Airspeed Limitations:

Speed Name/Remarks		Indicated Airspeed	
		Knots	MPH
V_{NE}	Never Exceed Speed Do not exceed this speed in any operation	149	168
V_{NO}	Max structural cruising speed Do not exceed this speed except in smooth air and then only with caution	111	127
V_A	Maneuvering speed 1670 Pounds 1500 Pounds 1350 Pounds	 104 98 93	 119 112 107
V_{FE}	Maximum flap extended speed	87	100
	Maximum window open speed	139	159
V_S	Stall speed (No Flaps)	40	46
V_{S0}	Stall speed in landing configuration	35	40
	Demonstrated crosswind capability	12	14

C-152 OPERATING INFORMATION

Maneuvering Limits

Speed Name/Remarks	Max Indicated Airspeed	
	Knots	MPH
Chandelles	95	109
Lazy Eights	95	109
Steep Turns	95	109
Spins	Use slow deceleration	
Stalls (except whip stalls)	Use slow deceleration	

Stall Speed Table (Max Gross/CG Forward):

Angle of Bank	0^0 Flaps		30^0 Flaps	
	KIAS	MPH	KIAS	MPH
0^0	40	46	35	40
30^0	43	49	38	44
45^0	48	55	42	48
60^0	57	66	49	56

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Optimum/Recommended Speeds:

Speed Name/Remarks		Indicated Airspeed	
		Knots	MPH
V_X	Best angle of climb	55	63
V_Y	Best rate of climb	67	77
V_R	Normal rotation	50	58
	Normal climb	70 - 80	80 - 92
	Normal landing (no flaps)	60 - 70	69 - 80
	Normal landing (full flaps)	55 - 65	63 - 75
	Powered landing (no flaps)	65	75
	Powered landing (full flaps)	60	69
	Max performance approach	54	62
	Optimum glide	60	69

Engine Failure During Takeoff Run:

Throttle .....Idle
Brakes.....Apply
Flaps .....Retract
Mixture .....Idle Cutoff
Ignition Switch .....Off
Master Switch.....Off

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Engine Failure Immediately After Takeoff

1. **If enough runway remaining to land:**
   Throttle.....Idle
   Land airplane
   Brakes .....Apply
   Flaps.....Up
   Mixture .....Idle cutoff
   Ignition Switch.....Off
   Master Switch .....Off
2. **Not enough runway to land**
   Airspeed.....60 KIAS (69 MPH)
   Fly runway heading to emergency landing site
   Mixture .....Idle cutoff
   Fuel shutoff.....Off
   Ignition switch.....Off
   Flaps.....As required
   Master switch.....Off
   Doors.....Ajar

Engine Failure In Flight:

1. **Gain all the altitude you can!**

   Pull back (gently) to use the aircraft's momentum to gain altitude until airspeed falls off to the optimum glide speed (60 KIAS - 69 MPH).

2. **Airspeed - Optimum glide speed 60 KIAS (69 MPH)**

   Trim the airplane for optimum glide speed..

3. **Find a suitable place to land and fly to it**

   If altitude and distance to selected site permit, try to set up a normal landing pattern. If that's not possible, take what you can get. Regardless of whether or not a full pattern can be set up, make sure the approach results in a landing parallel to any furrows in the selected field.

4. **If time permits, try to correct the problem**

   Fuel shut-off ..... On
   Mixture ..... Rich (in)
   Throttle ..... 1/4 Inch
   Carburetor Heat ..... On (out)
   Primer ..... In and Locked
   Master Switch ..... On (Both sides)
   Ignition switch ..... Both magnetos
   Start - if propeller is stopped.

5. **If still have time communicate**

   Transponder 7700
   Comm Radio 121.5

C-152 OPERATING INFORMATION

Emergency Landing Without Engine Power:

1. **Fly the airplane**

   AIrspeed ..... 65 KIAS / 75 MPH (flaps up)
   60 KIAS / 69 MPH (flaps down)

2. **Prepare aircraft for landing**

   Mixture ..... Idle cutoff
   Fuel Shutoff ..... Off
   Ignition Switch ..... Off
   Flaps ..... As required (30° recommended)
   Master Switch ..... Off
   Doors ..... Unlatch prior to touchdown

3. **Landing**

   Touchdown ..... Slightly tail low
   Brakes ..... Apply heavily

Precautionary Landing With Engine Power

1. **Fly the airplane**

   Airspeed.....60 KIAS (69 MPH)

   Flaps .....20°

   Selected Field.....Inspect

   Fly over field noting terrain and obstructions then retract flaps upon reaching a safe altitude and airspeed.

2. **Prepare airplane for landing**

   Radios and Electrical.....Off

   Flaps .....30° (On final approach)

   Airspeed.....55 KIAS (64 MPH) on final

   Master Switch.....Off

   Doors .....Unlatch prior to touchdown

3. **Landing**

   Touchdown.....Tail slightly low

   Ignition Switch .....Off

   Brakes.....Apply heavily

C-152 OPERATING INFORMATION

Ditching:

1. **Prepare for ditching**

   Radio .....Transmit MAYDAY on 121.5

   Give location, situation and intentions.

   Note, if you were already communicating with ATC, report situation to controller, as opposed to using 121.5.

   Transponder 7700

   Heavy Baggage.....Secure or jettison

2. **Fly the airplane**

   Approach

   High wind / Heavy seas - Into the wind

   Light winds / Heavy swells - Parallel to the swells

   Flaps.....30°

   Power .....300 ft./min. descent, 55 KIAS (64 MPH).

   Cabin Doors.....Unlatch prior to touchdown

3. **Landing**

   Touchdown.....Level attitude at 300 ft./min. descent

   Face.....Cushion with folded coat

   Evacuate.....Through doors.

   If necessary, open windows to allow cabin to flood to equalize pressure so doors can be opened.

   Life Vests and Raft .....Inflate

Engine Fire During Start Up:

Cranking .....Continue

Getting the engine to start will suck flames and accumulated fuel into the engine.

If Engine Starts

Power - 1,700 RPM for a few minutes

Engine - Shutdown and inspect for damage.

If Engine Fails to Start

Continue cranking for 2 to 3 minutes.

Obtain fire extinguisher

Master Switch - Off

Ignition Switch - Off

Fuel Shutoff - Off

Extinguish fire with extinguisher, seat cushion, blanket, etc. or dirt.

Inspect for damage and have repairs made before attempting another flight.

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Engine Fire In Flight:

Mixture .....Idle cutoff

Fuel Shutoff .....Off

Master Switch .....Off

Cabin Heat and Air.....Off (except overhead vents)

Airspeed.....85 KIAS (98 MPH)

If that does not extinguish the fire increase airspeed to that which produces an incombustible mixture.

Be aware of critical speeds; V_{NO} (108 KIAS/124 MPH) and V_{NE} (145 KIAS/166 MPH).

Landing.....Forced Landing Without Power

Electrical Fire In Flight:

1. Extinguish Fire

Master Switch .....Off
All other Switches .....Off
Ignition.....On
Vents, Cabin Heat/Air .....Closed
Fire Extinguisher.....Activate

2. If fire appears to be out and electrical equipment is needed

Master Switch .....On
Circuit Breakers.....Check for faulty circuit - do not reset.
Radio/Electrical .....On one at a time, with delay between until short circuit is localized.
Vents, Cabin Heat/Air .....Open once it is ascertained that the fire is completely extinguished.

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Cabin Fire:

Master Switch .....Off
Vents, Cabin Heat/Air .....Closed
Fire Extinguisher .....Activate

After using fire extinguisher within a closed cabin ventilate the cabin.

Landing .....As soon as possible

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Wing Fire

Navigation lights .....Off
Strobe Lights.....Off
Pitot Heat .....Off
Attitude

Perform side-slip to keep the flames away from the fuel tank and cabin.

Land .....ASAP

Do not use flaps.

Pre-Flight Inspection Checklist:

1. Wing Tops/Fuel Tanks

Fuel Level .....Both Wings - Visual check

If needed get gas (AVGAS 100) before proceeding with other fuel tank related items.

Filler caps .....Both Wings - Secure

Make sure vent on right wing cap is not blocked.

Wing Tops .....Inspect for loose screws, rivets and damage

2. Cockpit

Control wheel lock .....Remove
Ignition switch.....Off
Master switch .....On (both sides)
Fuel gauges.....Check quantity
Flaps .....10^{o}
Pitot Heat .....On - observe Ammeter drop - then off
Strobe/Beacon.....On - visually check - off
Master Switch .....Off
Fuel shut-off valve.....On
Paperwork:

Airworthiness certificate

Registration

Radio station license

Operating limitations (POH)

Weight/loading data

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3. Cockpit - Night Flights

Nav Lights & Strobes .....On

Walk around plane and visually check to see that all are operating.

Landing Light .....On

Visually check from outside if not dark enough to see that it's on from inside the cockpit.

Instrument Lights .....On

4. Fuselage - Left Side

Radio antennas.....Check security
Miscellaneous.....Check for loose screws/rivets, etc.

5. Empennage

Rudder gust lock .....Remove
Tail tie-down .....Disconnect
Control surfaces .....Check freedom of movement, actuators, security, loose rivets, damage.

6. Fuselage Right Side

Miscellaneous.....Check for loose screws/rivets, etc.
Fuel strainer drain (belly).....Check sample for water/dirt (some models)

7. Right Wing

Flaps	**Check actuator and rollers**
Aileron	**Check freedom, hinge pins and counterweights**
Wing tip	**Check for cracks** **Check navigation light**
Leading edge	**Check for dents, cracks, etc.**
Wing tie-down	**Disconnect**
Main wheel tire	**Check for proper inflation/wear** **Check cotter pin in wheel nut**
Main wheel brake	**Check for fluid leaks** **Check brake pads**
Fuel drain	**Check sample for water/dirt and fuel type (100LL - Blue)**

8. Nose

Engine Oil	**Check level**

Minimum 4 qts.; 5 qts. for short flights; 6 qts. extended flights

Fuel bowl drain	**Check sample for water/dirt and fuel type (100LL - Blue)**
Prop/Spinner	**Check for nicks and security**
Air filter	**Check for restrictions & excessive dirt**
Landing Light	**Check condition and cleanliness**
Cowling	**Look for birds or nests inside**
Nose wheel	**Check for proper inflation/wear; Check for cotter pins in wheel nuts; Check for leaking fluids**
Nose tie-down	**Disconnect**
Static source opening	**Check not blocked**

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9. Left Wing

Wing tie-down	**Disconnect**
Leading edge	**Check for dents, cracks, etc.**
Pitot tube	**Remove cover check for blockage**
Stall warning opening	**Check for blockage**
Fuel Tank Vent	**Check for blockage**
Wing tip	**Check for cracks** **Check navigation light**
Aileron	**Check freedom, hinge pins and counterweights**
Flaps	**Check actuator and rollers**
Fuel drain	**Check sample for water/dirt and fuel type (100LL - Blue)**
Main wheel tire	**Check for proper inflation/wear** **Check cotter pin in wheel nut**
Main wheel brake	**Check for fluid leaks** **Check brake pads**

Normal Engine Starting Checklist:

1. Before Starting

Preflight Inspection.....Completed
Seat position .....Adjust & ensure locked
Seal belts/harness.....Adjust and lock
Brief passengers on use of belts/harnesses and requirements for wearing them.
Fuel shut-off .....On
Radios/electrical.....Off
Brakes.....Test and set
Circuit Breakers.....Check all in

2. Starting Engine

Mixture .....Rich (in)
Carburetor heat .....Cold (in)
Primer.....Prime if required
Make sure locked in
Throttle .....1/4 Inch
Key .....In ignition
Master Switch .....On (both sides)
Propeller Area.....Call "Clear" & check prop area and behind plane
Ignition.....Start - release on start
Throttle .....1,000 RPM
Oil Pressure.....Check in green

3. Before Taxiing

Radios.....On and set to appropriate frequency. Call for radio check
Transponder .....Standby
Beacon/Strobe.....On
Nav. Lights/Strobes.....On if required

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Flaps.....Full up (normal takeoff)

4. Taxiing

Clearance .....Check for things in way of wings
Check for people ahead of and behind plane
Flight Controls.....Set for existing wind conditions
Brakes .....Come to full stop immediately after starting taxi roll

5. IFR Instrument Checks

Turn Coordinator.....Should indicate turn in proper direction while taxiing.
Attitude Indicator.....Very little change due to turns; Slight pitch indications due to acceleration or deceleration.
Heading Indicator .....Should track headings.
Altimeter.....When set to current altimeter setting should indicate within 75 ft. of airport elevation.
VSI .....Should indicate zero. If not, note indication and use for level indication in flight.
VORs .....Check at local ground check point or against each other based on some receivable signal.

Cold Weather Starting With or Without Pre-Heat:

1. **Before Starting**

Preflight Inspection.....Completed

Seat position .....Adjust & ensure locked

Seal belts/harness.....Adjust and lock

Brief passengers on use of belts/harnesses and requirements for wearing them.

Fuel shut-off .....On

Radios/electrical.....Off

Brakes.....Test and set

Circuit Breakers.....Check all in

2. **Starting Engine**

Ignition.....Off (take key out and hang it up)

Master Switch .....Off (both sides)

Prime

With ignition switch off and throttle closed, prime the engine two to four strokes (up to seven without pre-heat) as the propeller is being turned by hand. Use heavy primer strokes for best atomization of fuel.

If doing this by yourself, tie the plane down securely and set parking brake, in case engine starts.

Treat propeller as if the ignition is on and engine could start.

Leave primer charged and ready for a stroke.

Propeller Area.....Clear

Master Switch .....On

Mixture .....Full Rich

Throttle .....Open 1/4 inch

Ignition Switch .....Start

Throttle .....Pump to full open twice then return to 1/4 inch open position.

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Primer.....Continue to prime until engine is running smoothly. Alternately pump throttle rapidly over first 1/4 of travel.

Oil Pressure .....In the green

This might take a little time since the engine is cold. If pressure doesn't come up in about 30 seconds, shut the engine down.

Carburetor Heat .....Full on after engine started. Leave on until running smoothly.

Primer.....In and locked.

Caution:

If engine does not start during the first few attempts, or if engine firing diminishes in strength, it is probable that the spark plugs have frosted over. Pre-heat must be used before another start is attempted.

Caution:

Pumping the throttle may cause raw fuel to accumulate in the intake air duct, creating a fire hazard in the event of a back-fire. If this occurs, maintain a cranking action to suck flames into the engine. An outside attendant with a fire extinguisher is advised for cold starts without pre-heat.

3. **Perform steps 3 and 4 on normal start checklist**

Before Takeoff Checklist:

1. Final Cockpit Check

Cabin doors .....Closed and latched
Windows .....Closed
Flight Controls .....Free and correct
Elevator trim .....Takeoff position
Flight Instruments.....Check and set
Set attitude indicator to level flight position
Set altimeter to runway altitude or locally reported altimeter setting
Set heading indicator to magnetic compass
Comm Radio/VOR .....Set to appropriate freqs
Beacon/Strobe.....On
Nav Lights/Strobes.....On if required

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2. Engine Run-up

Fuel Shutoff .....On
Mixture .....Rich (in)
Parking brake.....Set or hold foot brakes
Throttle.....1,700 RPM
Magnetos .....Check
RPM drop should not exceed 125 RPM on either magneto.
RPM difference between magnetos should not exceed 50 RPM.
Carburetor Heat .....On
Check for RPM drop then back to off
Engine instruments.....Check
Oil pressure/Temperature
Ammeter - Create electrical load with landing light. Make sure no more than needle width deflection.
Vacuum .....Check in green
Throttle.....Idle
Carburetor heat.....On – Make sure engine keeps running
Throttle.....1,000 RPM
Throttle friction lock.....Adjust
Alternator switch .....Off – Check low voltage light on – Switch back to on
Flaps.....Appropriate takeoff position
Throttle friction lock.....Adjust
Transponder .....Set to mode C/Altitude

Normal Takeoff and Climb Procedures

Flaps .....Full up
Carburetor Heat .....Cold (in)
Elevator Trim .....Takeoff position
Heading indicator .....Calibrate against compass
Throttle .....Full open (in)
Engine Instruments.....Check while starting roll
RPM - 2600 (Top of green arc)
Oil Pressure - In the green
Oil Temperature - In the green
Suction - In the green
Airspeed.....Building
Elevator.....Lift nose wheel at 50 KIAS (58 MPH)
Climb Speed .....65 - 75 KIAS (75 - 86 MPH)

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Maximum Performance Takeoff (Short Field):

Taxi.....Maximum runway usage
Takeoff procedure should be started using ALL available runway. Taxi to end of runway and align with centerline.
Brakes .....Set and hold
Flaps.....10°
Carburetor Heat .....Cold (in)
Elevator Trim .....Takeoff position
Heading indicator .....Calibrate against compass
Throttle.....Full open (in)
Engine Instruments .....Check before starting roll
RPM - 2600 (Top of green arc)
Oil Pressure - In the green
Oil Temperature - In the green
Suction - In the green
Brakes .....Release
Airspeed .....Building
Elevator .....Slightly tail low
Climb Speed.....54 KIAS (62 MPH) with obstacles ahead.

Soft Field Takeoff:

Taxi .....Keep rolling to avoid bogging down

Flaps .....10°

If 10° flaps are used, with obstacles ahead, leave them extended until the obstacle is cleared and at a safe altitude.

The exception is in high density altitude takeoff where the climb would be marginal with the flaps at 10°.

Carburetor Heat .....Cold (in)

Elevator Trim .....Takeoff position

Heading indicator .....Calibrate against compass or runway heading

Throttle .....Full open (in)

Engine Instruments .....Check as starting roll

RPM - 2600 (Top of green arc)

Oil Pressure - In the green

Oil Temperature - In the green

Suction - In the green

Airspeed .....Building

Elevator .....Slightly tail low

Allow the airplane to lift off as soon as possible (before reaching safe climb speed). Level off at a few feet above the ground and fly in ground effect until reaching normal climb speed.

Climb Speed .....54 KIAS (62 MPH) with obstacles ahead.

Flaps .....Retract at safe altitude with positive rate of climb.

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After Takeoff Checklist

1. Climbout

Airspeed .....65 - 75 Knots (75 - 86 MPH)

Altitude .....Above 300 AGL

Flaps .....Up (in 10° increments if more than that in use)

2. At Cruise Altitude

Attitude .....Level

Airspeed .....Let build to desired cruise speed

Throttle .....Reduce to desired cruise setting

Heading Indicator .....Calibrate against compass

3. Above 3,000 MSL

Mixture .....Lean for maximum RPM

Enroute Climb:

Normal AIrspeed .....70 - 80 KIAS (80 - 92 MPH)

Max Performance .....See POH Climb Table in Section 5

Throttle .....Full Open (in)

Carburetor Heat .....Cold (in)

Mixture .....Rich (in) below 3,000 ft. May be leaned above 3,000.

Normal Approach and Landing Procedures:

1. **Pre-Landing (Downwind) check**

   Seat belts/Harnesses.....Adjust and lock
   Mixture .....Rich (In)
   Carburetor heat .....On (Out)
   Fuel Shut-off.....On

2. **Approach and Landing**

   Power .....Reduce to 1,500 to 1,700 RPM abeam approach end of runway
   Airspeed.....Let bleed off to less than 85 KIAS (95 MPH)
   Flaps .....Use as desired

   Under light (less than 10 Knots) wind conditions 10^{o} descending on the end of the downwind leg, 20^{o} on base, and full flaps over the threshold.

   In heavier winds 20^{o} or less is good flap setting for landing.

   Use minimum flap setting possible for cross wind landing

   Airspeeds

   Downwind through base 65 - 75 KIAS (75 - 86 MPH)

   Final approach 60 - 70 KIAS (70 - 80 MPH)

   In gusty winds add 1/2 difference between gust and average wind speed to approach speed.

   Touchdown

   Just above stalling speed - main wheels first.

   Landing Roll

   Lower nose wheel gently

   Braking

   Minimum required.

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Short Field Landing:

1. **Pre-Landing (Downwind) check**

   Seat belts/Harnesses.....Adjust and lock
   Mixture .....Rich (In)
   Carburetor heat.....On (Out)
   Fuel Shut-off .....On

2. **Approach and landing**

   Power .....Reduce to 1,500 to 1,700 RPM abeam approach end of runway
   Airspeed .....Let bleed off to less than 85 KIAS (95 MPH)

   Flaps

   Under light (less than 10 Knots) wind conditions 10^{o} descending on the end of the downwind leg, 20^{o} on base, and full flaps on final.

   Airspeeds

   Downwind through base 65 - 75 KIAS (75 - 86 MPH)

   Final approach 54 KIAS (62 MPH)

   In gusty winds add 1/2 difference between gust and average wind speed to approach speed.

   Touchdown

   Just above stalling speed - power off - main wheels first.

   Roundout must be done much faster than usual due to low airspeed.

   Landing Roll

   Lower nose wheel quickly.

   Braking

   Maximum possible without sliding tires.

   Flight Controls.....Flaps up
   Hold full up elevator

Soft Field Landing:

1. Pre-Landing (Downwind) check

Seat belts/Harnesses.....Adjust and lock
Mixture .....Rich (In)
Carburetor heat .....On (Out)
Fuel Shut-off.....On

2. Approach and Landing

Power .....Reduce to 1,500 to 1,700 RPM abeam approach end of runway
Airspeed.....Let bleed off to less than 85 KIAS (95 MPH)

Flaps

Under light (less than 10 Knots) wind conditions 10^{o} descending on the end of the downwind leg, 20^{o} on base, and full flaps over the threshold.

In heavier winds 20^{o} or less is good flap setting for landing.

Use minimum flap setting possible for cross wind landing

Airspeeds

Downwind through base 65 - 75 KIAS (75 - 86 MPH)

Final approach 60 - 65 KIAS (70 - 75 MPH)

In gusty winds add 1/2 difference between gust and average wind speed to approach speed.

Touchdown

Just above stalling speed - power off - main wheels first.

Landing Roll

Hold nose wheel off as long as possible.

Use up elevator to reduce weight on nose wheel throughout landing roll.

Braking.....As required
Flight Controls .....Full up elevator

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Balked Landing (Go Around):

Throttle.....Full Open (in)
Carburetor Heat .....Cold (in)
Flaps.....To 20^{o}

If more than 20^{o} of flaps were in when the go-around is initiated, retract immediately to 20^{o}.

Continue to retract flaps in 10^{o} increments only after establishing a positive rate of climb and reaching a safe altitude.

Airspeed .....55 KIAS (63 MPH)

Post-Landing Checklists:

1. **After Landing - Clear of Runway**
   - **Flaps .....Full up (visual check)**
   - **Carburetor Heat.....Off (in)**
   - **Elevator Trim .....Takeoff position**
2. **If Hard Landing**
   - **ELT.....Listen for on 121.5 on communications radio**
3. **Engine Shutdown**
   - **Radios/Electrical .....All off**
   - **Throttle .....1,000 RPM**
   - **Mixture .....Idle cutoff**
   - **Ignition.....Off**
   - **Master Switch .....Off**
4. **Securing the Airplane**
   - **Parking Brake .....Set**
   - **Control Lock.....Install**
   - **Tiedown .....Wings and Tail**
   - **Pitot Cover.....Install**
   - **Double Check**
     - All electrical equipment - Off
     - Master Switch - Off
5. **Close your Flight Plan**

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Before Leaving Home

1. **Self Check**
   - **Feeling ok .....Yes**
   - **Under any stress.....No more than usual**
   - **Taking any medication.....No**
   - **Alcohol in last 12 Hrs. .....No**
2. **Flight Planning/Navigation Equipment**
   - **Current Charts**
   - **A/FD**
   - **POH**
   - **Airport Guide**
   - **E6-B**
   - **Plotter**
   - **Calculator**
   - **Timer**
   - **Custom Checklists**
   - **Flight Plans**
   - **Weather Reports**
   - **Pencils**
   - **Clipboards**
3. **Emergency Items**
   - **Hand Compass**
   - **Knife**
   - **Flashlights**
   - **Batteries**
   - **Bulbs**
   - **Cell Phone (Charged)**
   - **Spare Glasses**
   - **Sun Glasses**