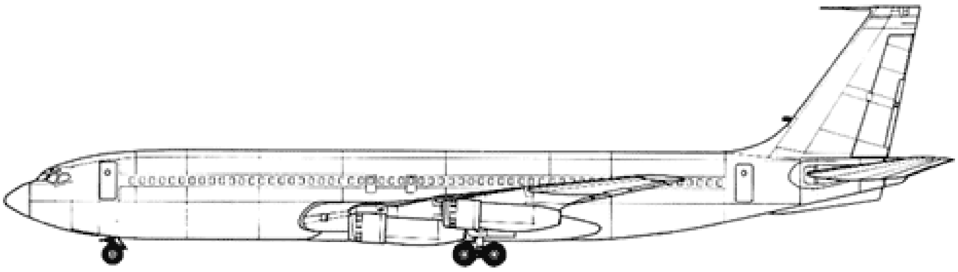
Legendary 707



Flight and Training Manual

Part II – OPERATIONS MANUAL

FOR FLIGHT SIMULATION USE ONLY

Captain Sim

"LEGENDARY 707" FLIGHT MANUAL

Part II – OPERATIONS MANUAL

1. OPERATING LIMITATIONS

1.1 GENERAL LIMITS

CREW
All flights require a minimum flight crew of three persons – pilot, copilot (first officer (FO)) and flight engineer (second officer (SO)).

THE MINIMUM NUMBER OF CABIN ATTENDANTS (FOR PASSENGER VARIANTS ONLY)
For revenue passenger operations depends on the number of passenger seats in the interior configuration, as follows:
2 attendants -- 100 seats or less;
3 attendants -- more than 100, less than 151 seats;
4 attendants -- 151 seats or more.

ENGINE ANTI-ICE
The engine ice protection systems shall be operated continuously as an anti-icing system in icing conditions.

ENGINE IGNITION
Engine ignition must be ON for take-off and initial climb.

REVERSE THRUST
Inflight use of reverse thrust is prohibited.

ICING CONDITIONS ENROUTE
During holding or prolonged flight in icing conditions, operation with wing flaps extended is not permitted.

PARKING
When parking the airplane, retract wing flaps to lock outboard ailerons for "control lock" gust protection.

1.2 AIRPLANE LIMITS

Max operating altitude:	42,000ft (FL420)
Max T/O &Landing altitude:	10,000ft
Max runway slope:	± 2% for take-off and landing
Max T/O, landing tailwind:	10 knots (kts)
Max crosswind T/O, landing:	33knots (kts)
Max flaps extension altitude:	20,000 ft.
Max speed:	Vmo/Mmo shall not be deliberately exceeded in any regime of flight (climb, cruise, or descent), except where a higher speed is specifically authorized for flight test or pilot training operations, or in approved emergency procedures.

MAXIMUM OPERATING LIMIT SPEEDS							
FL	S.L.	5,000 ft	10,000 ft	15,000 ft	20,000 ft	23,000 ft	Higher
Vmo/Mmo	375 kts	378 kts	382 kts	385 kts	390 kts	394 kts	M 0,887

FLIGHT LOAD ACCELERATION LIMITS
Flaps UP: + 2.5 G (T/O weight) - -0.6G
Flaps DOWN: + 2.06G (Landing Weight – 0.0G)

PERFORMANCE LIMITATIONS
Take-off and landing operational limits must be observed.

Maximum taxi weight (structural limit): 336,000 lbs
Maximum TOGW (at start of take-off roll): 333,100 lbs
Maximum landing weight (MLW): 215,000 lbs
Maximum zero fuel weight (ZFW) (structural limit): 195,000 lbs

LANDING GEAR OPERATING SPEED – VLO/MLO
Sea level (SL) to 30,000 ft: 270 kts
Above 30,000 ft: 280 kts
For emergency descent: 320 kts
Mlo: 0,825
Max Landing Gear Extended Speed (Vle): 320 kts, Mle: 0,825

MAX FLAPS EXTENDED SPEED (Vfe)
Flaps 14° -- 218 kts
Flaps 25° -- 207 kts
Flaps 40° -- 200 kts
Flaps 50° -- 181 kts

AUTOPILOT OPERATING SPEED
Do not exceed Vmo/Mmo

STABILIZER TRIM SETTING LIMITATIONS
Stab Trim Index should be in the green band for take-off

TEMPERATURE LIMITS (OUTSIDE AIR TEMPERATURE – OAT °C)
Min OAT: - 54°C for take-off and landing; -73,4°C for enroute flight path
Max OAT, T/O and Landing: not to exceed +49°C

ENGINE LIMITATIONS
Engine Overspeed Limits (Forward or Reverse)
N1 -- below 110,8 %
N2 -- below 106,2%

Operating Condition	Max EGT °C	Max Oil Inlet Temp. °C	Oil pressure, PSI Min	Max
Starting (momentary)	450	- -	- -	- -
Idle	- -	132	35	60
Takeoff, Go-around (5 minutes)	555	132	40	60
Rated (continuous)	490	132	40	60
Max Cruise (continuous)	490	132	40	60

- Takeoff thrust is limited by EPR, observing RPM and EGT limits
- The oil-in temperature limit is 132 °C for continuous operation and 143 °C for transient operations. Oil-in temperature may not exceed 132 °C for more than 15 minutes.

OPERATIONAL NOTE: IF ENGINES ARE ALREADY STARTED, to continue flight configure electrical and air system as follows:

- Battery switch (13)—**CHECK ON** (SO UPPER RANEL)
- Generator circuit breaker switches (34-37)—**CLOSE** (observe lights coming out)
- Left & Right Wing Valve Switches (76-77) - **BOTH OPEN** (SO UPPER PANEL)

If the generators cannot be connected on bus, proceed as follows:

- Generator control switches (42-45)-**CLOSE** (observe Generator control lights (38-41 coming out).
- Generator bus-tie circuit breakers (26-29)-**OPEN** (observe Generator circuit open lights (22-25) coming out).

2. NORMAL PROCEDURES

2.1 GENERAL

All flights assumes you are using Standard Operating Procedures (SOP)

NOTAM: SOP assumes you are beginning with engines are cleared to start (for START UP procedures refer to 2.2) at the departure gate (or at the selected runway (RW)) and:

exterior safety inspection	completed
preliminary cockpit preparation	completed
final cockpit preparation	completed
before start checklist	completed
after start checklist	completed
before take-off checklist	completed

In all situations and phases of flight you act as a Pilot Flying (PF) **AND DO ONLY CRITICAL ITEMS (CRITS)**

This aircraft's SOP have been modified for use with Flight Simulator . It must not be used for real-world flight operations.

TAKE-OFF AND DEPARTURE CRITS:

EXTERIOR LIGHTS (L BUTTON OR FROM THE FLIGHT DECK)……….	AS REQUIRED
EPR AND AIRSPEED BUGS……………………………………………………………….	CHECKED AND SET FOR T/O(V1,VR,V2)
STABILIZER TRIM INDEX…………………………………………………………………	IN THE GREEN BAND FOR T/O
FLAPS………………………………………………………………………………………………….	SET FOR T/O
RADIOS, RADAR, ADFs, TRANSPONDER, VOR/ILS………………………..	TUNED AS REQUIRED FOR DEPARTURE

ATER TAKEOFF CRITS:

LANDING GEAR………………………………………………………………………………	UP (NO LIGHTS)
FLAPS…………………………………………………………………………………………………	UP (NO LIGHTS)

DESCENT AND APPROACH CRITS:

APPROACH BRIEFING …………………………………………………………………….	REVIEWED
ALTIMETERS & INSTRUMENTS (altitude, airspeed, EPR bugs) …..	CHECKED&SET

LANDING CRITS:

LANDING GEAR………………………………………………………………….…...	DOWN, 3 GREEN
FLAPS………………………………………………………………………………………….	40 OR 50 OR AS REQUIRED, GREEN LIGHTS

2.2 START-UP PROCEDURE

IF ENGINES ARE ALREADY STARTED, configure electrical and air system as follows:

- Battery switch (13)—**CHECK ON** (SO UPPER RANEL)
- Generator circuit breaker switches (34-37)—**CLOSE** (observe lights coming out)
- Left & Right Wing Valve Switches (76-77) - **BOTH OPEN** (SO UPPER PANEL)

If generators cannot be connected on bus, proceed as follows:

- Generator control switches (42-45)-**CLOSE** (observe Generator control lights (38-41 coming out).
- Generator bus-tie circuit breakers (26-29)-**OPEN** (observe Generator circuit open lights (22-25) coming out).

IF ENGINES ARE TO BE STARTED:

BATTERY SWITCH (13)—CHECK ON (SO UPPER RANEL).
Left & Right Wing Valve Switches (76-77) - **BOTH OPEN** (SO UPPER PANEL)

START-UP USING CTRL+E BUTTONS

Starting sequence will be 1,2,3,4, or from the lowest No. of engine to be started.

START USING EXTERNAL POWER

1. Parking brake---**CHECK ON** (**CTRL+**"•"or directly by the handle)

SO UPPER PANEL--**SELECT** (FROM ICONS PANEL (SHIFT+2))

2. External power--**CONNECT (SHIFT+G)**
3. External power connected light (amber) --**CHECK ON**
4. Check Duct high (86) and low (87) pressure indicators rising
5. Ground service master switch (20)-**ON**
6. Power on BUS light (blue (19))-**CHECK ON**

Now engines are ready to start: **CTRL+E BUTTON—PUSH**

After all engines are stabilized at idle:
1. Generator circuit breaker switches (34-37)—**CLOSE** (observe lights coming out)
2. External power--**DISCONNECT** (SHIFT+G) or by brakes releasing
3. Ground service master switch (20)--**OFF.**

START USING the APU (Where installed)

SO UPPER PANEL…………………………………………………… **SELECT** (FROM ICONS PANEL (SHIFT+2))
APU PANEL……………………………………………………………… **SELECT** (FROM ICONS PANEL (SHIFT+2))

1. APU master switch--**ON** (observe APU EGT rising)
2. Check Duct high (86) and low (87) pressure (SO UPPER PANEL) indicators rising
3. Generator Field Switch (7 on the APU PANEL) ---------**CLOSE** (observe light came out)
4. Generator Breaker Switch (3 on the APU PANEL) ---------**CLOSE** (observe light came out)
5. Ground service master switch (20)---------------------------**ON**
6. Power on BUS light (blue (19))--**CHECK ON**

Now engines are ready to start: **CTRL+E BUTTON-PUSH**

After all engines are stabilized at idle:
1. Generator circuit breaker switches (34-37)—**CLOSE** (observe lights coming out)
2. APU-(if not further required)-- **OFF** (APU master switch — **OFF**)
3. Ground service master switch (20) - **OFF**

Turbocompressors for takeoff
Normally the takeoff is made with two turbocompressors on (usually numbers 2 and 3); engine bleeds are not to be used for any takeoff. A higher gross weight may be authorized for takeoff with one or both off. To start desired turbocompressors and configure air-conditioning system:

1. Turbocompressor start/stop switches (71-73) — **START**
2. Wing valve switches (76-77) - **OPEN**
3. Left & Right air-conditioning unit ON/OFF switches (84-85) – **ON**

START-UP USING ENGINE START SWITCHES

GROUND START

Make all BEFORE START ITEMS as described above (STEPS 1 trough 6), then:

1. **LEFT & RIGHT WING VALVE SWITCHES** (76-77) - **OPEN** (SO UPPER PANEL)
2. Engine start switches (40-43) of the respective engine — **START & HOLD until EGT increases** (OVERHEAD (OH) PANEL)

After all engines are stabilized at idle:
1. Generator circuit breaker switches (34-37)—**CLOSE** (observe lights coming out)
2. Another after start items—**AS DESCRIBED ABOVE**

INFLIGHT START

Any time you want to start engines inflight PROCEED AS FOLLOWS:
1. **CHECK** THAT Engine Fire Handles and Warning Lights **ARE PUSHED (LIGHTS OUT)**
2. **CHECK** THAT Engine 1,2,3,4. Fuel shutoff valve switches are in the **OPEN** position (7,8,14,15 on the SO LOWER PANEL)
3. **CHECK** THAT Left & Right Wing Valve Switches (76-77) - **BOTH OPEN** (SO UPPER PANEL)
4. **CHECK** THAT the Duct high (86) and low (87) pressure (SO UPPER PANEL)-**EXISTS** (IF NOT-**USE ANY** of the Turbocompressor start/stop switches (71-73), or any of the Engine bleed air switches (74,75,78,79 ON SO UPPER PANEL), or the APU as the pneumatic source **TO CREATE IT**)
5. **CHECK** THAT **AT LEAST ONE source of electrical power is connected** to the POWER BUS(if no engines are running- use APU as the electric and pneumatic power source, as described above in the start up procedure, using the APU) that means:

APU PANEL--------**SELECT** (FROM ICONS PANEL (SHIFT+2))

1. APU master switch—**ON** (observe APU EGT rising)
2. Check Duct high (86) and low (87) pressure (SO UPPER PANEL) indicators rising
3. Generator Field Switch (7 on the APU PANEL) ---**CLOSE** (observe light came out)
4. Generator Breaker Switch (3 on the APU PANEL) -- **CLOSE** (observe light came out)
5. Ground service master switch (21 on the SO UPPER PANEL)--**ON**
6. Power on BUS light (blue (19) on the SO UPPER PANEL) ----- **CHECK ON.**

NOW ENGINES ARE READY TO START:

6. Use **CTRL+E** or Engine start switches (40-43) of the respective engine — **(START & HOLD until EGT increases)** procedures to start Engines.

After all engines are stabilized at idle (or as desired):
1. Generator circuit breaker switches (34-37)—**CLOSE** (observe lights coming out)
2. Configure Air conditioning and pressurization system**- AS DESIRED.**

2.3 TAKE – OFF AND DEPARTURE PROCEDURES (SOP)

TAKE-OFF AND DEPARTURE CRITS:

EXTERIOR LIGHTS (L BUTTON OR FROM THE FLIGHT DECK)	AS REQUIRED
EPR AND AIRSPEED BUGS	CHECKED AND SET FOR T/O(V1,VR,V2)
STABILIZER TRIM INDEX	IN THE GREEN BAND FOR T/O
FLAPS	SET FOR T/O
RADIOS, ADFs, TRANSPONDER, VOR/ILS	TUNED AS REQUIRED FOR DEPARTURE

The use of standard T/O procedures will be assumed. The pilot making take-off (YOU) will advance the throttles to about 0.10 below take-off EPR-bug value.(The engineer (**SO**) will trim the engines for take-off thrust and monitor the power throughout the take-off regime).Once they are set, the Captain (YOU),will position his hand on the throttles until **V1**. The captain (YOU) will make any decision to discontinue the take-off and will execute the Rejected Take-off (RTO) procedures. (During a rejected takeoff, when the Captain begins nose wheel steering, the First-Officer will keep nose wheel firmly on the ground and the wings level).

THIS TABLES SHOW YOU AN EXAMPLES OF SETTINGS OF **EPR,N1%,** REQUIRED FOR TAKEOFF AND GO-AROUND,
V1,Vr,V2 VALUES, REQUIRED FOR TAKEOFF, THAT WERE USED IN THE ONE REALLY EXISTED 707.

TAKEOFF AND GO-AROUND THRUST										
OAT,C°	**-30**	**-20**	**-15**	**-10**	**-5**	**0**	**+10**	**+15**	**+20**	**+30**
EPR	1,87	1,83	1,82	1,82	1,82	1,82	1,82	1,82	1,82	1,82
N1%	97,9	99,5	100,8	101,8	102,8	103,7	105,7	106,7	107,6	109,2

TAKEOFF SPEEDS																
TO GW LBx1000	**165 & Below**	**175**	**185**	**200**	**215**	**230**	**245**	**260**	**270**	**280**	**290**	**300**	**310**	**320**	**325**	**333**
V1	102	104	108	112	116	120	123	127	130	133	136	138	142	145	146	148
Vr	103	107	111	116	119	123	127	132	135	138	142	144	148	150	152	154
V2	120	124	127	132	136	141	146	150	152	155	158	161	163	165	167	168

AIRPLANE CONTROL

Take – off positioning
Takeoff performance calculations presume the use of all available runway. Good judgment dictates that a **minimum** amount of the runway be used in positioning for takeoff.
The first point at which thrust may be increased varies with the runway and taxiway layout. Avoid making sharp turns onto the runway at high thrust

Applying take-off thrust
On all airplanes, set the chart rolling takeoff EPR values. When allied with the runway(RW):
- Advance throttles smoothly
- Pause until all engines have accelerated and are stabilized at 60% to 65%N1
- If using brakes, ease them off (press.)
- Smoothly advance throttles to about 0.10 below takeoff EPR-bug value

Caution: Be especially careful to advance throttles symmetrically on slippery runways, in crosswinds, and at light weights, in order to avoid directional problems.
Between 40 and 80kts, adjust thrust to bug value. Do not readjust EPR after 80kt except to stay within EGT or N1-N2 limits.

Rotation
The rotation maneuver should be a smooth continuous pitch change to the V2+10kts climb attitude. Begin the rotation maneuver approaching Vr at a rate that causes the nose wheel to leave the ground at Vr. The airplane should reach the target climb attitude and V2+10 simultaneously.
Caution: If the airplane is not airborne at 10 degrees pitch, **stop rotation** until liftoff occurs, then adjust attitude as described above to reach V2+10.

V2+10 climb attitude						
Weight,lbsx1000	205 or less	205-230	230-255	255-280	280-305	305&higher
Pitch, degrees	18º	17º	16º	15º	14º	13º

Retract the gear (**G or from joystick**) when a positive rate of climb is indicated on the pressure altimeter. Landing gear retraction increases drag **while** the gear doors are open.

Initial climb
After establishing the initial climb attitude by reference to the attitude indicator (ADI), monitor the airspeed and adjust the pitch attitude to maintain V2+10,to a maximum of 18 degrees nose up.
The speed V2+10 is very close to the maximum-angle-of-climb speed and also provides normal maneuvering capability. .Do not exceed 30 degrees bank. (To ensure the desired climb after takeoff all cockpit crewmembers should cross-check attitude (on the ADI) with airspeed (on the airspeed/Mach indicator), altimeter, and vertical speed (on VSI).

Standard takeoff and departure climb
Use the Standard Takeoff and Departure Climb at:

- all U.S.airports, and
- non-U.S. airports, that are **not** noise sensitive.

Use the Standard Takeoff and Departure Climb profile diagram.

Noise - restricted takeoff and departure climb
Use the Noise-Restricted Takeoff and Departure Climb at the airports that **are** noise sensitive. Use the Noise-Restricted Takeoff and Departure Climb profile diagram.

SYSTEMS MANAGEMENT

Turbocompressors for takeoff
Normally the takeoff is made with two turbocompressors on (usually numbers 2 and 3), engine bleeds are not to be used for any takeoff. A higher gross weight may be authorized for takeoff with one or both off. When conducting a takeoff with one or no turbocompressor turn the turbocompressor off. Usually this is performed by the flight engineer (SO) or can be accomplished by you by choosing SO UPPER panel and put the TURBOCOMPRESSOR SWITCH to START and WING VALVES to OPEN.

Operational variations: crosswind takeoff
Unless a strong wind exists, no unusual characteristics should be expected during takeoff. Use the normal rolling takeoff procedure, keeping the nose wheel firmly on the runway. Inlet distortions in high crosswinds may cause the engine to momentarily stall as thrust is applied.
Be alert for any tendency of the upwind wing to rise. Maintain wings level by applying aileron into the wing as required. Avoid large control inputs. To avoid a high-drag, spoilers-up condition, use no more aileron control input then necessary.

Stay on the centerline. Smooth rudder inputs combined with small lateral control inputs will result in a normal takeoff roll. As the controls become more effective with speed, displacements should be reduced.
NOTE: When the crosswind component exceeds 15 kt, control may be difficult, especially on slippery or narrow RWs. Use caution. Consider requesting a RW more into the wind.
At Vr rotate with smooth, positive back-pressure. Liftoff cleanly. As rotation takes place, more roll control input will be required to keep the wings level.
The airplane will be in a sideslip with crossed controls at liftoff. After liftoff, ease out the cross control inputs and establish a crab angle to maintain the desired track.

ATER TAKEOFF CRITS:

LANDING GEAR	**UP (NO LIGHTS)**
FLAPS	**UP (NO LIGHTS)**

2.4 CRUISE PHASE (SOP)

CREW MANAGEMENT

The primary tasks during the cruise phase are accurate navigation and the fine tuning of the airplane performance. The reduced cockpit workload allows the crew ***to think over ahead of the airplane.*** Be aware of the overall weather situation and stay abreast of changes in forecast conditions. Project the effects of flight plan variations and actual airplane performance.
The airplane requires constant management. (A minimum of two crewmembers, with seat belts fastened should be "minding the store" at all times. When a pilot station is not occupied above FL250, the remaining pilot must don his oxygen mask and use interphone for flight deck communications.

AIRPLANE CONTROL

Altitude selection
Buffet boundaries, optimum cruising levels, and performance ceilings are all directly dependent upon gross weight. Before accepting an altitude for cruising, determine optimum altitude, considering the top-of-climb gross weight and anticipated temperature.
NOTE: Optimum altitude is the altitude that gives the best nautical miles per thousand pounds of fuel for a given gross weight. It provides a 1.35G or better buffet protection.
Before accepting an altitude, determine that it is and will continue to be acceptable as the flight progress under projected conditions of temperature and turbulence. (The engineer (**SO**) will provide target airspeeds, gross weight, and power settings, as required.)

Buffet boundary
The minimum recommended moderate turbulence buffet boundary protection is 1.35G.The minimum severe turbulence buffet boundary protection is 2.0G.
Minimum maneuvering speed at high altitude
At altitudes, higher than 10,000ft, these speeds must be adjusted to maintain a safe maneuvering margin. Add 1 knot per 1000 feet of altitude to Vth+50 **(Vth--threshold speed)** to obtain the minimum maneuvering speed for that altitude.

Example: To determine minimum maneuvering speed at 35000ft, assume Vth equals 125:
- Apply rule of 50: 125+50=175
- Add 1kt per thousand feet: 125+50+35=210

210kts therefore the minimum maneuvering speed for 35000ft.
NOTE: If airplane control is adversely affected by turbulence at holding speeds, increase speed and notify ATC.

HERE IS AN EXAMPLE OF THE CRITICAL SPEED PLACARD, THAT WAS USED IN THE ONE REALLY EXISTED 707 AND IS BASIC FOR CALCULATION OF Vprog, Vgust

WEIGHT× 1000LBS	Vth(thresh speed)		STALL PEED KNOTS					2&3ENG CLIMB SPEED
	FLAPS POSITION							
	50°	**40°**	**FULL**	**40°**	**25°**	**14°**	**0°**	
160	110	111	88	89	91	94	112	175
170	113	114	91	92	94	97	115	180
180	116	118	93	95	97	100	119	186
190	119	121	96	97	99	103	123	191
200	122	124	98	99	102	106	126	196
210	125	127	101	102	105	109	130	201
220	128	130	103	105	108	112	133	206
230	131	133	105	107	110	114	136	211
240	134	136	107	109	113	117	139	215
250	137	139	110	112	115	120	142	220
260	139	142	112	114	117	122	144	225
270	142	144	114	116	120	125	147	229
280	145	147	116	118	122	128	150	233
290	147	150	118	121	124	130	152	237
300	150	153	120	123	127	133	155	242
310	152	155	122	125	129	135	157	246
320	155	158	124	127	131	138	160	250
330	157	160	126	129	133	140	162	253

2.5 DESCENT (SOP)

DESCENT AND APPROACH CRITS:

APPROACH BRIEFING	**REVIEWED**
ALTIMETERS & INSTRUMENTS (altitude, airspeed, EPR bugs)	**CHECKED&SET**

CREW MANAGEMENT

The cockpit workload increases gradually as the airplane descends into the terminal area. Good judgment dictates that distractions be minimized and administrative and nonessential duties be completed before descent or held until after landing. The earlier essential duties can be performed, the more time will be available in the more critical approach and landing phases.
The descent profile and speed schedule is sometimes varied by ATC or weather conditions. Otherwise the pilot should select a descent schedule that will provide passenger comfort, schedule compliance and economy.

Approach review (briefing)
Having maintained an averseness of the destination weather and traffic situation and considering the requirements of a potential diversion, review the airport approach charts and pages and recognize the plan for approach and landing.
The approach review normally should be accomplished before top-of-descent (TOD) and include at least the following:

- MEA, MORA, MSA as appropriate;
- Initial approach altitude;
- Outer marker (OM) or final approach fix crossing altitude;
- Approach minimums;
- (Nonprecision approach) distance and time to the missed approach point (MAP);
- Airport or TDZ elevation;
- Missed approach procedure, with emphasis on initial heading and altitude;
- Airport and runaway review;
- During the approach review set pressure and radio altimeter bugs.

During descent
PF (**YOU**) should actively maintain an altitude awareness at all times. Know your altitude, your rate of descent, and the altitude clearance. Keep the altitude reminder set. Also shortly after TOD, set EPR bugs.

Threshold speed, Vth.
V-threshold (Vth) is the ***minimum maneuvering speed*** in the landing configuration.
PF (**YOU**) should determine Vth from the Critical Speeds placard for the estimated landing gross weight (LGW) and flap setting. The low airspeed bug should be set to this confirmed Vth.
NOTE:

- the term "40 Vth" denotes Vth for a flaps 40 landing;.
- the term "50 Vth" denotes Vth for a flaps 50 landing.

Programmed speed, Vprog
V-programmed (Vprog) is the ***target airspeed*** in the landing configuration. Depending on conditions, Vprog is determined by adding one (only) of the following adjustments to Vth:

- **5 kt, or**
- **Gust and Headwind Adjustments, or**
- **Possible Wind Shear Adjustment**

To determine which adjustment should be made, consider the applicable conditions, as follows:

5 kt*.* For steady winds up to 10 kt obtain Vprog by adding 5 kt to Vth. Vprog=Vth+ 5 kt.
Example: for LGW 210,000lb & flaps 40 : set one bug to Vth (127kt); set one bug to Vprog (132kt).

Gust and Headwind Adjustments
For steady winds over 10kt and gusting winds, the effects of high inertia and the lack of direct lift production from increased thrust required a more significant adjustment to Vth. The maximum total gust and headwind adjustment is 20kt.
Vprog = Vth + reported gust value +1/2runway headwind component = Vth+20kt maximum.

Example: For LGW 210,000lb & flaps 40 : Vth=127kt; For wind 340 at 15kt gusting to 25kt, landing RW36 Vprog=Vth + gust adjustment+1/2 runway headwind component = 127+10+7=144kt, ***so it means*:**

Set one bug to Vth(127kt); Set one bug to Vgust(Vth+10)=137kt; Set one bug to Vprog(Vgust+7)=144kt.

Possible Wind Shear Adjustment

When the possibility of windshear exists, a Vth adjustment up to 20kt may be made
Vprog = Vth + 20kt maximum. In no case may Vprog exceed Vth by more than 20 kt.
After a single value for Vprog is determined, proceed as follows:

- Set one bug to Vprog on airspeed indicator;
- If appropriate, set another bug to Vgust on airspeed indicator.

Setting altimeter bugs for approach

During approach review (briefing),the altimeter bugs should be set as follows:

1) Radio Altimeter Bug

- For a category II ILS approach, the radio altimeter bug must be set to decision height(DH),RA value.
- For any other approach set the radio altimeter bug to 500ft.

2) Pressure Altimeter Bug.

- Set bug to TDZ or airport elevation.
- For all straight-in approaches use TDZ, if it is published. If it is not published, use airport elevation.
- For circling approaches, use airport elevation. Set bug to the DH or MDA.

Standard callouts

- 1000ft above any assigned flight level or altitude, and
- transition level.

AIRPLANE CONTROL

Use DME, GPS, radar, and any other means to accurately fix distance out before commencing descent.

Normal descent: 0.80 Mach or 320 knots

The normal descent is with idle thrust at 0,80Mach or 320 kt, whichever is slower (0,80Mach above approximately FL275, and 320 kt below).
Depending on the gross weight, the normal descent schedule results in average descent rate of 2700 fpm between 40,000 and 25,000 ft. Below 25,000 ft the average descent rate is approximately 1500 fpm. Clean configuration is preferred. Descents with flaps or gear down are airspeed-imitated, noisy, and expensive. Also, at limit speed, flaps cause buffeting. Even though clean descents are preferred, speed brakes should be used when they are needed to maintain the desired descent profile.

High-speed descent

Maintain cruise mach to Vmo (barber pole) minus 15 kt, then hold Vmo minus 15 but not exceed 350 kt/ Descent angle, range, and fuel are not appreciably changed from the normal descent.

Descent with gear extended

Observe the gear operating speeds placards; set throttles to idle before extending gear. Gear extension will give about 3500 fpm rate of descent.

Descent with flaps extended

Observe the 20,000 ft flap extension limit. Set throttles to idle before extending flaps and observe the flap limit speed. Extend flaps to 25 and hold 190 to 160 kt.

SYSTEMS MANAGEMENT

Landing lights
For collision avoidance in VMC, turn on desired landing and/or runway turnoff lights when descending through 10,000 ft.

Fuel system
The fuel system should be placed in the tank-to-engine configuration before landing. Use fuel heat as required.

2.6 APPROACH

CREW MANAGEMENT

The approach and landing are the most critical phases of flight. As such, they demand the highest level of attention and sharing of plan.
Approach procedures provide for orderly transition to the landing configuration while controlling navigation in an increasingly precise manner. It is essential that the crew constantly maintain an awareness of airplane's flight and navigation situation. Crosschecking must be thorough and continuous. (Paperwork, nonessential duties, and irrelevant conversation must be put aside.
NOTE:
Irrelevant conversation during the approach phase diverts attention from essential duties, callouts, scan, etc.) In all approach and landing operations, the PF (**YOU**) remains in command and fully responsible for safety.
A primary purpose of redundancy is the capability of crosschecking. During an approach, flight information redundancy is necessary. For example, when the airplane is on the glide slope, the pressure instruments, compass, PDI, flight director, and autopilot operation all tell the crew something about the airplane's progress. Any of these is subject to failure or inaccuracy. One of the most common approach problems is the failure of the crew to continuously validate one source of information with another. **Overconcentration on a single display or situation can lead to serious errors.**
Whether making an IFR or a VFR approach, **use all appropriate navigational and approach facilities** to aid flight path control and to ensure landing at the correct airport and runway.
(Traffic density and normal maneuvering requirements in the approach area suggest that the seatbelt sign be turn on early in descent. The timing is optional and will vary with conditions, but in no case should it be delayed below 10,000 ft.)

Approach duties
The pilot making the approach (YOU) will:

- make the radio check as follows:
    - tune (and identify) the primary approach navaid,
    - ensure final approach course set in both HSI windows,
    - set VOR/ADF switches as required,
    - tune (and identify) the ADF's, check ADF mode,
    - select the flight director (FD) as required.

- adjust thrust to maintain Vprog plus or minus 5 kt,(for strong gusty wind conditions, speed may bleed off to a minimum of Vgust below 200 to 300 ft AGL).
- on VOR, ADF, or localizer approach, check the time or DME distance from facility to determine the Missed Approach Point(MAP),
- approaching MDA, check time and distance remaining to MAP,
- on ILS approaches, monitor LOC and GS information on the ADI (and HSI),
- note the drift angle,
- on Category II approaches, approaching DH, check that the expanded LOC is within the limit bars, that speed is stabilized on Vprog plus or minus 5 kt ,and that GS is within 1 dot,
- confirm altitude callouts, be prepared to land if visual cues confirm instrument indications, and
- execute missed approach, if required.

Checklists
Assume the Approach checklist is completed at or below the transition level (TL).
Assume the Landing checklist is completed after the landing flaps are selected. The checklist must be completed by 1000 ft AGL on all straight-in approaches. At this point, the airplane should be stabilized on the glidepath, stabilized on Vprog, with the proper sink rate.
For circling approaches, lower the flaps to the landing configuration when beginning the final visual descent for landing. Then complete the Landing checklist.
The altitude check over the final approach fix (FAF) is to ensure that the airplane is on the correct descent profile. The instrument check is for the appearance of warning flags or other gross instrument discrepancies.

Instrument failures
When the airplane is below 500 feet, because there is insufficient time to evaluate the problem, instrument failures signaled by compass flag, NAV or GS flag **require an immediate missed approach** unless continuous visual flight has been established.
This procedure is intended to prevent the pilots' distraction from the flight instruments and to permit an unhurried assessment of the problem and its effect on landing minima.

AIRPLANE CONTROL

The normal approach is an ILS approach. All ILS approaches are essentially the same, but depending on the airplane and the facilities, the pilot can elect to fly the approach in several ways by varying the degree of automation.
The approved methods of airplane control during approaches are:
- fully coupled, and
- manual (uncoupled, handflown).

In selecting one of these ways, the pilot is merely substituting one means of control for another at various points in the approach. In general, as the level of automation increases:
- minimums are lowered because of the improved accuracy,
- equipment redundancy requirements increase to provide the necessary safety,
- pilot manual input is decreased to permit more attention to cockpit management and instrument monitoring.

Speed control
Approach target speeds are noted on the profile diagrams and are referenced to Vprog. Minimum maneuvering speeds are also noted on the profiles, and are referenced to Vth. All approach target speeds should be held within +/- 5 kt.

Thrust control
Maintain a balanced thrust condition throughout the approach.

Rate of descent control
Below 500 ft AGL, for any descent rate of more than 1000 fpm, take immediate corrective action or abandon the approach.

Gear and flap extension
There are number of important considerations when extending the gear and flaps for landing. Among these are the airspeed at which they are extended and the length of time during which the airplane is in a high-drag configuration. There are significant advantages to minimizing both factors.
Operating the gear and flaps at lower airspeeds minimizes passenger reaction to these conditions and also increases airframe service life. As the speed is reduced for landing, the flaps should normally be extended at or near the minimum maneuvering speed for the existing flap setting.
The advantages of minimizing the time during which the airplane is in a high-drag configuration include considerable savings in fuel and reduced noise levels, both on the ground and in the cabin. (There is a significant increase in both fuel consumption and noise level between clean and approach configurations in level, unaccelerated flight.) If drag required during the descent or early in the approach is subsequently no longer required, the pilot should consider a cleaner configuration rather then unnecessarily maintaining high levels of thrust, noise, and fuel consumption.
NOTE:
Regardless of weather conditions, for all straight-in approaches, the airplane should be in the landing configuration, with the landing checklist complete, not lower than 1000 ft AGL. At this point the airplane

should be stabilized on the glide path, stabilized on Vprog, with the proper sink rate, and trimmed for zero control forces.
For circling approaches, extend landing flaps and request the landing checklist when beginning the final visual descent for landing.

Flight director management
Although it is used in other phases of flight, **the primary purpose of the flight director** is to provide roll and pitch commands during the final stages of an instrument approach.
Used properly, the flight director can reduce pilot workload and enhance cockpit management.
During coupled approaches, if the autopilot malfunctions, transition to manual flight can readily be made if the flight director (FD) has been properly set up and used. Its use is required on Category II approaches. It should be used for backup and monitoring of all precision approaches.

ILS approach with flight director (FD)
Maintain continuous spatial operation. Verify the intercept angle by comparing heading and ADI and HSI indications. Compare outer compass locator ADF bearing in relation to the localizer course, also GPS can be used.

- **Localizer intercept**

After being cleared for approach, on the final vector or procedure turn inbound:
Select NAV/LOC mode on the AP panel. After localizer capture the V/L light on the FD announciation panel goes green and FD roll command bar commands localizer capture and tracking.

- **Localizer and glideslope tracking.**

When established on LOC and wings level, select AUTO G/S mode on the AP panel. After GS capture, the G/S light on the FD announciation panel goes green and FD pitch command bar commands LOC and GS tracking. (Drift corrections are automatically computed.) Set heading bug on inbound front course (for missed approach).
Respond to pitch and roll command bar with elevator and aileron control **(from joystick or buttons)**. Maintain speed with thrust. During final approach, keep the FD bars centered over the center dot on the ADI and monitor LOC and GS tracking on the HSI and the ADI.
MAN G/S mode can be used to establish on the GS from above.

ILS approach with autopilot (AP)
Engage the AP **(Z-button or as assigned)** in the HDG mode. Use ALT HOLD as required. Maintain appropriate maneuvering speed with thrust.
During the approach, monitor localizer and glideslope tracking with the flight director, the HSI, and the expanded localizer (on ADI).

- **Localizer intercepts.**

After being cleared for the approach, on the final vector or procedure turn inbound:
-- Select AUTO G/S on the AP panel.
-- Announciator lights (V/L and G/S light on the FD announciation panel goes green), and V/L and G/S light on the AP announciation panel goes amber, (then green after capture of LOC and GS.) The coupler is now programmed for automatic capture of the localizer and glideslope.
The airplane will stay on last selected heading unit within 2 dots on HSI. Normally, the intercept angle should be from 35 to 45 degrees. If the angle varies much from this, consider intercepting in HDG mode to avoid overshooting or getting too close to become established. When localizer capture begins, the V/L light on the AP announciation panel changes to green and G/S light remains amber. The autopilot will now command automatic localizer tracking.

- **Glideslope intercept.**

When the HSI & ADI glideslope bars centers:
-- A/P G/S announciator light turns green.
-- The A/P will now command automatic G/S tracking.
On the glideslope, make thrust changes smoothly. A stable approach is essential for optimum tracking. Maintain balanced thrust.
At 1000 ft radio altitude, ILS signal attenuation automatically begins. As altitude is decreased, LOC and G/S signals are attenuated and bank angle is limited so that the A/P will maintain a constant response to a given displacement from the beam.
Disconnect the A/P by 50 ft AGL **(Z-button or as assigned).**
If a missed approach is executed, disconnect the A/P **(Z-button or as assigned)**.

Unsatisfactory A/P performance
Below 400 ft AGL, if the A/P disengages or if the PF (YOU) is not satisfied with A/P performance, the A/P may be disengaged **(Z-button or as assigned)** and the approach continued if FD system is operating. The initiation of a missed approach must be considered if the airplane deviates from a nominal approach path because of an A/P malfunction.

ILS approach tolerances
At DH on all ILS approaches, the airplane should be on the localizer within the limits of the expended localizer (on ADI) and should be on the G/S plus or minus one dot.

Descent below minimums
If the following requirements are not met at decision height (DH) or in either case at any thereafter, the pilot must execute a missed approach immediately.

Approaches other than CAT II
A precision approach may not be continued below the DH nor may an airplane on a nonprecision approach be operated below the MDA unless both of the following conditions exist:

- the approach threshold, approach lights, or other markings identifiable with the approach end of the RW are clearly visible to the pilot and
- the airplane is in a position from which a normal descent to the landing RW can be made.

CAT II approach
A Category II approach may not be continued below the DH unless:

- the pilot has established visual reference with the approach light system and
- at 100 ft HAT (Height Above Touchdown), visual reference has been established with the RW threshold environment, which includes any of the following:
  - touchdown zone (TDZ) lights
  - RW threshold
  - red terminating barrettes, with an ALSF-1 system
  - red side-row barretts inside the 500-ft bar, with an ALSF-2 or ICAO system
  - red side-row barretts on any other approved lighting system, and
- the pilot determines that a landing can be accomplished within the TDZ.

Visual approach
The configuration and speed schedules for visual approaches are shown on the Visual Approach diagram.
Use all available aids such as ILS glideslope, VASI, PAPI, and PAR monitor to maintain the proper flightpath. Take special care to maintain established approach profiles over noise-sensitive areas.
Landing at the wrong airport and on the wrong RW and the touchdowns short of the RW are frequently associated with good weather and visual approaches. Use all appropriate navaids and facilities to prevent such occurrences.

SYSTEMS MANAGEMENT

Windshield wiper and rain repellent
Part of the approach briefing should include determination of use of windshield wiper and rain repellent systems when required.

Landing lights.
On a night landing where fog is present, use of landing lights too early may cause visibility problems. When landing lights are not to be turned on until near the threshold, the PF should turn them on when required **(L-button or as assigned or individually from the flight deck)**.

2.7 LANDING

LANDING CRITS:

LANDING GEAR	**DOWN, 3 GREEN**
FLAPS	**40 OR 50 OR AS REQUIRED, GREEN LIGHTS**

CREW MANAGEMENT

On all straight-in approaches before 1000 ft AGL the airplane should be:

- in the landing configuration,
- with the landing checklist complete,
- stabilized on target speed,
- on glide path with proper sink rate, and
- trimmed for zero control forces.

Go-Around

A go-around must be initiated on any approach when the captain's (YOUR) judgment indicates that continuation of the approach or landing would compromise safety. **There is no stigma attached to go-around, nor any implication of poor performance.**

Airplane control

The VFR touchdown target is 1000 ft from the threshold. Continual observation of the aiming point will make the necessary minor changes in attitude and their resulting effect on glidepath and sink rate immediately evident.
Landing gross weight (LGW) affects more than just Vth. Heavy-weight landings require extra attention to flightpath and speed control.
Remember, more things you keep constant, the easier the approach and landing will be.
It is difficult to transition to judging altitudes, speeds and distances at low level after high-altitude and high-speed cruising. This is especially true on straight-in approaches and at night.
Be mindful of indicated airspeed (IAS) and rate of descent during final segment of approach. These values are the same as during instrument approach.
Glidepath angles are difficult to judge without additional visual cues (altitude, distance, landmarks, etc.) At night many of these cues are not available. Special attention should be given to cross-checking and verifying the desired flightpath. **Be conscious of how things should look and how they do look.** For example, at night when you are too low on the glideslope, the RW lights begin to merge into two lines instead of remaining as distinct individual lights.

Flaps-40 landing

With the exception of the conditions noted below, use flaps 40 for landing when stopping distance is not is not a significant concern. use flaps 40 reduces noise and fuel consumption during the final approach.
At flaps 40, changes in airplane handling and performance are relatively minor, except that at high landing weights the pitch attitude will be about 1 degree higher than at flaps 50. In addition, Vth will be from 2 to 4 kt higher than at flaps 50, and up to 800 ft more landing distance will be required.

Flaps-50 will be used:

- when antiskid is inoperative,
- for landings from CAT II approaches,
- on short, wet, or slippery runways, and
- whenever stopping may be a problem.

Final approach

The pilot making the landing (YOU) will control the thrust. Be alert to avoiding high sink rates whenever possible, especially with the engines spun down. Engine acceleration time seems lengthened at high gross weights because more thrust is required to overcome the high inertia.
Maintain a constant glidepath. Use of 2,75- to 3,0-degree slope is recommended for all landings. Using the same angle every time trains your eye and gives the smallest average touchdown dispersion.

On a 3-degree glidepath, sink rate is approximately 700 fpm no-wind for an average approach speed. Sink rates at 100 ft should not exceed 800 fpm regardless of conditions.
During coupled approaches it is necessary to press the autopilot disconnect button **(Z - button)** some time before starting the flare. It is good practice to do this every landing, so that it becomes a habit.
Deceleration on the RW is about three times greater than in the air. If the airspeed is higher than desired, accept it and land the airplane.

Wind shear
If appropriate, consider holding or diverting to avoid shear conditions.
During the approach, the following methods can be used to assist in determining inflight wind:

- airplane drift angle,
- au unusually steep or shallow rate of descent required to maintain glideslope, and
- an unusually high or low power setting required to maintain airspeed.
  If wind shear is suspected, airspeed bugs are set accordingly (as described above, Descent Chapter):
- when winds are reported strong and gusty at the surface, they may be considerably stronger or weaker at altitude. Vprog and Vgust airspeed bugs are set to accommodate possible shear and protect against gusts. During the approach, windshear may cause airspeed to bleed off from Vprog to Vgust. Do not allow speed to decrease below Vgust. If the bleed off does not occur, accept the higher speed and land the airplane. Do not float.
- When reported surface wind would not justify an increased bug setting (for example, tower reports calm wind), but wind shear is suspected by the crew, the Possible Wind Shear adjustment of up to 20 kt may be used to determine Vprog. If the anticipated shear does not materialize, do not attempt to bleed off airspeed before touchdown; accept the higher speed and land the airspeed. Do not float.

Stabilize the approach early – an unstabilized approach will always delay detection of wind shear.
Many types of wind shear conditions exist, including changes of speed and/or direction, as well as the possibility of vertical air movement (updrafts or downdrafts).
WARNING:
If wind shear is encountered on final approach, do not hesitate to go around if the approach profile and airspeed cannot be restabilized. It cannot be emphasized too strongly that a go-around is often the professional pilot’s best course of action.

Touchdown
Reduce the rate of closure with the runway. As the elevator input becomes effective, reduce thrust. The capability of the elevator to arrest sink rate and throttle reduction timing varies significantly with weight and speed. Normally, throttles are at idle just before touchdown.
Ease off elevator (joystick) back-pressure to lower the nose and “fly» or “roll onto” the runway under positive elevator control. Avoid hold-off, stall-type landings because they reduce wing tip and engine pod clearance and require more runway. **Do not trim during the landing flare.**

Stopping
On the ground, stopping distance varies with the coefficient of friction, use of control surfaces, revising, and braking techniques.
Upon touchdown, extend the speedbrakes fully **(“/”-button or as assigned)** and pull the reverse levers **(F2-button, PG DOWN button, from the cockpit or from joystick or as assigned)** to the interlock (amber REV OPTG light will come on). Speedbrakes are an important factor affecting stopping distance. They increase drag quickly and kill wing lift so that wheel braking becomes more effective.
As soon as the nosewheel is on the runway increase reverse thrust **(F2- button, PG DOWN button, from the cockpit or from joystick or as assigned)** on all engines. When necessary don’t hesitate to use full allowable reverse thrust. (Do not exceed engine limits except in an emergency.)
Apply brakes promptly as soon as the spoilers are up, the nose wheel is down, and runway tracking is established. Maintain a constant deceleration rate down to desired taxi speed.
If an engine does not indicate being in reverse (or if a reverser is inoperative),it is recommended that only symmetric reverse thrust be used. Consider airplane directional control capabilities (particularly at lower speeds), and use asymmetric reverse thrust only with caution.
As airplane slows, engine noise level builds but reverse effectiveness drops. Maintain the desired deceleration rate by smoothly applying the brakes **(“•” (period) button or as assigned)**.
Start reducing reverse thrust at 80 kt **(F3 or PG UP button, from the cockpit or from joystick or as assigned),** continuing lever motion forward at a rate which avoids engine surging. Be in idle reverse by 60 kt to minimize cross ingestion.

CAUTION:
Placing the throttles in a forward thrust position when the engines are above idle RPM immediately produces significant forward thrust. Wait until the engines are spun down and the speed is under control before coming out of idle reverse.
As the airplane slows, maintain the established deceleration by increasing brake pressure **("•" (period) button or as assigned)**. Normally, maximum braking is not required.
NOTE: The best braking technique for normal stops is to apply, use moderately, and release the brakes in the shortest reasonable time. However, when maximum braking is required, apply and use the brakes as hard and as long as needed.

Operational variations: crosswind landings
Make a normal approach. Maintain runway alignment by crabbing. Before touchdown, gradually remove as much of the crab as possible with rudder, thereafter preventing downwind drift by a slight wing-low attitude into the wind. Overcontrolling can induce dutch roll.
It may be necessary to land with some crab angle if the crosswind is high. This presents no problem if the angle is not excessive and the flightpath is aligned with the runway.
CAUTION:
Touchdown with a large crab angle and the wings level may result in a rapid rising of the upwind wing and may cause an engine nacelle to drag on the runway.
Make a normal touchdown. Slightly increased airspeed will flatten the altitude and reduce the likelihood of scrapping a pod.
After touchdown and while decelerating, keep directional control with the rudder. Aileron inputs should be based only to maintain a wings-level attitude.

2.8 AFTER LANDING

CREW MANAGEMENT
Remember that the flight isn't over until the airplane has blocked. Be alert. The rules for taxi out also apply to taxiing in.

Checklists
SOP assumes that After Landing Checklist items are accomplished by the engineer (SO) when the airplane is slowed to taxi speed. Pilot items should wait until the airplane is clear of the runway.

AIRPLANE CONTROL

Parking
The airplane is to be parked with the assistance of guide man or mechanical devices such as mirror or light combinations or you can use Taxi Guide line of the Flight simulator. The only exception to this is when the airplane can be parked in an open area where potential obstructions or hazards to the airplane are clearly in view and can be avoided.
Before stopping the airplane, center the nosewheel and taxi straight ahead a short distance to relieve side loads on the landing gear

Engine shutdown
If no longer required for taxi, parking, or electrical needs, outboard engines should be shut down after landing to conserve brake life and save fuel.
Normally the engines are sufficiently cool shortly after landing to permit immediate shutdown; but if high thrust was used after landing, allow the engines to idle for at least two minutes before shutdown. This idling period permits the engines to cool slowly to prevent possible damage resulting from rapid temperature changes.

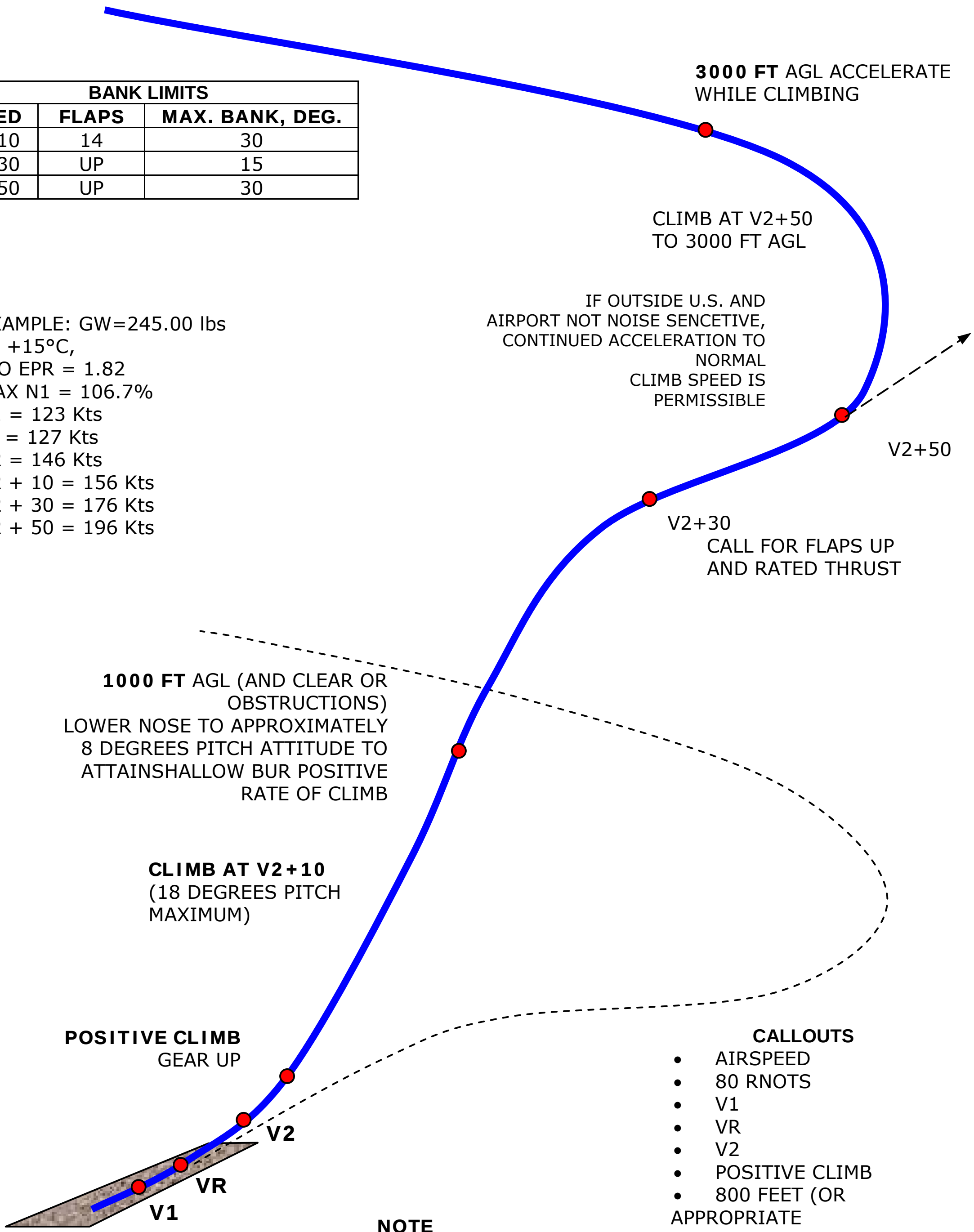
SYSTEM MANAGEMENT

Turn off all unnecessary electrical loads before shutting down engines. Normally, the number three engine is kept running until outside electrical power has been connected.

STANDARD OPERATING PROCEDURES (SOP), TAKE OFF AND DEPARTURE

BANK LIMITS		
SPEED	**FLAPS**	**MAX. BANK, DEG.**
V2+10	14	30
V2+30	UP	15
V2+50	UP	30

EXAMPLE: GW=245.00 lbs
t= +15°C,
T/O EPR = 1.82
MAX N1 = 106.7%
V1 = 123 Kts
Vr = 127 Kts
V2 = 146 Kts
V2 + 10 = 156 Kts
V2 + 30 = 176 Kts
V2 + 50 = 196 Kts



CALLOUTS

- AIRSPEED
- 80 RNOTS
- V1
- VR
- V2
- POSITIVE CLIMB
- 800 FEET (OR APPROPRIATE OBSTRACTION CLEARANCE ALTITUDE)

NOTE
SID and obstruction clearance altitudes must be complied with

STANDARD OPERATING PROCEDURES (SOP), APPROACH

MAINTAIN CLEAN CONFIGURATION AS LONG AS PRACTICAL MINIMUM SPEED VTH+50

APPROACH PREPARATINS

- APPROACH BRIEFING
- APPROACH CHECKLIST COMPLETE
- RADIOCHECK COMPLETE
- FLIGHT DIRECTOR; FLT INST

SET AUTO G/S

SET HDG BUG INBOUND FRONT COURSE SELECT LOC MODE (SELECT NAV / LOC MODE)

FINAL VECTOR OR INBOUND PROCEDURE
TURN FLAP 14 VPROG+30

ESTABLISHED ON LOCALIZER
HEADING BUG SET TO INBOUND COURSE SELECT

GLIDESLOPE ACTIVE

- FLAPS 25
- VPROG+20

MINIMUM MANEUVERING SPEEDS					
FLAP PSITION	0°	14°	25°	40°	50°
SPEED	VTH+50	VTH+30	VTH+20	VTH+10	VTH

ONE DOT BELOW GLIDESLOPE
GEAR DOWN (ON HIGH GS INTERSEPT, GEAR DOWN MAY BE DELAYED TO 1500 FT GL)

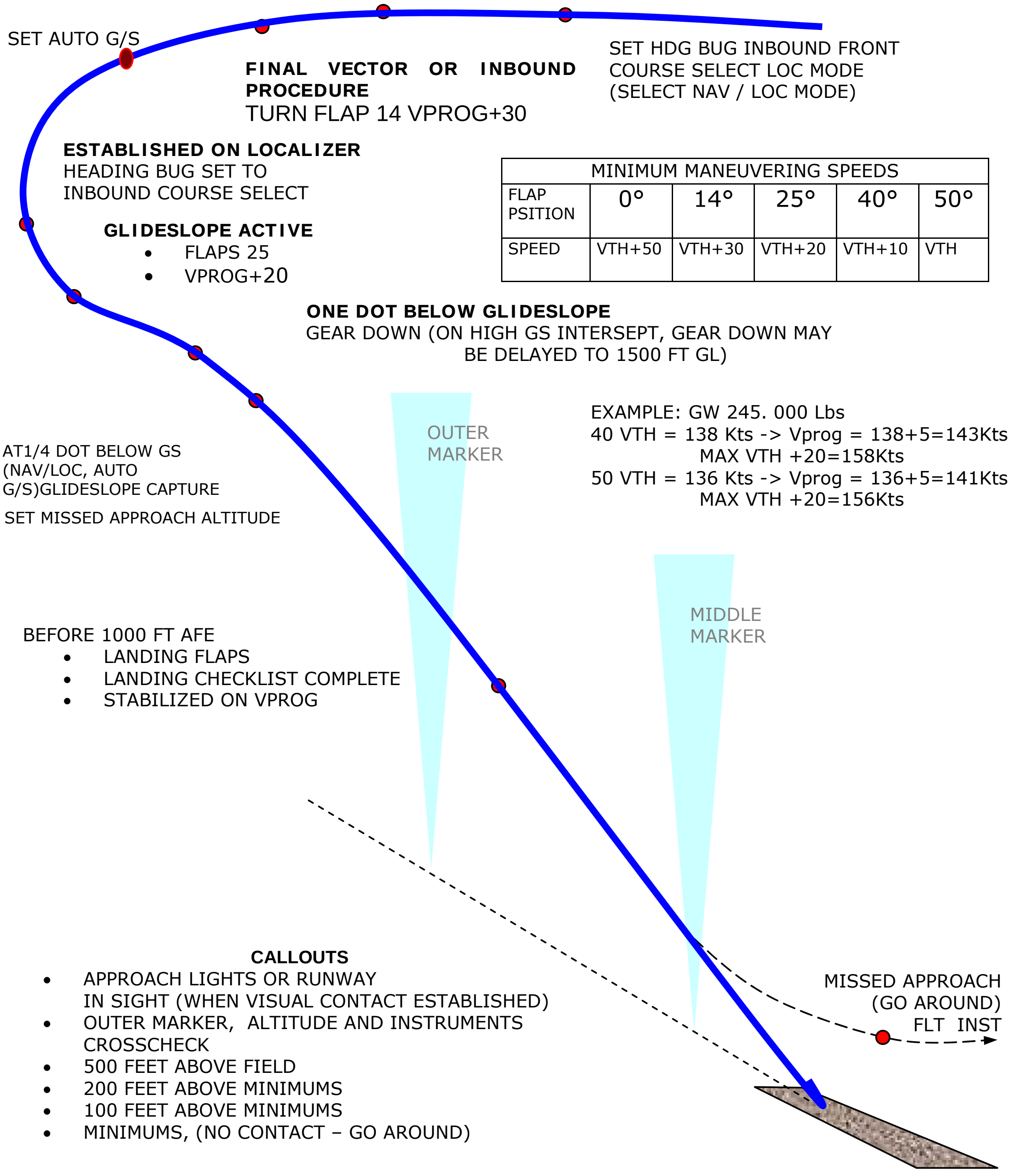
EXAMPLE: GW 245. 000 Lbs
40 VTH = 138 Kts -> Vprog = 138+5=143Kts
MAX VTH +20=158Kts
50 VTH = 136 Kts -> Vprog = 136+5=141Kts
MAX VTH +20=156Kts

AT1/4 DOT BELOW GS (NAV/LOC, AUTO G/S)GLIDESLOPE CAPTURE

SET MISSED APPROACH ALTITUDE

BEFORE 1000 FT AFE

- LANDING FLAPS
- LANDING CHECKLIST COMPLETE
- STABILIZED ON VPROG



CALLOUTS

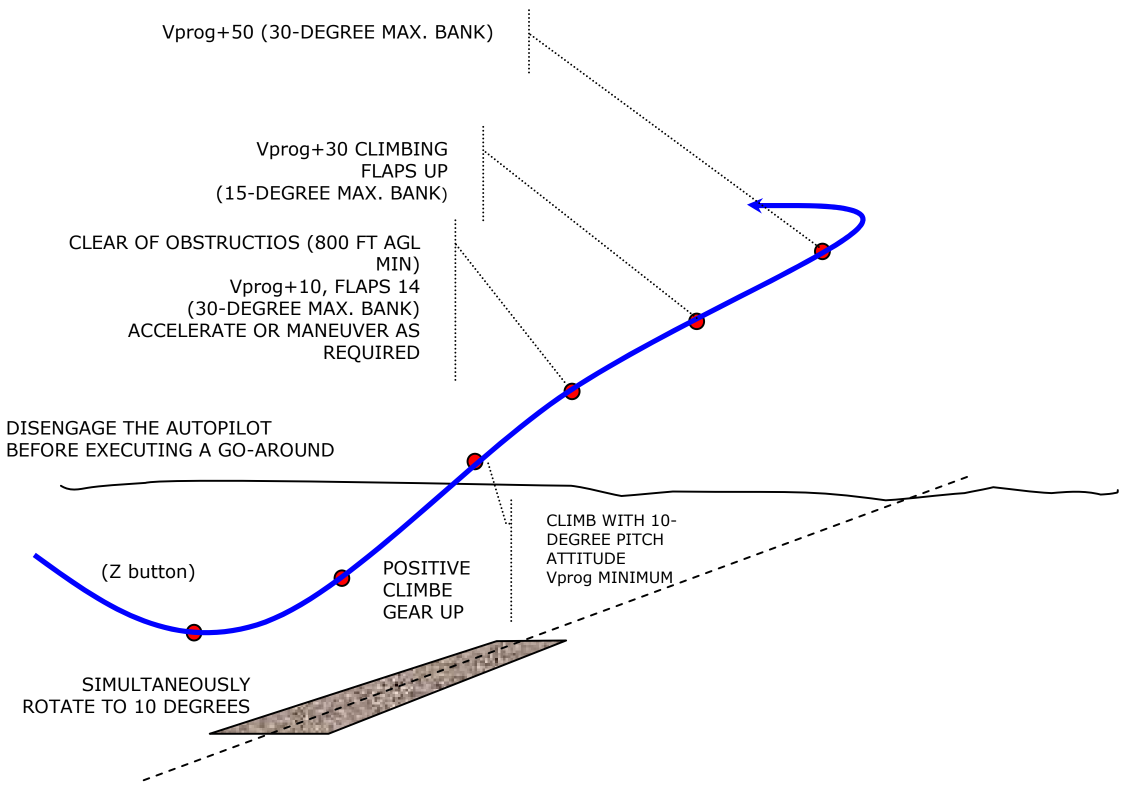
- APPROACH LIGHTS OR RUNWAY IN SIGHT (WHEN VISUAL CONTACT ESTABLISHED)
- OUTER MARKER, ALTITUDE AND INSTRUMENTS CROSSCHECK
- 500 FEET ABOVE FIELD
- 200 FEET ABOVE MINIMUMS
- 100 FEET ABOVE MINIMUMS
- MINIMUMS, (NO CONTACT – GO AROUND)

MISSED APPROACH
(GO AROUND)
FLT INST

STANDARD OPERATING PROCEDURES (SOP), MISSED APPROACH

To execute a missed approach:
disengage autopilot, if coupled, (Z – button)

- simultaneously rotate to 10 degrees pitch on the altitude indicator, apply go-around trust, and retract flaps to 25,
- retract gear after verifying a positive rate of climb,
- climb with flaps 25 and a 10-degree pitch attitude (Vprog minimum) until clear of obstructions (minimum 800 ft AGL),
- at a minimum speed of Vprog +10, select flaps 14,
- retract the flaps on the normal retraction schedule.



EXAMPLE:
GW = 245.000 lbs
Vprog = 141 Kts – minimum
Vprog + 10 = 151 Kts – select flaps 14°
Vprog + 30 = 171 Kts – select flaps UP
V prog +50 = 191 Kts

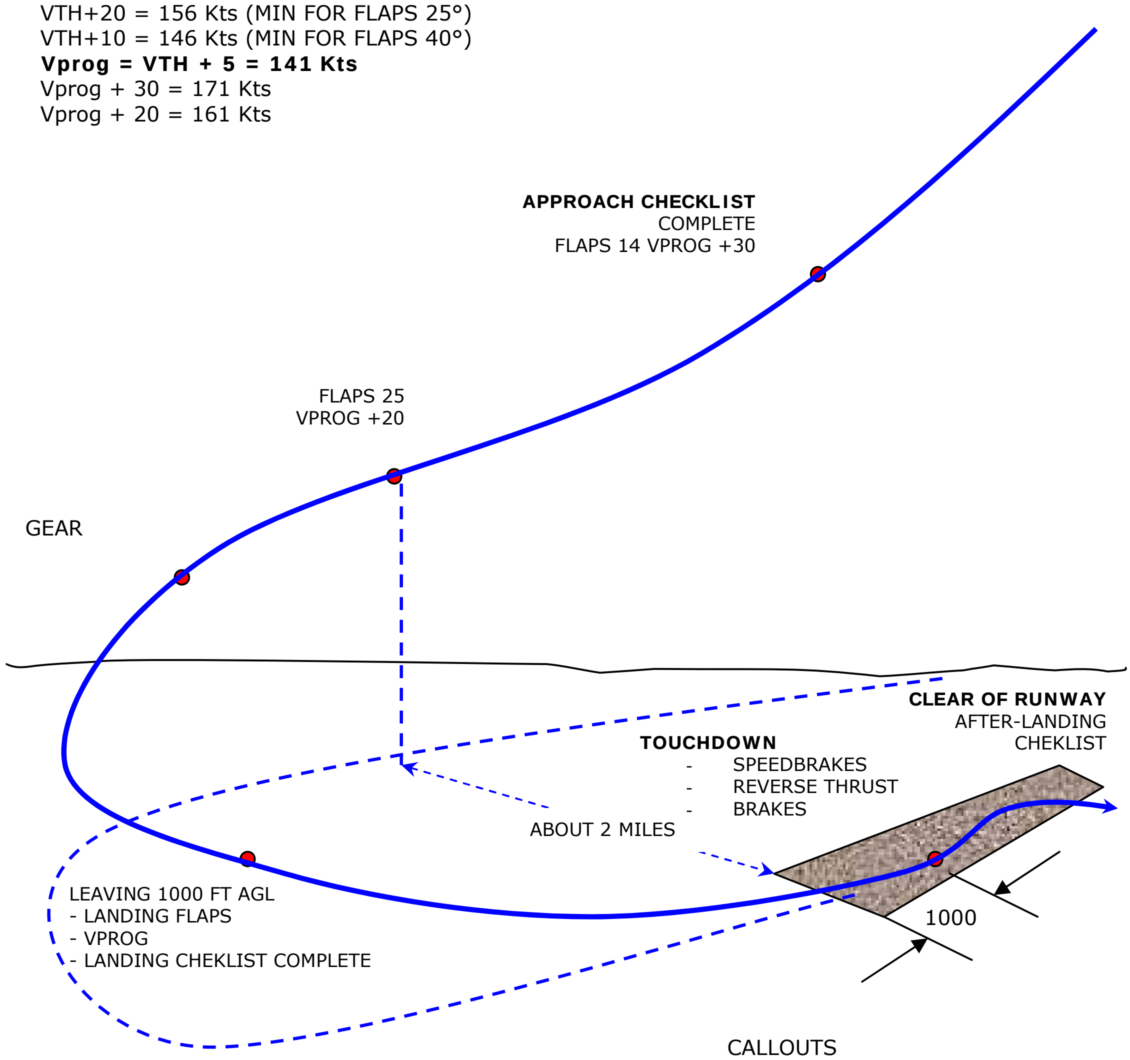
STANDARD OPERATING PROCEDURES (SOP), VISUAL APPROACH

MINIMUM MANEUVERING SPEEDS					
FLAPS POSITION	**0**	**14**	**25**	**40**	**50**
SPEED	**VTH+50**	**VTH+30**	**VTH+20**	**VTH+10***	**VTH**

*FOR FLAPS 40 VTH, MINIMUM SPEED IS VTH

EXAMPLE: GW = 245.000 Lbs
VTH = 136 Kts (MIN FOR FLAPS 50°)
VTH+50 = 186 Kts (MIN FOR FLAPS 0°)
VTH+30 = 166 Kts (MIN FOR FLAPS 14°)
VTH+20 = 156 Kts (MIN FOR FLAPS 25°)
VTH+10 = 146 Kts (MIN FOR FLAPS 40°)
Vprog = VTH + 5 = 141 Kts
Vprog + 30 = 171 Kts
Vprog + 20 = 161 Kts

FOR NIOSE ABATEMENT, HOLD 2000 FT OR MORE, COMMENCING DESCENT JOIN PATTERN ABEAM END OF RUNWAY



CALLOUTS
- 500 FEET ABOVE FIELD
- 200 FEET ABOVE FIELD
- 100 FEET ABOVE FIELD