2013 FAR SYNOPSIS

THE FOLLOWING IS A SYNOPSIS OF SOME OF THE FARs WHICH AFFECT YOU AS A PART 91 GENERAL AVIATION PILOT. THIS SYNOPSIS IS NOT A SUBSTITUTE FOR A COMPLETE REVIEW OF THE FARs. REFER TO THE FARs FOR ALL INFORMATION AFFECTING FLIGHT.

43.3 [g] and Appendix A[c] Authorizes private pilots or higher to perform specifically listed **preventative maintenance** items on aircraft they own or operate and are not flown commercially. See also FAR 91.403.

61.1 Certificate flight instructors are now authorized flight instructors.
Flight simulator defined: full size cockpit layout, identical systems to the aircraft, full range of motion.
Flight training device defined: full size replica of the cockpit with systems that represent ground and flight operations. Both simulators and flight training devices must by approved by the controlling FAA FSDO.
Cross country defined: landing at a location other than the point of departure. Military, commercial, and ATP pilots may travel at least a straight line 50 NM distance to a point (no landing required) and return to the original point of departure to log cross country. Note that specific distance cross countries are required in training for a certificate or rating.

61.3 You must carry on your person or have readily available in the aircraft your **photo ID** (drivers license, passport, military ID, state issued ID) **pilot certificate** and **medical certificate** when you are a required crew member.

61.15 Notify the FAA, AMC 700, PO Box 25810, Oklahoma City, OK, 73125 within **60 days of any motor vehicle action.** Any conviction, ever, involving **illegal drugs** may suspend or prevent issue of a pilot certificate for up to one year.

61.18 The FAA, on request from the Transportation Security Administration (TSA) may **suspend, or refuse to issue, an airman's certificate** for reasons of national security.

61.19 A **student pilot** certificate is valid for 24 months after the month in which it was issued. A **flight instructor** certificate is valid for 24 months after the month in which it was issued.

61.23 **Medical certificates**: 3rd class -valid for 24 months. For persons less than 40 years old (at time of issue), 36 months. 2nd class - valid for 12 months. 1st class - valid for 6 months. No medical certificate is required to act as a **glider pilot, balloon pilot, light sport pilot and flight instructor.**

61.31 To act as Pilot in Command (PIC) in any **high performance aircraft** (more than 200 HP per engine) or, to act as PIC in a **complex aircraft** (retractable gear, flaps, controllable propeller; flap and propeller only for seaplanes) you must receive flight instruction from an authorized instructor. These are a one time requirement and are good for all high performance / complex aircraft that do not otherwise require a type rating. Pilots who have logged PIC time in high performance or complex aircraft prior to

8/4/97 are “grandfathered” and exempt from these requirements. To act as Pilot in Command (PIC) in any **tail wheel** (includes tail skid) or, to act as PIC in a **high altitude** (pressurized, capable of operations above FL 250) aircraft, you must receive flight instruction from an authorized instructor. Pilots who have logged PIC time in tail wheel or high altitude aircraft prior to **4/15/91** are “grandfathered” and exempt from these requirements. Note these are separate requirements.

61.51 Logging pilot time: You must log that time necessary to obtain a license or rating or to show currency. All other flight time may be logged. Your log book (any written or electronic form is acceptable) must include: date/ total time of flight/ place of departure and arrival/ type of aircraft and identity (N number)/ type of pilot time (PIC, SIC, dual from a flight instructor. Note you may log both PIC and dual on a flight if you qualify in both categories)/ flight conditions (day or night, actual or simulated instruments), and the name of the safety pilot for simulated instrument flight. **Pilot in Command** (PIC): As a private or commercial pilot, you may log as PIC only that time you are the sole manipulator of the controls of an aircraft for which you are rated, or, when acting as PIC in an aircraft that requires more that one pilot. **ATPs** may log PIC when operating on a flight that requires an ATP rating. **Flight Instructors** may log PIC when giving flight instruction. **Second in Command** (SIC): flight time in an aircraft for which you are rated wherein the type aircraft requires more than one pilot or the regulations require more than one pilot. Acting as a **safety pilot** for a pilot flying under simulated instrument conditions (wearing a vision limiting device) may be logged as PIC or SIC time. Note that there is a clear distinction between **acting as PIC and logging PIC.** To act as PIC, you must meet all requirements for currency (**P**hysical - current and appropriate class, **B**iennial flight review, **C**urrency – 6 month instrument if IFR and 90 day landing if carrying passengers or other required crew members, **F**lying endorsements or “grandfathered” for high performance / complex / high altitude / tail wheel, **L**icense – appropriate category and class). You may log PIC if you are the sole manipulator of the controls in an aircraft for which you are rated or are the sole occupant of the aircraft (no other requirements necessarily need be met). **With the exception of multi crew aircraft, ATPs, and flight instructor, only the person manipulating the controls may log PIC time.**

Log books: you must present your log book (or any other required document) to the FAA, NTSB, state or local law official required upon reasonable request. (This has been interpreted to mean you have reasonable time to go to the place where the document is kept and then present it. Additionally, you do not have to, nor should you, surrender any document at that time, rather simply show the document). **Student pilots** must carry their log book (and any other required documents) with them on solo cross county flights to show evidence of required endorsements. **Recreational pilots and Sport Pilots** must carry their log book on any flight that requires a specific endorsement.

61.53 You may not act as a required crew member any time you know or have reason to know you do not meet the minimum requirements of your current **medical certificate.**

61.56 Flight Review (FR) Required every 24 months to act as PIC. Note that you may fly in another crew position without a flight review. The FR requires minimum of 1 hour of ground instruction and 1 hour of flight instruction from an authorized instructor(s). You must review the contents of FAR part 91 and any other areas deemed necessary by the conducting authorized instructor. The ground and flight portions of the FR may be given at separate times by separate instructors. The instructor giving the FR does not have pass / fail authority; you either receive a flight review endorsement or duel flight instruction given if the FR is not completed. A successful check ride for any pilot license, rating or privilege given by the FAA , Designated Examiner, or US armed forces check airman will act in lieu of a FR. The completion of a phase of the **FAA Wings program** (one hour of approved ground instruction or an FAA approved safety seminar plus 3 flight hours with a flight instructor. See AC 61-91G, Pilot

Proficiency Award Program) will also act in lieu of a FR. The FAA considers that a FR given by a flight instructor does constitute flight instruction.

61.57 Flight Currency: Three takeoffs and landings every 90 days as the sole manipulator of the controls to act as PIC if you are carrying passengers or if you have a safety pilot (or other required pilot crew member) with you. This must be in the same category (airplane, helicopter, etc.) and class (single engine land, multi engine land, etc.) and type, if so required.
Night PIC currency requires three takeoffs and landing to a full stop within the period of one hour after sunset to one hour after sunrise. Note also that **tail wheel aircraft** require full stop landings for currency as above.
Instrument currency: within the last six calendar months you must fly six published instrument approaches (any type), enter one holding, and capture and track a NAVAID bearing or radial in the category of aircraft you intend to fly. Alternatively, you may use an FAA approved simulator or flight training device representing the same category of aircraft you intend to fly. Fly an approach - capture and track any portion on the approach plate to get credit for an approach. Holding - cross a holding fix with the intention to turn in the holding pattern. Track NAVAID - flying an approach will satisfy this requirement. After the 6th month, you must take an instrument proficiency check in the category of aircraft (simulator, or flight training device) you intend to fly with an instrument flight instructor, an FAA examiner or designated examiner, a company check pilot for FAR 121, 125, or 135 operations, or a U.S. armed forces check pilot.

61.60 Change of Address: within 30 days of moving your permanent mailing address, send a change of address notice to: FAA, Airman Certification Branch, AFS 760, Box 25082, Oklahoma City, Ok 73125. Include your name, date of birth, airman certificate number and new address. A plain post card is acceptable. You may make a change of address on line at <*http://registry.faa.gov*>. If your new address is a post office box, rural route, or anything other than a “drive up” street address, include a signed and dated map to your new address. New airman certificates will not be issued for address changes only.

61.303 Sport Pilot: Sport pilots, recreational pilots, and private pilots and higher may **act as PIC** in an aircraft that meets Light Sport Aircraft (LSA) criteria using either an FAA medical or a **valid U.S. drivers license**. Recreational or private pilots or higher that have unresolved medical issues from a previously issued FAA medical certificate must resolved these issues to be able to use a divers license in lieu of a medical certificate.

61.315 Sport Pilot Limits: Sport pilots may **not act as PIC** in an LSA for hire or compensation (this includes any compensation, such as barter) / to further a business / to demonstrate an aircraft for sale if a salesperson / with more than one passenger / in class A, B, C or D airspace or to / from an airport in class B, C or D airspace / at an airport with an operating control tower (see also 61.325) / above 10,000 feet / at night / when the inflight or surface visibility is less than 3 SM / without visual reference to the surface of the earth. Note also you may not act as PIC if there are limits placed on your driver’s license that would prohibit operation of an aircraft.

61.325 Sport Pilot Added Privileges: Sport pilots may **receive additional training** from an instructor to be able to act as PIC in class A, B, C or D airspace or to / from an airport in class B, C or D airspace or at an airport with a operating control tower.

91.3 The person **acting as PIC** is the final authority for the operation of the aircraft. In any inflight emergency requiring immediate action, the PIC may deviate from any rule to the extent required to meet that emergency.

91.7 The PIC is responsible for determining if an aircraft is in a condition for **safe flight**. This includes mechanical condition, required inspections, maintenance endorsements, and required documents on board the aircraft.

91.9 The PIC must ensure that the **pilot's operating handbook** or **flight manual** is in the aircraft for flight.

91.13 No person may operate an aircraft in a **careless or reckless** manner so as to endanger the life or property of another.

91.15 The PIC may not permit any **object to be dropped** from an aircraft that creates a hazard to persons or property.

91.17 You may not act as a crew member within eight hours of consumption of **alcohol**, if you are under the influence of alcohol, or if your blood alcohol content is.04 percent or higher, by weight.

91.19 You may not carry any narcotic **drug**, marihuana, depressant, stimulant or and other substance defined in federal or state laws as illegal.

91.25 The FAA may not use reports submitted to the **NASA Aviation Safety Reporting Program** in any enforcement action except accidents and criminal offenses wholly excluded from the ASRP program.

91.103 **Preflight actions** required before flight: FOR ALL FLIGHTS - review the runway lengths at the airports of intended use, calculate the take off and landing distances from the aircraft flight manual or other reliable information relating to the aircraft performance under the expected flight conditions. FOR ALL IFR FLIGHTS or FLIGHTS NOT IN THE VICINITY OF AN AIRPORT become familiar with all information concerning the flight. Weather reports and forecasts, fuel requirements, alternate airports when the flight to the planned destination can not be completed, known traffic delays when advised by ATC. "Advised by ATC " implies a review of at least distant (D) and Flight Data Center (FDC) NOTAMs are required, as well as any delay advised in an ATC clearance.

91.105 Required flight crew members must keep their **seat belt** fastened at all times they are at their flight crew station. If so equipped, **shoulder harnesses** must be fastened for take off and landing.

91.107 The PIC may not allow the aircraft to taxi, take off or land until each person on board is notified to fasten their **seat belt** and **shoulder harness**, if installed. Persons less than two years old do not require a seat. The floor of the aircraft may be used as a seat when carrying individuals involved in **sports parachuting.**

91.109 When flying simulated instruments with a vision limiting device: the safety pilot must be at least a private pilot with the appropriate category and class license and a current medical. The **safety pilot** must be seated in the other control seat, have adequate forward and side visibility, and have duplicate, full functioning controls .

91.113 Right -of -Way rules: The least manoeuvrable aircraft (balloon) has the most right of way; the most manoeuvrable aircraft (helicopter) has the least right of way. When aircraft are on crossing paths inflight, the aircraft to the right has right of way. Aircraft will alter course to their right when approaching head on. If overtaking an aircraft, the overtaken aircraft has the right of way. Anytime you are VMC, the PIC has final authority and responsibility for the **separation of aircraft.**

91.117 Aircraft speeds:
Below 10,000 feet MSL and within class B airspace, 250 KIAS maximum. Note that ATC may authorize a higher speed in controlled airspace.
In the airspace directly under class B airspace or a VFR corridor through class B airspace, 200 KIAS maximum.
Within 4 NM of the primary airport in class C or D airspace when at or below 2500 feet AGL, 200 KIAS maximum.

91.119 Minimum safe altitudes: Except for take off and landing, do not fly lower than a height from which you can make an emergency landing without undue hazard to people or property on the surface. Do not fly within 1000 feet vertically and 2000 feet horizontally of the highest obstacle when over congested areas. Do not fly lower than 500 feet AGL when over other than congested areas. Do not fly within 500 feet of any person, vessel, structure or object when over open water or sparsely populated areas.

91.121 Altimeter setting: below 18,000 feet MSL, use the altimeter setting reported by ATC or received by a station along the route of flight and within 100 NM of your aircraft. When departing from an airport that does not have an approved altimeter source, use the setting received from ATC of the field elevation. Above 18,000 feet, use 29.92 inches of mercury (1013 millibars).

91.123 ATC clearances: When you have received an ATC clearance, you must comply with that clearance. You may deviate from your clearance only in an emergency or in response to a Traffic alert and Collision Avoidance System (TCAS) resolution advisory. Tell ATC you are deviating from your clearance as soon as possible. If you are uncertain as to the meaning of a clearance, request clarification from ATC. If you deviate from an ATC clearance you must submit a detailed report on the circumstances within 48 hours only if requested to do so by ATC. If you request **VFR flight following** radar services from ATC, or sequencing from an ATC tower do understand the services ATC will provide. If you receive a discreet transponder code and radar flight following, this in no way alters your status as a VFR flight. ATC will provide traffic advisories and other services on request. You are responsible for terrain and special use airspace clearance and are the final authority for the separation of aircraft. Unless ATC states specific headings, altitudes, and airspeeds, you may maneuver your aircraft as you desire. This is true when in class C, D or E airspace. Advise ATC of changes if they ask you to. When communicating with an **ATC tower**, you will receive sequencing services. You must remain VMC if you are VFR and you are responsible for the separation of aircraft. You must comply with ATC

instructions. The tower controller must separate as well as sequence traffic in the surface area, but you, the PIC, are the final authority for the separation of aircraft.

91.125 ATC Light Signals:

Signal ground air

steady green	takeoff land
flashing green	taxi return for landing
steady red	stop give way & circle
flashing red	taxi off runway do not land
flashing white	return to your starting point on the airport

alternating red / green - exercise extreme caution

91.126 When landing at **non towered airports** in class G, class E, or

91.127 class C airspace, make all turns to the left unless light signals or

91.129 visual markings indicate right turns.

91.130 Tower controlled airports in class D or C airspace: you must establish communications with the tower prior to entry into the class D or C airspace. “Establish communications” has been interpreted to mean the appropriate ATC facility acknowledges you by call sign. You must comply with the instructions issued by the tower (see 91.123). In the event of **radio failure**, you may land at the tower controlled airport if the weather is at or above basic VFR minimums, visual contact is maintained with the tower, and a clearance to land (light signal) is given. When approaching to land on a runway served by a **visual approach slope indicator,** you must remain at or above the glide slope until a lower altitude is necessary for a safe landing. When departing non towered satellite airports in class D or C airspace, establish communications with the primary airport tower or appropriate ATC facility as soon as practicable after takeoff. **Taxiing:** a clearance from ground control to taxi to a runway at a tower controlled airport clears you to cross all other taxiways and runways along your taxi route. You may not taxi onto or across at any point of the runway you were cleared to until the tower issues a specific clearance. When departing you must comply with the departure procedures established for that airport. You may deviate from these rules if authorized by the appropriate ATC facility.

91.131 You must be at least a private pilot to operate without restriction in **class B airspace.** Student pilots must have specific ground and flight training in THAT class B airspace and current log book endorsements from a flight instructor to operate in that class B airspace and operate from any airport in the class B airspace. See FAR 61.95. The minimum equipment to operate in class B airspace is a two-way VHF radio and a transponder with altitude reporting. VFR, no specific navigation equipment is required; a VOR receiver is the minimum required when IFR. If your transponder or altitude encoder is inoperative, you may receive clearance to enter / operate in class B airspace from ATC. See FAR 91.215(d).

91.133 You may enter **Prohibited** and **Restricted areas** only with permission of the controlling agency for that area. See Airspace, previous.

91.137 **Temporary restricted areas** will be announced by NOTAM. ATC may route you through or directly to / from an airport within a temporary restricted area when you are IFR. If there is no other clearly practicable means to operate VFR to and from an airport within this restricted area, including limitations imposed by terrain or weather, you may operated VFR in the temporary restricted area. You must notify the FSS or ATC facility listed in the NOTAM prior to flight and receive advisories on any other operation within the restricted area and you must not hamper any official operations within the restricted area. You may not exercise this privilege simply to observe disaster operations within the temporary restricted area. See <http://tfr.faa.gov>

91.141 **Restrictions; President and other Parties** You may not operate an aircraft over or in the vicinity of any area to be visited or travelled by the President, Vice President or other public figures. NOTAMS will establish restrictions. See <http://tfr.faa.gov>

91.151 **Fuel reserves** for VFR flight - DAYTIME: you must plan, considering the known winds aloft and any known ATC delays, to fly to the first point of intended landing and be able to fly for 30 minutes thereafter at normal cruising speeds. NIGHT: as above, but you must plan to have fuel to fly for 45 minutes.

91.153 If you file a **VFR flight plan**, you must cancel this flight plan with Flight Service or other ATC facility upon completion of the flight.

91.155 **Weather minimums** for VFR flight -

Airspace	Requirements	Visibility	Cloud Distance
Class A	IFR	N/A	N/A
Class B	Clearance	3 sm	Clear of Clouds
Class C	Communication	3 sm	500’ / 1000’/ 2000’
Class D	Communication	3 sm	500’ / 1000’/ 2000’ / 1000’ ceiling
Class E	None	3 sm	500’ / 1000’ / 2000’
Class G +1200 agl	None	1 sm Day	500’ / 1000’ / 2000’
Class G -1200 agl	None	1 sm Day	Clear of Clouds Day
Class G +1200 agl	None	3 sm **Night**	500’ / 1000’ / 2000’
Class G -1200 agl	None	3 sm **Night**	500’ / 1000’ / 2000’

91.157 **Special VFR** - see weather minimums section. Special VFR may only be conducted with an ATC clearance, Clear of clouds, Flight visibility of 1 mile.

91.159 **VFR enroute altitudes** - when in level flight and more than 3000 feet above ground level, maintain the following altitudes:
On a magnetic course (NOT heading) of 000 to 179 degrees any odd thousand foot increment plus 500 feet (5,500, 7,500, 9,500, etc.).

On a magnetic course of 180 to 359 degrees, any even thousand foot increment plus 500 feet (4,500, 6,500, 8,500, etc.).
This applies up to 18,000 feet MSL. Below 3000 feet AGL or when climbing, descending, or in a holding pattern of two minutes or less, you may fly at any altitude.

91.167 Fuel reserves for IFR flight - You must plan, considering the known winds aloft and any known ATC delays, to fly to the first point of intended landing and be able to fly to the alternate airport and for a further 45 minutes thereafter at normal cruising speeds.
An alternative does not need to be filed if for 1 hour before and 1 hour after the estimated time of arrival, the ceiling will be at least 2000' above the airfield elevation and the visibility will be at least 3 miles.

91.169 IFR Flight Plan information - An alternative does not need to be filed if for 1 hour before and 1 hour after the estimated time of arrival, the ceiling will be at least 2000' above the airfield elevation and the visibility will be at least 3 miles.
If an alternative is required then the weather forecasts at the ETA must be 600' and 2 miles visibility for a precision approach and 800' and 2 miles visibility for airports with a non-precision approach.

91.171 VOR Equipment checks for IFR Operations – Within the past 30 days and required for IFR flight the Date, Place, Bearing error, and Signature

Ground Check	± 4º
VOT Test Signal	± 4º
Dual VOR Check	within 4º
Airbourne Check	± 6º

91.175 Standard Instrument Takeoff minimums (Aircraft for hire)
1sm visibility for aircraft with 1 or 2 engines.
½ mile visiblilty for aircraft with more than 2 engines
Take off minimums do NOT apply to part 91 flight, but landing minimums do.
No pilot may operate below DA or MDH unless:
The aircraft is in a position to make a normal descent to landing with normal manoeuvres can be made.
At least 1 of the following visual references is distinctly visible and identifiable to the pilot

- Approach light system (ALS)
- Threshold, threshold lights, threshold markings
- Runway end identifier lights (REIL)
- Visual approach slope indicator (VASI)
- Touchdown zone (TDZ)
- Touchdown zone markings or lights(TDZL)
- Runway, runway markings or runway lights

91.177 Minimum IFR Altitudes. Except for takeoff or landing, never operate below published minimum altitudes (MEA, MOCA). A pilot may operate below the MEA and at or ablove the MOCA within 22nm of a VOR.
If no minimum altitudes are published:
Below 1000' above the highest obstacle within 4nm

Below 2000’ above the highest obstacle within 4nm (in designated mountainous areas)

MEA Minimum Enroute Altitude,
Navigation reception and obstacle clearance.

MOCA Minimum Obstacle Clearance Altitude
Navigation reception within 22sm and obstacle clearance.

MCA Minimum Crossing Altitude
Obstacle clearance with normal climb

MRA Minimum Reception Altitude
Navigation reception of the intersection, obstacle clearance.

MSA Minimum Sector Altitude
1000’ obstacle clearance within 25 miles of navaid

MAA Maximum Authorising Altitude
Below Special Use Airspace

MVA Minimum Vectoring Altitude
At least 500’ obstacle clearance during radar vectoring

91.179 IFR Cruising Altitude or Flight Level – When operating below 18,000 MSL on a magnetic course of zero degrees through to 170 degrees any **odd** thousand foot MSL, (such as 3000, 5000, 7000.)
On a magnetic course of 180 degrees through 359 degrees any **even** thousand foot MSL, (such as 2000, 4000, 6000)

91.183 IFR Comunications – Report to ATC the time and altitude of passing each designated reporting point, except when under radar control. Any unforecast weather conditions encountered, and any information relating to the safety of flight.

91.185 IFR Comunications – Two way radio failure. If VFR then land as soon as practicable and remain VFR. If in IFR conditions then for the **Route** you follow the last **assigned, vectored, expected** that ATC has advised you might receive, in the absence of these then the **filed** route.
Regarding **Altitude** the order of what altitude to remain it is the last **assigned,** then the **minimum** altitude to operate IFR. Failing these then the **expected** altitude or flight level that ATC advised you may expect.

91.203 Required certificates - a current **airworthiness certificate** and appropriate **certificate of registration.** The airworthiness certificate must be carried in the aircraft and displayed near the entrance in view of the aircrew and passengers. If a **fuel tank is installed in the cabin** or baggage compartment, you must carry a FAA form 337 in the aircraft documenting the tank installation.

91.205 Minimum standard equipment required for flight operations –

VFR Day flight
Gas gauge
Oil pressure gauge
Oil Temperature gauge
Seat belts and shoulder straps
ELT
Altimeter
Compass
Airspeed Indicator
Tachometer

VFR Night
Anti collision lights
Position lights
Energy source
Spare Fuses

IFR Flight
Clock (must display hours, minutes and seconds)
Directional Giro
Attitude Indicator
Rate of Turn indicator
Two way radios and Navigational equipment appropriate to the ground facilities being used.
Generator
Altimeter (Adjustable to pressure)
Slip/Skid Indicator

91.207 Emergency Locator Transmitters: You must have a properly installed ELT in the aircraft. ELTs must be inspected every 12 months and an airframe log book endorsement made. The following exceptions do not require an ELT on board:
-single seat aircraft
-training flight within 50 NM of the departure airport
-any non turbojet aircraft operated under FAR part 91 - for 90 days maximum, provided the aircraft log book is endorsed for the removal of the ELT and a placard is placed in view of the PIC showing “ELT removed”

91.209 Position lights: You must display position lights (red/green/white) between sunset and sunrise. You must display position lights or well illuminate an aircraft if parked or being moved on the ground in dangerous proximity to night flight operations areas. Anti-collision lights should be on in flight.

91.211 Oxygen requirements: When the CABIN altitude is above 12,500 and at or below 14,000 feet MSL, the required crew member(s) must use supplemental oxygen when at these altitudes for more than 30 minutes STARTING with the 31st minute.
Above 14,000 feet, the required crew must use oxygen at all times.
At 15,000 feet and above, the crew must offer oxygen to passengers (use of oxygen is optional).

In pressurized aircraft above FL 250, regardless of cabin altitude, the crew must provide a 10 minute supply of oxygen to each person, in the event of loss of cabin pressure.

91.213 Inoperative equipment and instruments: You must either have an approved Minimum Equipment List (MEL) for the aircraft and you follow the directives therein OR you may remove or deactivate and placard inoperative equipment and instruments in small (less than 12,500 # CERTIFIED take off weight) rotor craft or non turbine airplanes and the equipment is NOT:
-Part of the day, VFR type certificated equipment or instruments required in the basic type certificate of the aircraft
-Indicated as required in the aircraft's equipment list for kinds of operations conducted
-Required by FAR 91.205 (minimum standard equipment for flight operations) or any other rule in FAR 91 for the specific kind of flight operations being conducted
-required to be operational by an air worthiness directive

91.215 Transponder requirements: If you have a transponder and it meets the 24 months system check, you must operate the transponder and altitude reporting feature on the code assigned by ATC. Transponders with altitude reporting are required in class A, B, and C airspace; within 30 NM of the primary airport(s) in class B airspace and when at and above 10,000 feet MSL (except when you are at/above 10,000 feet MSL AND within 2,500 feet AGL). If you do not have altitude reporting capability, or it is inoperative, you may request a waiver to enter airspace requiring such at ANY time. If you have a transponder but it is inoperative, you may request a waiver to enter airspace requiring such at ANY time. If you do not have a transponder on board, you must request a waiver at least one hour before the proposed operation.

91.217 The **altitude reporting** feature of your transponder must be tested to an 125 foot accuracy. Note: when ATC asks for your altitude read out, ATC must see an encoded altitude within 300 feet that which you verbally report. If you report an altitude greater than 300 different from your readout, ATC may not use your altitude reporting function for separation purposes. (ref: ATC hand book 7110.65)

91.221 If your aircraft is equipped with an approved, operable Traffic Alert and Collision Avoidance (**TCAS**) system, you must operate that system inflight.

91.225 Automatic Dependent Surveillance – Broadcast: From January 1st 2010 all aircraft must have ADS – B equipment installed and be operational.

91.303 Aerobatic flight: Defined as any intentional maneuver involving an abrupt change in an aircraft's attitude, an abnormal attitude, or abnormal acceleration, not necessary for normal flight. You may not perform aerobatic flight if: over a congested city, town, or settlement / over an open air assembly of persons / within the lateral boundaries of surface based class B, C, D, or E airspace designated for an airport (note: this does not include the concentric, non surface based rings to class B or C airspace) / within four NM of the centerline of an airway / below 1,500 feet AGL / when flight visibility is less than three SM. Note: aerobatic flight and / or formation displays at organized **air shows** requires a waiver from the controlling FAA FSDO. Additionally, individual pilots performing in wavered airspace must display competency by holding a current FAA form 8710-7, "Statement of Aerobatic Competency", or other approved document, such as a FAST or FFI card.

91.307 Parachutes: If carried for emergency purposes, they must be FAA approved and repacked as required. Refer to the specific make parachute for packing currency. Typically a modern parachute must be repacked by a certificated rigger every 120 days. If carrying another person (other than a crew member) you may not exceed 60 degrees of bank or 30 degrees of pitch unless all occupants of the aircraft are wearing a current, approved parachute. Exceptions: a flight test for a certificate or rating / spins and other flight maneuvers performed by an ATP instructing an ATP candidate or a flight instructor instructing a student for a certificate or rating. Note: further clarification was published in the Federal Register referencing FAR 91.71 (now 91.307). "…regardless of what certificate or rating the applicant is seeking, an aerobatic maneuver required for any pilot certificate or rating (even one not presently sought by the applicant) may be performed **without parachutes** when done by, or at the direction of, a certificated flight instructor…" (29 F.R. 9823, July 22, 1964, effective August 21, 1964).

91.319 Experimental aircraft: No person may operate an experimental certificated aircraft for other than the purpose for which the certificate was issued. For a newly certificated aircraft, you may not operate outside of a designated area until it is shown that the aircraft operates normally and has no hazardous operating characteristics or design features. You must operate day VFR only and may not operate over densely populated areas or on a congested airway unless so authorized in the special operating limitations. You may not carry persons for compensation or hire. *Note: The FAA has granted EAA, NAFI and SAMA an exemption from FAR 91.319(a). This exemption allows owners of experimental "crew training" (FAR 21.191(c)), "exhibition" (FAR 21.191(d)), amateur-built (FAR 21.191(g)) or kit-built (FAR 21.191(h) aircraft to rent, or lease their aircraft to other rated pilots for the purpose of providing aircraft specific transition training and flight reviews (FAR 61.56)* You must notify control towers you are an experimental aircraft. Note: experimental aircraft, by convention, use the term "experimental" on initial contact to all ATC agencies. Normally, a letter, "experimental operating limitations" (FAA form 8130-1) accompanies the special airworthiness certificate (FAA form 8130-7) issued. The above letter states the conditions and limitations for operations for the aircraft.

91.403 The owner or operator of an aircraft is primarily responsible for **maintaining that aircraft in an airworthy condition**. Only individual authorized in FAR part 43 may work on aircraft (mechanic or repairman) except for specific preventative maintenance which may be performed by the aircraft owner. See FAR 43.3. You may not fly an aircraft that has not complied with all manufacturer's required inspections, parts repair, or replacement.

91.405 The owner or operator of an aircraft must ensure the aircraft receives the required **maintenance inspections**, and the person performing these inspections makes appropriate entries to return the aircraft to service in the airframe, engine, and propeller log books. The owner or operator is responsible to have inoperative equipment removed or placarded before flight. See FAR 91.213.

91.407 The owner or operator on an aircraft may not fly that aircraft after maintenance, alteration, or rebuilding unless it has been **approved for return to service** by a person authorized under FAR 43.9 or 43.11. If an aircraft receives alteration that may have appreciably changed the flight characteristics or substantially affected its operation in flight, only crew members may fly for an operational check of the aircraft. The PIC must be at least a private pilot. If the aircraft is ready, the PIC makes an entry in the maintenance log book(s) to return the aircraft to service.

91.409 No person may fly an aircraft unless and **annual inspection** was performed within the last 12 calendar months. No PIC may carry a person other than a crew member for hire and no person may give flight instruction in an aircraft he / she provides unless the aircraft has a current **100 hour inspection**. 100 hour inspections may go 10 hours over the 100 hour limit if the aircraft is enroute to a place where the 100 hour or annual inspection can be performed.

91.411 The **altimeter** and the **static system(s)** must be inspected every 24 calendar months to operate IFR.

91.413 The **transponder** and **altitude encoder**, if installed, must be inspected every 24 calendar months.

91.509 Survival equipment for overwater operations. No person may fly more than 50 nm from shore without a life preserver or approved flotation for each occupant. If flight is over 30 minutes or 100nm from shore then each occupant requires a life preserver, enough liferafts to accommodate the occupants

91.513 Emergency equipment. At least one handheld fire extinguisher in crew, passenger compartment that is readily accessible in flight.

91.519 Passenger Briefing. Before take-off the pilot in command must make sure all passengers have been briefed on Smoking, Use of safety belts and harnesses, opening the passenger doors and emergency exits, location of survival equipment.

AIM EXTRACTS

THE FOLLOWING EXTRACTS FROM THE AERONAUTICAL INFORMATION MANUAL (AIM) AND OTHER SOURCES WILL ASSIST YOU IN FLIGHT OPERATIONS. THIS IS NOT A COMPLETE REVIEW OF THE AIM. SEE THE AIM FOR ALL INFORMATION FOR FLIGHT OPERATIONS.

1-1-3 The Morse code (or recorded voice ID) is the only positive **identification** for a **VOR** signal. Any AFSS or RCO voice communications over the VOR should not be used to identify the VOR. Sometime a propeller (or rotor) RPM setting will cause the VOR signal to fluctuate. If you have CDI variations up to +/- six degrees, vary your RPM to see if this is the case.

1-1-8 VOR standard service volumes (range): A minimum of 40 NM, when you are flying between 1000 feet AGL and 18,000 feet MSL, for VORs used to form the National Airspace System (NAS). Standard service volume limits do not apply to published IFR routes or procedures. Remember, VOR signals are line of sight. Service volumes will be reduced in mountain areas.

1-1-13 The **absence** of a **Morse code** (or recorded voice ID) signal over a VOR means the VOR is NOT usable for navigation EVEN IF there is an apparent signal from the station.

1-1-22 Global Positioning System **(GPS)** is a system of 24 satellites in near earth orbit that can fix the position of a receiver with high accuracy. GPS receivers measure the distance from a satellite using the travel time of a radio signal. Each satellite transmits this radio signal as a Coarse Acquisition (CA) code, which includes the satellite's position, clock error, drift correction, and status (health) of the satellite. A minimum of five satellites are physically observable from any point on (or near) the earth's surface. Three satellites can fix a position in two dimensions, four satellites can fix position and approximate altitude of the receiver; a fifth satellite is required to provide IFR navigation. Receiver Autonomous Integrity Monitoring (RAIM) is a IFR receiver system that compares the relative logic (accuracy) of the other satellite signals and provides a warning flag if the signals do not meet logic parameters. Six satellite reception permits RAIM to identify the satellite(s) that does not meet parameters. GPS receivers may receive input from the altitude encoder. This function is called baro-aiding; the on board altitude encoder sends an altitude signal (with 29.92 in hg as the pressure setting) to the GPS receiver. Currently, no hand held GPS receiver meets TSO 129C, nor are some of the currently VFR only GPS receivers upgradeable to TSO standards. TSO 129C A1 is the standard for a general aviation IFR receiver that may be used for en route, terminal, and non precision approaches. Each IFR installation requires the GPS receiver plus a selector/ annunciator panel plus a VOR head, HSI, or IFR approved moving map/CDI display. Aircraft using GPS for IFR operations must (currently) be equipped with an approved and operational alternate means of navigation (VOR, NDB, GNS, INS, IFR Loran) appropriate to the flight. You need NOT actively monitor these alternate navigation systems if RAIM is working. If RAIM is not available, you may navigate IFR via a TSO 129C GPS system, but must actively monitor other navigation systems to ensure navigation integrity. All TSO 129C A1 GPS receivers are equipped with RAIM and are considered an RNAV system; file your IFR flight plan with a /G navigation code (IFR approved approach GPS and transponder with altitude reporting).

IFR APPROACHES

You must have a current data base to fly the approach. Note: you may practice a GPS approach with an out of date data base as long as the data has not changed and you do not file IFR. If you ask for an approach, your TSO 129C receiver will look at the data base for the information to move it to the usable memory. If the data base is out of date, your receiver will retrieve the data, but requires you to acknowledge the data base is not current.

TO FLY AN APPROACH

To fly a non precision GPS approach - the following steps are common to all TSO 129C A1 receivers: - select the destination from the data base- select the approach function on the receiver - select a specific approach from the approach data base - select a specific Initial Approach Fix / Final Approach Fix (IAF/ FAF) from the approach data base. When you are 30 NM from destination the receiver will arm automatically or request you to manually select arm mode. The CDI sensitivity will change from 5 NM either side of instrument center to 1 NM either side. This increased CDI sensitivity is called terminal mode. Some receivers require you enter the local altimeter setting; other receivers do this automatically. This action will arm the approach if not otherwise armed. The receiver will guide you to the IAF / FAF and sequence automatically to all subsequent GPS way points to the FAF. Note the FAF may be the first approach waypoint if receiving vectors to final from ATC. When 2 NM prior to the FAF, the receiver will go from ARM to ACTIVE mode and the CDI sensitivity will change from 1 NM either side of instrument center to 0.3 NM either side of center. This final increased CDI sensitivity is the approach mode

operation for the receiver. As you arrive at the missed approach point, the GPS receiver will stop auto sequencing. If you select the direct to function, the receiver will default to the missed approach holding fix. If the RAIM feature senses degraded signals such as less than 5 satellites available, loss of signal, or other problems, the RAIM light will illuminate and you will get an off flag on the VOR or HSI. Note: RAIM has different sensitivity settings: if the receiver is in the enroute mode you will get a warning flag in 30 seconds. In the terminal or approach mode, you will get a warning flag within 10 seconds. If you are on the approach and passed the FAF, the receiver will provide degraded navigation information for up to 5 minutes if the RAIM function is lost. This is to permit you to miss or abandon the approach.

Precision GPS approaches: GPS precision approaches may go as low as category one minima of a 200 foot DH and ½ SM visibility. Precision GPS requires **Wide Area Augmentation System** (WAAS), which was commissioned 7/10/2003. WAAS consists of ground based receiver / retransmitters and communications satellites that will provide additional integrity monitoring (in addition to RAIM) for GPS. An aircraft conducting a precision GPS approach will have a warning flag with 6 to 8 seconds if any part of the GPS system does not meet parameters, using both RAIM and WAAS protection. Additionally, the FAA is planning for **Local Area Augmentation Systems** (LAAS) which could permit precision GPS approaches to very low minimums, including zero ceiling/zero visibility landings. LAAS will consist of a psudolite (false satellite- a precisely positioned ground based GPS receiver/transmitter). This psudolite will receive the same signal as your airborne receiver, correct for all system and transmission errors, and then transmit an additional positioning signal to your aircraft GPS receiver using a VHF frequency. This will permit three dimensional accuracy to match or exceed ILS category II and III approach minimums.

FLIGHT PLANNING
If you file to an airport that has GPS as the only available approach aid, and the weather is such that you must file an alternate, the alternate must have a ILS/LOC/VOR/NDB/RNAV suitable approach or be VMC to meet the requirements of an alternate. You may not file to an alternate that has only GPS as an approach aid, in this case.

4-1-9 At **non towered airports**, use the following communications procedures: arrival - call 10 NM from the airport to request an airport advisory on UNICOM or state your intentions on CTAF. Report entering downwind, base, final, and leaving the runway.

4-1-11 Airports that do not have a published UNICOM or CTAF; you may use **multicom** (122.9) to announce traffic intentions. Use 122.75 or 122.85 (airplanes) or 123.025 (helicopters) for **air to air communications** or when operating at a **private airport** not open to the public.

4-2-3 Contact procedures: When making the **initial call** to any ATC controller or FSS specialists, use the following format:
-Name of the facility you are calling
-Your FULL call sign
-Your type of message or your full request, if it is short
-Term over as necessary, to end your transmission

4-2-4 Note ATC may **abbreviate** your **call sign** to your prefix and last three identifiers. Once ATC has abbreviated your call sign, you may continue to use this shortened call sign with THAT controller. If another aircraft with a similar sounding call sign comes up on frequency, either you or the ATC controller

should initiate use of your full call sign in the interest of flight safety. On initial contact to a new controller, always use your full call sign. Example: *Houston Center, Cessna 1234ME , four thousand, direct Memphis -- Cessna 4ME, roger* Use the “N” prefix to your call sign only when flying outside of the USA. Acknowledge all calls from ATC, either verbally or through actions observable by the controller. Example: *"Cessna 4ME, squawk 4523 and ident"*. ATC will observe your reply via the squawk and ident you give. Always reply verbally if ATC's instructions are not clear. Use of standard abbreviation such as "roger" (I understand your transmission) "wilco" (I understand your transmission and will comply with your instructions) "affirmative" and "negative" are encouraged to reduce transmission time.

4-3-11 ATC may authorize **takeoffs and landings on multiple intersecting runways.** Takeoff: the tower will issue an intersection takeoff clearance. Example: *“Cessna 1234ME, intersection mike, cleared for takeoff runway 14”* You may request usable runway distance remaining from the tower. Landing: the tower will a land and hold short clearance. Example: *“Cessna 1234ME, cleared to land runway 14, hold short runway 03”* You may request usable runway distance available for landing from the tower.
You need not accept a land and hold short (LAHS) clearance if you are unwilling or unable to comply.

4-4-1 An **ATC clearance** is NOT permission to deviate from any rule, regulation, or minimum altitude nor conduct unsafe operations in your aircraft at any time. If ATC issues a clearance that would cause you to deviate from a rule or regulation, or in your opinion, would place the aircraft in jeopardy, it is your responsibility to request an amended clearance. If you take action that differs from your ATC clearance, you must inform ATC accordingly.

4-4-3 Cruise Clearance: Assigns a block of airspace. Pilot may climb and descend between the MEA and assigned altitude. Once verbally reporting a descent from an altitude, the pilot may no longer return to that altitude.

4-4-4 You may request an **amended clearance** from ATC if you feel you have information that would make a different course of action more practicable or if you equipment or operating limitations make prohibit compliance with the clearance issued.

4-4-5 Special VFR clearances: see Special VFR in “Weather Minimums for VFR Flight”, previous.

4-4-6 Write down your **clearance** when received from ATC. When you receive an initial clearance, read back the complete clearance. Airborne aircraft should read back those parts of an ATC clearance containing altitude assignments and/or headings. It is your responsibility to accept or reject an ATC clearance at the time it is issued.

4-4-7 VFR on Top clearance, Both VFR and IFR rules apply, maintain appropriate VFR altitudes, cloud clearances and visibility minimums. Report changes in altitude to ATC. Separation is is not always provided. **IFR climb to VFR on top conditions,** IFR flight plan. May include a clearance limit. Say direction of flight or destination. Clearance will contain a top report if available. Report reaching VFR on top, If not VFR on top at a specified altitude advise ATC.

4-4-9 The inclusion of the term **immediately** in an **ATC clearance** or instruction means there is urgency in an imminent situation and expeditious compliance by you is expected and necessary for safety. The term **at pilot's discretion** with an altitude clearance means you may initiate change of altitude
when you desire and you may stop at any altitude within the clearance limit. You may not return to an altitude once it is vacated. Any time you are IFR and can not maintain at least a 500 FPM rate of climb or descent, advise ATC.

4-4-12 **Tower** may instruct you to modify you traffic pattern, such as "extend down wind" or other guidance. Directives that include the term "immediate" or other tower guidance are issued solely for air traffic separation. Do not accept a clearance if you are unable to comply or it would adversely affect your flight operation.

4-4-13 **Visual separation:** When under radar guidance in terminal areas, ATC may issue the instruction *maintain visual separation* for other aircraft you hold in visual contact. Your acceptance of *maintain visual separation* means you may maneuver your aircraft to ensure separation of both the other aircraft and the resulting wake turbulence. If you lose visual contact with the other aircraft, promptly advise ATC.

4-4-15 **Traffic Alert and Collision Avoidance** (**TCAS**): TCAS I provides lateral warning of other aircraft. No avoidance recommendations are available. TCAS II provides traffic advisories and lateral resolution advisories. Aircraft that maneuver to avoid traffic based on TCAS advisories only will not receive standard IFR separation from ATC until the maneuvering aircraft has returned to the assigned altitude and course or alternate ATC instructions have been received

5-1-1 Preflight: a computer accessed **Direct User Access Terminal** (**DUATS**) session does constitute an FAA approved weather briefing and a record of your weather briefing, flight plan, and pilot's log will be kept on file.

5-1-3 **Notice to Airman (NOTAM)** System: Aeronautical information that could affect your decision to make a flight. NOTAMS are distributed by telecommunications (Class One) and are available hourly to flight service and DUATS. NOTAMS that remain in effect for a period, generally, more than a week are printed and distributed as (Class Two) NOTAMS on a 28 day cycle. Class Two NOTAMS are available by subscription, from FSS *when requested*, DUATS, and at www.faa.gov/NTAP There are three categories of NOTAMS:

Local (L) NOTAMS are NICE TO KNOW; such as personnel and equipment working near a runway, taxiway closures, etc. L NOTAMS do not cover safety of flight items or anything that is part of the National Airspace System (NAS). L NOTAMS are held only by the servicing FSS for that airport and are not transmitted or included in DUATS.

Distant (D) NOTAMS are NEED TO KNOW; they cover all navigation facilities that are part of the NAS and all public use airports that are listed in the airport/facility directory. D NOTAMS cover safety of flight items such as runway closures and temporary loss of ILS/VOR/NDB/GPS facilities. D NOTAMS are transmitted at the end of hourly weather reports and are available to all FSS via the FAA service A communications system. DUATS provides complete D NOTAM coverage. D NOTAMS remain available

through the above means until they are cancelled.

Flight Data Center (FDC) NOTAMS are HAVE TO KNOW; they are regulatory in nature and cover all parts of the NAS. Items such as changes to instrument procedures, airways alterations, and temporary special use airspace are examples of FDC NOTAMS. FDC NOTAMS are only transmitted once on the service A system; there after they are kept on file at all FSS until cancelled or published in the biweekly Notice TO Airman Publication (NTAP). NTAP covers all long term D NOTAMS and FDC NOTAMS in effect at the time of publication. DUATS provides FDC NOTAMS only for site specific requests using a location identifier.

5-3.7 Holding Instructions: Holding fix –Direction from fix – Radial Course, bearing or airway to hold on – Leg length for DME/RNAV or leg time in minutes – Left turns if required – Expect Further Clearance time.
Holding speed limitations –
Below 6000'MSL – 200 KIAS
6001' to 14,000' MSL – 230 KIAS
Above 14,000' MSL – 265 KIAS
All altitudes when depicted on chart by icon – 175 KIAS
6001' to 14,000' MSL when depicted on a chart by icon – 210 KIAS

5-4-20 Visual Approach: Still on an IFR flight plan, VFR minimums apply. Must have airport or proceeding aircraft in sight. No missed approach procedure.

5-4-22 Contact Approach: Only on request**,** not assigned by ATC. Airport must have an IAP, 1 mile visibility, clear of clouds and reasonably expect to continue to airport. Separation from IFR and SVFR traffic.

5-5-1 Pilot and controller roles and responsibility: The PIC is the final authority for and is responsible for the safe operation of the aircraft. The controller is responsible to give first priority to the separation of aircraft and the issuance of radar safety alerts, second priority to other services that are required but do not involve the separation of aircraft, and third priority to additional services to the extent possible. Note: the controller's primary reference is FAA Order 7110.65, Air Traffic Control.

5-5-8 See and avoid: when you are in visual meteorological conditions (VMC) you are the final authority for the separation of aircraft.

5-5-15 Minimum fuel advisory: If you are in contact with ATC, advise them of your minimum fuel status any time you can not accept any delay when reaching destination. Example: *"Approach, Cessna 1234ME, minimum fuel"* Note that this is not an emergency condition, but *advises* ATC you have a mitigating condition. You may not necessary receive traffic priority unless you declare an emergency. If requested state your fuel remaining in minutes. Example: *"Approach, Cessna 1234ME estimates 15 minutes fuel remaining"*