PREFLIGHT ACTION: (91.103)

Before beginning a flight, each Pilot In Command shall become familiar with all available information concerning the flight including — **weather** reports and forecasts, **fuel** requirements, **alternatives** available, **traffic delays** — aircraft **performance** for expected airport **elevation**, **runway slope**, **wind**, **temperature** and aircraft gross **weight** — **runway lengths**, **takeoff & landing distance** information, and ***NOTAMS***.

ATC CLEARANCE and FLIGHT PLAN REQUIRED: (91.173)

No person may operate an aircraft in ***CONTROLLED*** airspace under IFR unless that person has—

(a) Filed an IFR flight plan; and

(b) Received an appropriate ATC clearance.

It is perfectly **legal to fly** in ***UNCONTROLLED*** **[Class G]** **airspace without** an IFR flight plan or **clearance**. **Therefore**, when receiving an **IFR clearance on** the **ground** at an uncontrolled (Class G) airport, the **clearance may include** the **phrase** **"upon entering controlled airspace… "**

NOTE: See **Chapter 1** for more details about flying under IFR in **UNCONTROLLED** **[Class G]** airspace.

PREFERRED ROUTES: (P/C Glossary, A/FD)

1. Established between busier airports to increase efficiency and capacity.
2. Preferred routes are listed in the **Airport/Facility Directory**.

800-992-7433

IFR (VFR)
(Tail#) _____
(AC Type)_____**/U/A/G**
_____ Knots
(Where am I?) _____
Departure **Time** ___(or ASAP)
_____ thousand
D➔___D➔ & Lndg____
____hours enroute
Remarks _____
____hours fuel
Alternate? _ _ _
Name__ __spelled_ _ _
Based in _ _ _ Phone #_____
_____ on board
(color) _____ & _____

A pilot operating under **Part 91** can file an **IFR** flight plan to an **airport** that **does not have** an **instrument approach** (or does not have an instrument approach that the aircraft can legally execute) if the pilot includes in that flight plan an **alternate** airport, which **meets** the **alternate** airport **weather requirements** of 91.169(c).

FLIGHT CREWMEMBERS at STATIONS — (PILOTS in their SEATS) — SAFETY BELTS — SEAT BELTS — SHOULDER HARNESS:

(91.105, 91.521, 135.128, 121.311, 121.543)

(a) During **takeoff** and **landing**, and while **en route**, each required flight crewmember shall—

(1) **Be at** the **crewmember station unless** the absence is necessary to perform duties in connection with the **operation of the aircraft** or in connection with **physiological needs**; and

(2) Keep the **SAFETY BELT fastened** while at the crewmember station.

(b) Each required flight crewmember shall, during **takeoff** and **landing**, keep his or her **SHOULDER HARNESS** fastened while at his or her assigned duty station. This paragraph **does not apply if** —

(1) The seat is **not equipped** with a **shoulder harness**; or

(2) The crewmember would be **unable** to **perform** required **duties** with the **shoulder harness** fastened.

Physiological — functional processes in an organism or any of its parts.

"Physiological needs" — using the restroom, stretching your legs briefly, or "other" physiological requirements.

91.203(b) — No person may operate a civil aircraft unless the **airworthiness certificate** required or a special flight authorization is **displayed** at the **cabin** or cockpit entrance so that it is **legible** to **passengers** or **crew**.

91.107 requires that you **brief** your **passengers** to fasten their **seatbelts** before taxi, takeoff and landing.

TAKEOFF BRIEFING: (AC 120-71 APPENDIX 17)

AC 120-71 — Standard Operating Procedures for Flight Deck Crewmembers:

The purpose of the pilot briefing is to enhance communications on the flight deck and to promote effective teamwork. Each crewmember is expected to perform as an integral part of the team. The briefing should establish a mutual understanding of the specific factors appropriate for the flight. A pilot briefing should be given prior to starting engines for the first flight of the day (and any subsequent flight, if applicable).

A **TAKEOFF BRIEFING** should be given **prior to each takeoff**.

The **captain** (typically) **determines** the **length** and **detail** of the **briefing**. Factors to consider include:

- Experience level of the pilots.
- Special MEL procedures as a result of inoperative components.

TAKEOFF BRIEFING (typical)

Pilot Flying (**PF**) — "The Departure Procedure is — fly runway heading to 3000 then a left turn to 270º on course, climb and maintain 9000. I'll have you **set takeoff power** on **my command** — call out — **Power Set**, **Airspeed Alive**, **80 knots Crosscheck**, **V_1**, **Rotate**, **Positive Rate**, **Gear Up** and **Flap Speed**. Monitor the gauges—any major malfunction (such as engine fire, engine failure, thrust reverser deployment, loss of directional control, or other catastrophic malfunction) **below V_1** — we'll **abort** — any malfunctions **after V_1**, — we'll **continue**. If we do lose an engine after V_1, we'll return to land on the most convenient runway. **Any Questions?**"

Pilot Not Flying (**PNF**) — "Are we gon'na get some food when we get to Albuquerque?"

Pilot Flying (**PF**) — "Affirmative. Takeoff briefing complete."

Other considerations could be:

- Runway conditions
- Terrain
- Abort procedures (e.g., drag chute, thrust reversers)
- Anti-ice
- Takeoff alternate

TOLD Card (**T**ake-**O**ff & **L**anding **D**ata)

(**TAKEOFF side**) Typically provides spaces for:

1. **ATIS**
2. Takeoff **weight**
3. **Flap** setting
4. **Time** to **100** knots
5. **Power** settings — **T**ake**O**ff and **M**ax **C**ontinuous
6. **Runway** required — Balanced Field Length (BFL), aka Required Runway Length, Takeoff Field Length, Accelerate-Stop/Go distance or Critical Field Length
7. Speeds:
   - (a) **V_1** — Takeoff **decision** speed
   - (b) **V_R** — **R**otation speed
   - (c) **V_2** — Takeoff safety speed & best single engine climb gradient
   - (d) **V_{FR}** —**F**lap **R**etraction speed
   - (e) **V_{FS}** — **F**inal **S**egment climb speed
   - (f) **V_{ENR}** — **ENR**oute climb speed
   - (g) **Return V_{REF}** — Emergency **RETURN** for landing **REF**erence speed
8. Clearance

Lengel Executive Airlines

TAKEOFF FALCON 20

ATIS:

V_1	WEIGHT	
V_R	FLAPS	TIME TO 100
V_2	POWER T.O.	
V_{FR}	POWER M.C.	
V_{FS}	RWY RQD	
V_{ENR}	RETURN V_{REF}	

CLEARANCE:

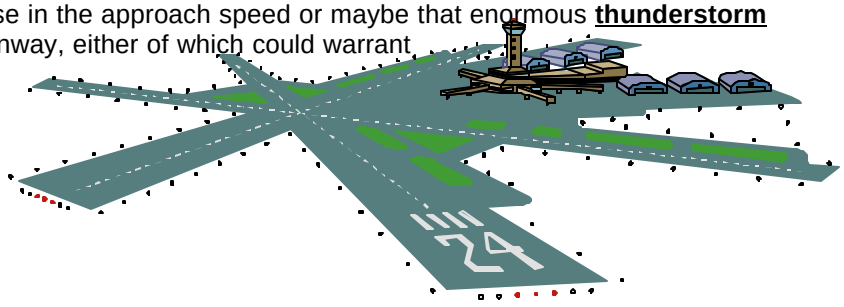
APPROACH BRIEFING — ATIS-ATS:

1. "ATIS" —
   a. "**WIND** is…
   b. **ALTIMETER SETTING** is…
   c. Glideslope out of service;
   d. Approach lights out of service;
   e. Locator Outer Marker out of service;
   f. Snack machine at the FBO out of Fritos."

Another Acronym to Consider
AHARMMMS
ATIS, Heading, Altitude, Radios, Markers, Minimums, Missed, Speed.

2. "A" = Approach —
   a. **DATE** and chart **NUMBER** — "This chart is dated July 5th 20XX revision # 31-1."
   b. **NAME** and **LOCATION** of approach — "ILS 18R at CLT, Charlotte Douglas."
   c. Navaid **FREQUENCY** — "Localizer frequency is 111.3. I'm putting it in both boxes now and identifying." (also a good time to tune and identify any other frequencies that may be applicable such as the Locator Outer Marker, etc.)
   NOTE: ***ALWAYS* set BOTH** approach capable **navigation radios** to the **localizer frequency. *NEVER* trust your life to just one approach radio.** If you only have two approach capable nav radios, NEVER set one of them to the missed approach frequency before the approach (therefore trusting your life to only one nav radio for the approach).
   Remember, ***EVERY* missed approach begins *EXACTLY* the same way** — CLIMB like a _ _ _ _ _ _ _ _ _ _ _ _ . Sort out the details later.
   d. **FINAL APPROACH COURSE** — "The final approach course is 183º and I'm putting it in both HSI's (or OBS's) now."
   e. **GLIDE SLOPE INTERCEPT ALTITUDE** — "**G**lide **S**lope **I**ntercept **A**ltitude will be 4600 feet at 'TOMME' which is the CLT VOR 14.3 DME fix and I'm putting CLT 115.0 in the DME now."
   f. **Decision Height** or **Minimum Descent Altitude** and **Missed Approach Point** — "Decision Height will be 943 feet on the Glide Slope and that will be our missed approach point."
   g. **TOUCHDOWN ZONE ELEVATION** (**TDZE**) — "The touchdown zone elevation is 743 feet. Do NOT descend ***below*** this altitude at any time!"
   h. **MISSED APPROACH PROCEDURE** — "Missed approach is a climb to 3600 feet via the CLT 186º radial, basically straight ahead. I'll give you the rest of the holding instructions when and if we need them."
   i. **RUNWAY LENGTH** — "The runway is 10,000 feet long and 150 feet wide."
3. "T" = Terrain — **M**inimum **S**ector **A**ltitude and the **highest obstacle**. Any interesting **TOWERS** or **MOUNTAINS** in the area that you may want to avoid during the approach or the missed approach?
4. "S" = Speeds & Special — "Approach speed (V_{AP}) will be 126 and V_{REF} will be 118. Initial go-around speed is 132 (V_{AC}), I'll give you that speed again and flap retract speed (V_{FR}) should we have to go missed."
   - V_{AP} — **AP**proach target speed—V_{REF} + configuration and wind
   - V_{REF} — **REF**erence speed for final approach
   - V_{AC} — Missed **A**pproach **C**limb speeds for flap configuration with the critical engine inop (2.1% climb gradient)
   - V_{FR} — **F**lap **R**etraction speed — minimum speed required for flap retraction (after missed approach)

   Special — Anything that merits **special attention**. Like maybe the 3 inches of **ice** hanging off the wings that could call for an increase in the approach speed or maybe that enormous **thunderstorm** right off the opposite end of the runway, either of which could warrant special attention to making this particular approach work. **Noise abatement** procedures might be another issue especially on some visual approaches.



5. "Any QUESTIONS?"

NONPRECISION — NDB / VOR — APPROACH & HOLDING:

PRIMARY NDB CONCEPTS: (AIM 1-1-2, FAA-H-8083-15 Instrument Flying Handbook)

1. **PARALLEL** the **Course** you want to be on (inbound or outbound):
   ⇒ The **HEAD** of the **needle ALWAYS points to** the **COURSE** (and the wind).

2. **While PARALLELING the Course** you want to be on (inbound or outbound):
   If the **HEAD** of the **needle is:**
   ⇒ **LEFT of Center** — **Turn LEFT** — **30º or 45º for a few seconds**
   (turning only "double the deflection" is usually much too wimpy, it will *NOT* work in any significant wind)
   ⇒ **RIGHT of Center** — **Turn RIGHT** — **30º or 45º for a few seconds**
   (turning only "double the deflection" is again much too wimpy)

Since ADF receivers do not have a "flag" to warn when erroneous information is being displayed, the pilot should **continuously monitor** the **NDB's identification**.

NDB OUTBOUND:

1. **Parallel** the **outbound course**.
2. **Turn towards** the **HEAD** of the needle — **30º** or **45º** for a few seconds.
3. **When the TAIL** (superimposed on the DG) **points to the outbound course** — **YOU'RE ON IT** — turn back to the outbound heading and see what you got — repeat if necessary (it's just like shampooing!).
4. NOTE: The **Procedure Turn is always *AWAY* from the fix**.

NDB INBOUND:

1. **Parallel** the **inbound course**.
2. **Turn towards** the **HEAD** of the needle — **30º** or **45º** for a few seconds.
3. **When the HEAD** (superimposed on the DG) **points to the inbound course** — **YOU'RE ON IT** — turn back to the inbound heading and see what you got — repeat if necessary.

NDB or VOR — *ON* the Field:

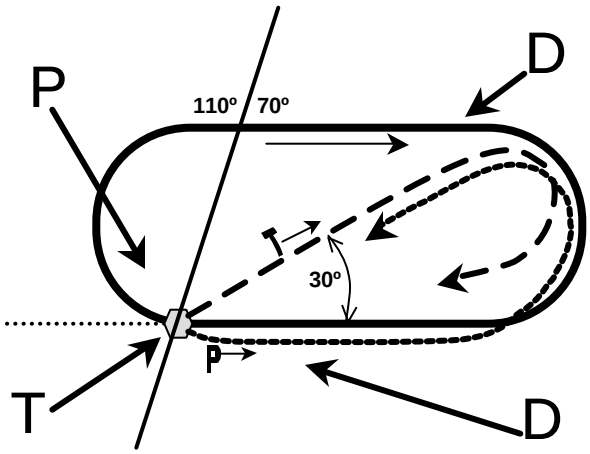
1. **When established** on the **inbound** course — **DROP** the **GEAR / FLAPS** & **DESCEND** to MDA **as quickly as possible** — AT LEAST **1,000** to **2,000 FPM**
   (you must get to MDA **A**s **S**oon **A**s **P**ossible so you have time to look for the airport).
2. If this will be a **Single Engine CIRCLING** approach — be ready to get the **gear / flaps back UP before** reaching **MDA**.

NDB or VOR — *OFF* the Field:

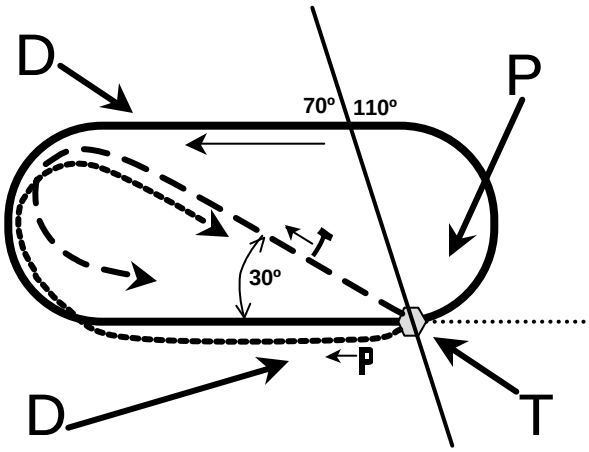
1. **When crossing over** the **NDB** / **VOR** inbound—**start TIME**—**DROP** the **GEAR/FLAPS** & **DESCEND** to MDA **as quickly as possible** — AT LEAST **1,000** to **2,000 FPM**
   (you must get to MDA **A**s **S**oon **A**s **P**ossible so you have time to look for the airport).
2. If this will be a **Single Engine CIRCLING** approach — be ready to get the **gear / flaps back UP before** reaching **MDA**.

HOLDING: (AIM 4-4-3, 5-3-7, 5-4-8, FIG 5-3-1, 5-3-2, 5-3-3)

STANDARD (RIGHT turns)



NON-STANDARD (LEFT turns)



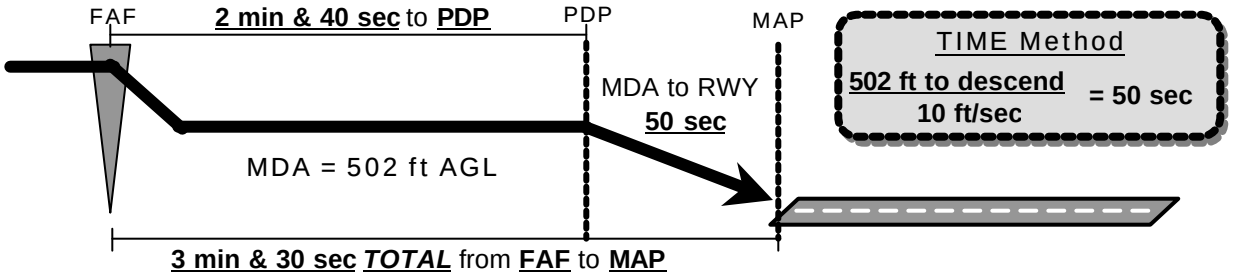
VISUAL Descent Point (VDP): [AIM 5-4-5f, P/C Glossary, 121.651(c)(4)]

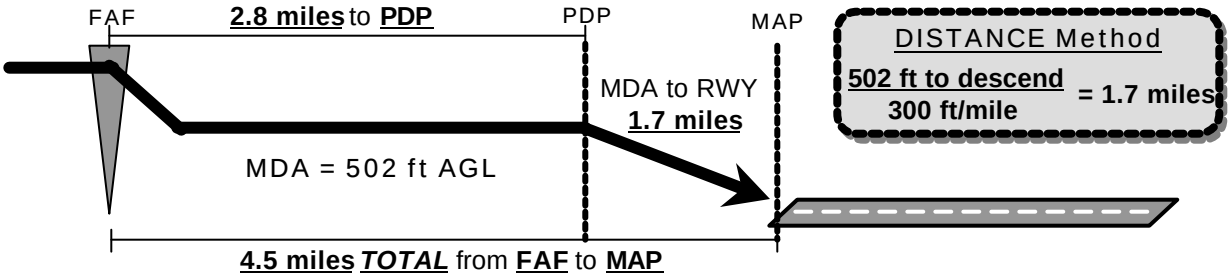
1. A defined **point** on the **final approach course** of a ***nonprecision* straight-in approach** from which **normal descent** from the MDA to the runway touch-down zone may commence, provided the runway or approach lights, etc., are clearly visible to the pilot.
2. The VDP is almost always **located** so that it **coincides** with a **VASI**, **PAPI**, or other ground-based descent aid. The VDP is identified on the **profile view** of the approach chart by the symbol: **V**.
3. To calculate a **3º descent angle** from the VDP to the runway — **Divide** the **groundspeed by 2**, then **multiply** the result **by 10** [100 kts (GS) ÷ 2 x 10 = 500 fpm descent].
4. Another good method is to look at the end of the runway—drive the airplane over to it—and then land!
5. 121.651(c)(4) — A pilot **may descend below** the **MDA prior to** the published **VDP *only*** where a **descent** to the runway **cannot be made** using **normal procedures** or rates of descent if final descent is delayed until reaching that point.

PLANNED Descent Point (PDP):

1. That point during an approach where a pilot ***MUST* begin** the **descent** to the **runway** or he will NOT land in the landing zone.
2. **RULES of THUMB:**
   - **(a) TIME** Method — **10 feet** per **second**.
   - **(b) DISTANCE** Method — **300 feet** per **mile**

When using DME for distance information, the DME distance of the MAP or runway threshold must be added (or subtracted) to the calculated PDP.





3. Of course once again, the alternate method is to look at the end of the runway—drive the airplane over to it—and then land! Works every time for most pilots.

Vertical Descent Angle (VDA): (AIM 5-4-5h.)

1. A **computed path** from the **F**inal **A**pproach **F**ix and **altitude to** the **runway** threshold at **TCH**. The optimum descent angle to be used is **3.00 degrees**.
2. Pilots can use the published **angle** and estimated/actual **groundspeed** to find a target **rate of descent** from a rate of descent **table published with** the instrument approach **procedure**.
3. The published angle is **for information only** and is **strictly *ADVISORY*** in nature. The tried and true **"Dive and Drive"** method is still perfectly legal (and preferred by most pilots).

Charted VISUAL Flight Procedure Approach (CVFP): (P/C Glossary, OpSpec C077)

An **approach** conducted while operating on an **IFR flight plan** which authorizes the pilot of an aircraft to proceed **visually** and **clear of clouds** to the airport **via visual landmarks** and other information **depicted** on a **charted visual flight procedure**. The approach must be authorized and under the control of the appropriate air traffic control facility. **Weather minimums** required are **depicted** on the **chart**.