Ft	Total Ft To Clear 50 Ft Obst	Grnd Roll Ft	Total Ft To Clear 50 Ft Obst	Grnd Roll Ft	Total Ft To Clear 50 Ft Obst	Grnd Roll Ft	Total Ft To Clear 50 Ft Obst	Grnd Roll Ft	Total Ft To Clear 50 Ft Obst
S.L.	545	1290	565	1320	585	1350	605	1380	625	1415
1000	565	1320	585	1350	605	1385	625	1420	650	1450
2000	585	1355	610	1385	630	1420	650	1455	670	1490
3000	610	1385	630	1425	655	1460	675	1495	695	1530
4000	630	1425	655	1460	675	1495	700	1535	725	1570
5000	655	1460	680	1500	705	1535	725	1575	750	1615
6000	680	1500	705	1540	730	1580	755	1620	780	1660
7000	705	1545	730	1585	760	1625	785	1665	810	1705
8000	735	1585	760	1630	790	1670	815	1715	840	1755

NOTES:

1. Short field technique as specified in Section 4.
2. Decrease distances 10% for each 9 knots headwind. For operation with tail winds up to 10 knots, increase distances by 10% for each 2 knots.
3. For operation on dry, grass runway, increase distances by 45% of the "ground roll" figure.
4. If a landing with flaps up is necessary, increase the approach speed by 9 KIAS and allow for 35% longer distances.

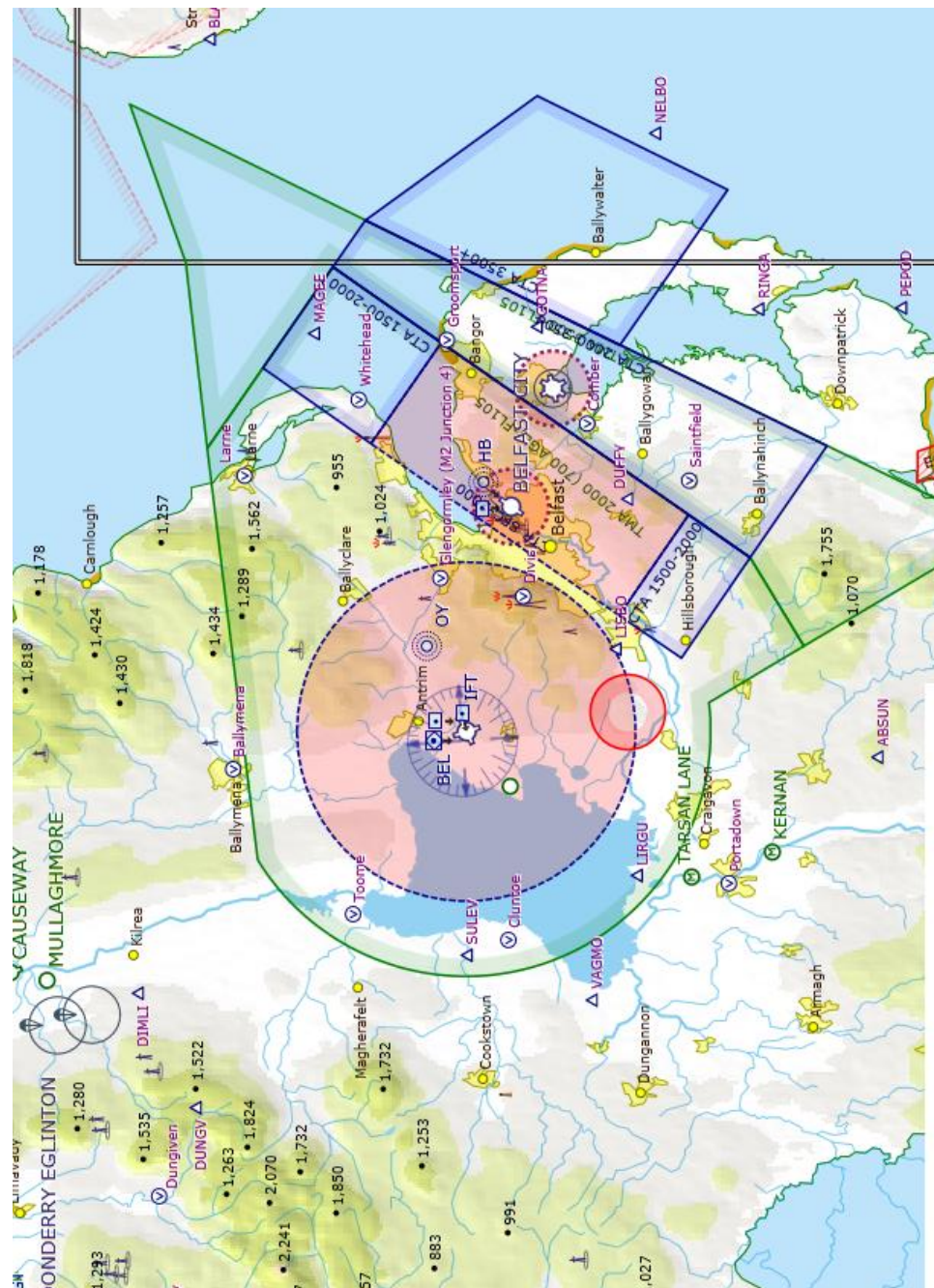
CRUISE PERFORMANCE

CONDITIONS:

2550 Pounds

Recommended Lean Mixture At All Altitudes (Refer to Section 4, Cruise)

PRESS ALT FT	RPM	20°C BELOW STANDARD TEMP			STANDARD TEMPERATURE			20°C ABOVE STANDARD TEMP		
		% BHP	KTAS	GPH	% BHP	KTAS	GPH	% BHP	KTAS	GPH
2000	2550	83	117	11.1	77	118	10.5	72	117	9.9
	2500	78	115	10.6	73	115	9.9	68	115	9.4
	2400	69	111	9.6	64	110	9.0	60	109	8.5
	2300	61	105	8.6	57	104	8.1	53	102	7.7
	2200	53	99	7.7	50	97	7.3	47	95	6.9
	2100	47	92	6.9	44	90	6.6	42	89	6.3
4000	2600	83	120	11.1	77	120	10.4	72	119	9.8
	2550	79	118	10.6	73	117	9.9	68	117	9.4
	2500	74	115	10.1	69	115	9.5	64	114	8.9
	2400	65	110	9.1	61	109	8.5	57	107	8.1
	2300	58	104	8.2	54	102	7.7	51	101	7.3
	2200	51	98	7.4	48	96	7.0	45	94	6.7
6000	2100	45	91	6.6	42	89	6.4	40	87	6.1
	2650	83	122	11.1	77	122	10.4	72	121	9.8
	2600	78	120	10.6	73	119	9.9	68	118	9.4
	2500	70	115	9.6	65	114	9.0	60	112	8.5
	2400	62	109	8.6	57	108	8.2	54	106	7.7
	2300	54	103	7.8	51	101	7.4	48	99	7.0
2200	48	96	7.1	45	94	6.7	43	92	6.4	



EMERGENCY PROCEDURES:**ENGINE FIRE DURING START**

<i>Radio Call</i>	<i>INFORM ATC</i>
<i>Ignition Switch</i>	<i>CONTINUE CRANKING ENGINE</i>
<i>Throttle</i>	<i>FULL OPEN</i>
<i>Mixture</i>	<i>IDLE CUT OFF</i>
<i>Fuel Shutoff Valve</i>	<i>OFF (PULL FULL OUT)</i>
<i>Ignition Switch</i>	<i>OFF</i>
<i>Master Switch</i>	<i>OFF</i>
<i>Park Brake</i>	<i>OFF</i>

EVACUATE WITH FIRE EXTINGUISHER UPWIND OF AIRCRAFT

ELECTRICAL FIRE IN FLIGHT

<i>Radio Call</i>	<i>MAYDAY</i>
<i>Master Switch</i>	<i>OFF</i>
<i>Vents, Cabin Heat, Air</i>	<i>CLOSED</i>
<i>Fire Extinguisher</i>	<i>USE AS NECESSARY</i> <i>(ventilate cabin after use)</i>
<i>Avionics Master Switch</i>	<i>OFF</i>
<i>Electrical Switches</i>	<i>ALL OFF EXCEPT IGNITION SWITCH</i>

IF FIRE HAS BEEN EXTINGUISHED

<i>Master Switch</i>	<i>ON</i>
<i>Circuit Breakers</i>	<i>CHECK for fault circuit, do not reset</i>
<i>Radio Switches</i>	<i>OFF</i>
<i>Avionics Master Switch</i>	<i>ON</i>
<i>Radio / Electrical Switches</i>	<i>ON one at a time, with delay</i> <i>after each until short circuit is</i> <i>identified</i>

EMERGENCY PROCEDURES:**ENGINE FAILURE IMMEDIATELY AFTER TAKE OFF**

<i>Radio</i>	<i>MAYDAY</i>
<i>Airspeed</i>	<i>70 Kts (flaps up)</i> <i>65 Kts (flaps down)</i>
<i>Landing Site</i>	<i>SELECT SUITABLE AREA INTO WIND</i>
<i>Mixture</i>	<i>IDLE CUT OFF</i>
<i>Fuel Shut Off Valve</i>	<i>OFF (PULL FULL OUT)</i>
<i>Ignition Switch</i>	<i>OFF</i>
<i>Flaps</i>	<i>AS REQUIRED</i>
<i>Passengers</i>	<i>BRIEF</i>
<i>Master Switch</i>	<i>OFF</i>
<i>Cabin Doors</i>	<i>UNLATCHED</i>

ENGINE FIRE IN FLIGHT

<i>Radio</i>	<i>MAYDAY</i>
<i>Mixture</i>	<i>IDLE CUT OFF</i>
<i>Fuel Shut Off Valve</i>	<i>OFF (PULL FULL OUT)</i>
<i>Auxiliary Fuel Pump Switch</i>	<i>OFF</i>
<i>Cabin Heat & Air</i>	<i>OFF (Except overhead vents)</i>
<i>Transponder</i>	<i>SET CODE 7700</i>
<i>Airspeed</i>	<i>100kts until fire extinguished</i>

INITIATE FORCED LANDING – DO NOT ATTEMPT ENGINE RESTART

EMERGENCY PROCEDURES:

ENGINE FAILURE DURING FLIGHT

<i>Radio</i>	<i>MAYDAY</i>
<i>Airspeed</i>	<i>70 Kts</i>
<i>Landing Site</i>	<i>SELECT SUITABLE AREA INTO WIND</i>
<i>Transponder</i>	<i>SET CODE 7700</i>
<i>Fuel Shut Off Valve</i>	<i>ON (PUSH IN)</i>
<i>Fuel Selector</i>	<i>BOTH</i>
<i>Auxiliary Fuel Pump Switch</i>	<i>ON</i>
<i>Mixture</i>	<i>RICH</i>
<i>Ignition Switch</i>	<i>BOTH or START if propeller has stopped</i>

****IF ENGINE FAILS TO RESPOND**

<i>Auxiliary Fuel Pump Switch</i>	<i>OFF</i>
<i>Mixture</i>	<i>IDLE CUT OFF</i>
<i>Fuel Shut Off Valve</i>	<i>OFF (PULL OUT)</i>
<i>Ignition Switch</i>	<i>OFF</i>
<i>Flaps</i>	<i>AS REQUIRED</i>
<i>Passengers</i>	<i>BRIEF</i>
<i>Master Switch</i>	<i>OFF</i>
<i>Seats & Seat Belfast</i>	<i>SECURE</i>
<i>Cabin Doors</i>	<i>UNLATCHED</i>

EMERGENCY PROCEDURES:

LOW VOLTAGE ANNUNCIATION (“VOLTS”) IN FLIGHT

Ammeter	Check Indication
Avionics Master Switch	OFF
Alternator Circuit Breaker	CHECK IN
Master Switch	OFF (both sides) 10 secs then ON
Low Voltage Annunciator	CHECK OFF
Avionics Master Switch	ON

****IF LOW VOLTAGE ANNUNCIATION CONTINUES**

Radio Call	INFORM ATC
Alternator	OFF
Non essential Radio & Electrical Equipment	OFF
LAND	As soon as safely possible
With alternator switched off, compass deviations up to 25° may occur	

AMMETER SHOWS EXCESSIVE RATE OF CHARGE

Radio Call	INFORM ATC
Alternator	OFF
Non essential Radio & Electrical Equipment	OFF
LAND	As soon as safely possible
With alternator switched off, compass deviations up to 25° may occur	

AMMETER SHOWS EXCESSIVE RATE OF CHARGE

VAC Gauge	CHECK
If vacuum is not within normal operating limits, a failure in the vacuum system has occurred. Partial panel procedures may be required for continued flight	