STANDARDS FOR GA 7

RØROSFLY AS

It is mandatory for all instructors and students in Rørosfly as to follow all procedures as described in "Standards for GA7".

Individual procedures from individual instructors are strictly forbidden and deviations from the standards below should immediately be be reported to the Head of Training/Chief Flight Instructor in Rørosfly as.

We hereby declare that we are willing to follow all procedures as described in "Standards for GA 7:

INSTRUCTOR NAME	DATE:	SIGNATURE
Tor W. Sandnes		
Per Marius Nilsen		
Ken Ove Wik		
Odd Stormorken		
Erik K. Kjeldsen		

Index:

APPENDICES:

1 PREPARATIONS BEFORE FLIGHT

Before starting the flight the student is responsible to do the following preparations and to bring with him:

- Weather – Notams & Alternate
- ***Vxse / Vyse*** (Page 5-15 POH GA7)
- ***Vth (Page 5-33 POH GA7)***
- ***Va* (Page 2-3 POH GA7)**
- Power settings for ***holding (Page 5-31 POH GA7)***
- ***Weight & Balance form***
- ***SE service ceiling*** (Page 5-16 POH GA 7)
- SE rate of climb. (Page 5-15 POH GA7)
- Temperature corrections. (AIC 84/97))
- VFR Map over the area to be flown
- VFR-Routes Light Aircraft (AIP/Bottlang)
- Airport map with comm.-failure procedure (AIP/Bottlang)
- Approach charts (Jeppesen)
- SID/Contingency Procedure Rørosfly As. (CLP)
- Knee-board
- Notepad
- Pencil
- Student Folder with program & Grade sheet
- Jeppesen SCA

All these items are also covered on the "Before flight" form in the briefing room.

2 GROUND

2.1 START-UP

All preparations (Radios/navaids/altimeters etc) for start-up is the duty for the student and not the instructor. All radios shall be tested with squelch and volume before taxiing

The left engine is normally started first.

2.2 ALTIMETER CHECKING

Altimeters are to be checked during the pre-flight phase as follows:
Set both altimeters to aerodrome QNH and check that they indicate the same value as the official elevation of the location place of the aerodrome. The tolerance is +/-80 feet.
The reading should be within 60 feet of each other.

2.3 DEPARTURE BRIEFING – NAVAIDS AND AVIONICS SET-UP

Set bugs for the calculated speeds for **Vxse** or **Vyse** and **Vth** on the ASI.
Brief the SID, climb-out procedure and what to do in case of engine failure or fire. State considerations whether to make an immediate landing or diversion to planned take-off alternate due to weather.

After the brief - set navigation aids - tune the radios -identify, insert and verify the appropriate heading, QDM, QDR or radial on the instruments.

This procedure is always:	***First the brief, then: Frequency-Ident-Set Course***

Avionics shall be checked on local facilities and set-up for the SID/CLP or departure clearance expected to be flown. If only one navigation set is required, the second navigation set should be tuned in for an ILS approach to runway in use. Number one set is always tuned for the procedure to be flown.

NAV 1: First navigation-aid en-route or SID navigation-aid/Fix.
NAV 2: Navigation aid defining the instrument approach to the departing runway (or whichever runway that will be applicable for a return after take-off)
ADF: Airport NDB facility or first navigation-aid en-route or SID navigation-aid/fix.
DME: Airport DME facility, first navigation-aid en-route or SID navigation-aid/fix.
GPS: Map page for general support.

2.4 DEPARTURE BRIEFING

2.5 TAXI

Check left – center and right before starting taxi.

Do not taxi and read checklist at the same time – perform only by heart items.
Use power as required and taxi carefully. When turning use rudder with asymmetric power. Engine run- up with the nose into the wind.
Before turning for line-up use turning areas with safe distance to the end.
If the the aircraft has been parked in snow or slush in temperatures below freezing, brake disk freezing may occur.
Be careful with T/G in snow and slushy conditions with air temperatures beond freezing level . – Wheels may be blocked after they have been retracted and impossible to get down again. In such conditions the gear should be left down when doing T/G.

When taxiing into position from the holding, perform the instrument checklist by heart:

Turning left, needle left ball right, DG and compass decreasing, attitude steady and ADF tracking.

Turning right, needle right, ball left, DG and compass increasing, attitude steady and ADF tracking.

The call out for this exercise is: "Flight Instruments Checked"

2.6 LINE-UP

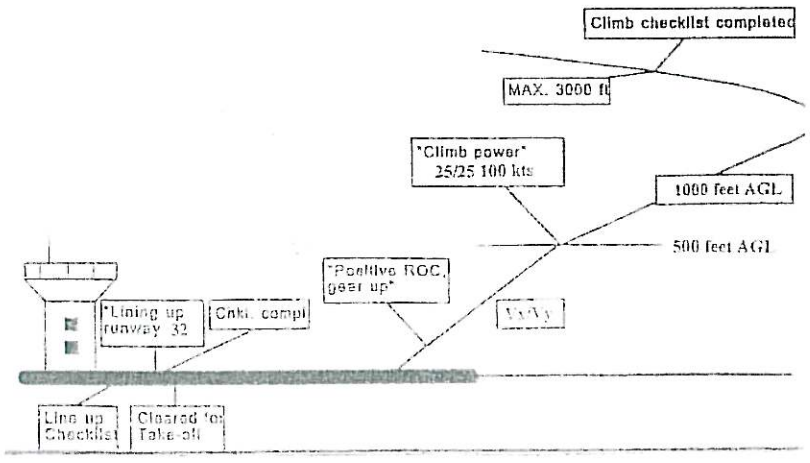
Do not report ready for take-off before having performed all checks, ATC clearance is received and take-off briefing is completed.
When lining up, call out runway position, e.g. "lining up runway 32, gyros checked against QFU and checked against compass. Perform line-up checklist and wait for take-off clearance. Hold brake pedals, **do not** set parking brake.

3 IN FLIGHT

3.1 TAKE-OFF

When clearance for T/O received: Advance power to 2000 RPM, release brakes smoothly - apply T/O power and check engine instruments are normal.
At lift-off speed (GA7 75-PA34 80) rotate -apply brakes and when positive rate-of-climb is indicated –select gear up.
In the event of an engine failure after rotation, the procedure is circle to land, not on the remaining rwy.
During take-off perform call-outs according to the figure below, TRIM the aircraft for the climb configuration.

3.2 CLIMB



Except for engine failure, minimum altitude for turning after T/O at ENRO is 2800 ft MSL.

Climb with Vy or Vx to 500ft AGL with T/O power, then reduce to climb power 25/25 (GA7) or 33/25 (PA34).
Then accelerate to en-route climb speed 100kts and establish on the SID/departure clearance. At 1500 ft read climb checklist and trim.
At 1000 ft prior to assigned level or altitude call "Pre-level" and check /set altimeter setting. Cross check both altimeters.

3.3 CRUISE

200ft. before reaching altitude: Cowl-flap closed if cylinder head temperature is OK.
When level, set cruise power, perform cruise checklist and TRIM.

3.4 TRANSITION FROM CRUISE TO CLIMB

1.	Mixture	ENRICH
2.	Nose up – Speed towards	100 KIAS
3.	At 100 KIAS -Props	2500
4.	Power	25"(GA 7) 33" (PA34)
5.	Cowl Flaps	AS REQUIRED
6.	CHT	MAX 400°F

Flow from right to left.

3.5 DESCENT

Plan ahead. Be at the radio fix in published altitude and proper speed (A recommend descent profile is calculated using 5 x altitude = distance to go, i.e. from 8000 ft. start the descend at 40 NM and maintain cruise airspeed.)
You can plan to maintain Vno in smooth air if you are in a hurry, but watch for the rate of descend.
In case of turbulence reduce to Va. A reasonable compromise is to set 20 KIAS below Vno as normal descend speed.

Perform checklist and approach briefing (Ref. enclosure 12) in good time.
At 1000ft prior to assigned level, call"pre-level" and check/set altimeter setting and cross check altimeters (Pre-level, QNH 10xx, altimeters checked)
You may also set the altimeters on QNH when you are cleared for descend and the approach.

4 LANDING/PARKING

4.1 NORMAL LANDING

Landing shall be made using full flaps with speed Vth. (Vref.) plus additional speed to compensate for adverse wind conditions.

Rule of thumb: Add half the value of headwind component ≥ 10kts + gust – Maximum 10 kts.

Try not to have a long flare in order to make a greasy landing, as most instruments landings are made on wet and slippery runways. A prolonged flare is eating up:runway and increasing the risk of aquaplaning.
If not a short-field landing – ALWAYS use the brakes with care. Aerodynamic braking is a good way to have good control and save the brakes.

The after landing checklist shall NOT be performed until the active runway is vacated. Then stop the aircraft and read the checklist.

4.2 LANDING WITH FLAPS 0°

A malfunction in the flap system is the only reason a zero flap landing should be performed. Make sure the correct Vth. is obtained from the POH according to the landing weight.
NOTE: A high nose attitude is obtained during approach and landing which decreases the forward visibility considerably.

4.3 CROSSWIND LANDING

During crosswind conditions always calculate with turbulence. If strong wind is current, downdrafts might occur. Decide about speed compensation.
Aim for the runway centreline and maintaining a crabbing angle so the aircraft will follow the extended centreline. At approximately 100 ft. use rudder and simultaneously bank smoothly into the wind in order to

align the aircraft with the runway. The initial touch down should, without floating, be on the upwind wheel with bank angle as required to maintain zero drift. After touchdown, lower the nose-wheel and maintain wings level attitude by use of the ailerons.

4.4 WIND RESTRICTIONS

The maximum crosswind component for operation of any aircraft will be the manufacturer's maximum demonstrated crosswind component.

Maximum demonstrated Crosswind Components for takeoff and landings

Maximum accepted X-wind component for slippery runways are reduced according to the following:
(FBrA= Forecasted Braking Action)

	FBrA 0.40 Good	FBrA0.35 Med/G	FBrA Med	FBrA Med/Poor
AA5A/B	15 knots	14knots	10knots	5knots
GA7	15 knots	14knots	10knots	5knots

Minimum acceptable Braking Action is 0.15

Maximum Surface Winds (including gusts)

AA5A	25 knots
GA7	35 knots

An easy way to calculate crosswind component while in the air is the "wristwatch method". Ref. enclosure 2 for this method.

4.5 SHUT DOWN/PARKING

When parking brake is set or you hold the brakes, read the parking checklist. Then release the brakes and clean up in the cockpit.
Always install the control lock and with chocks on the main wheels when parking outside the hangar
NB! Before moving the plane, REMOVE the rudder lock!

5 INSTRUMENT PROCEDURES

5.1 FILING IFR FLIGHT PLAN VIA RADIO

If an instrument flight plan is to be requested, the following data are needed: (NOT needed for VFR flights)

Requested Route:	
Persons on-board:	
Endurance:	
Estimated Flight Time:	
Alternate:	

5.2 QDM/QDR INTERCEPTION

When passing overhead a station use 30 interception angles

When intercepting use "double difference", maximum 60. For example: You are on radial(or QDR) 175. Intercept radial (or QDR) 150 outbound. Interception angle is then 2x25 =50. Approaching the radial, decrease the interception angle to 30 and smoothly complete the interception.

5.3 QDM/QDR TRACKING

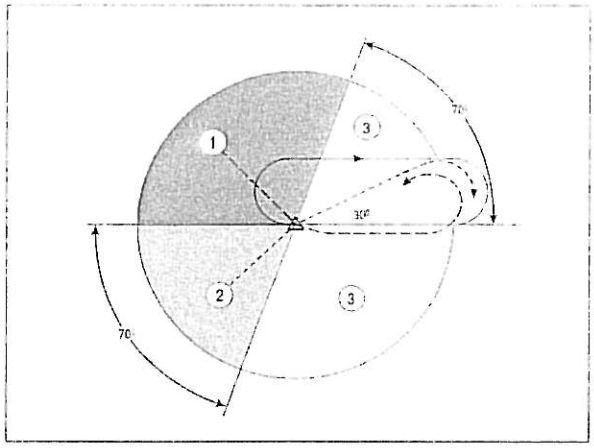
Ref. enclosure 3

5.4 HOLDING

Ref. enclosure 4 for details in holding procedures

5.4.1 ENTRY PROCEDURES

1. Parallel entry (Sector 1)
2. Offset entry/Tear-drop (Sector 2)
3. Direct entry (Sector 3)



In the holding, reduce holding speed according to POH.

Outbound time (No wind)at or below 14 000ft.: 1.0 min.
NOTE: In RBU holding RBU QDR is 093 aften one minute.

Outbound time above 14 000 ft.: 1.5 min

Max speed Cat A 0-14 000ft.: 170 Kias

5.4.2 TIMING

Start timing outbound when wings level or abeam the fix whichever is later.
One minute outbound +/-1 sec pr. kts head/tailwind component.

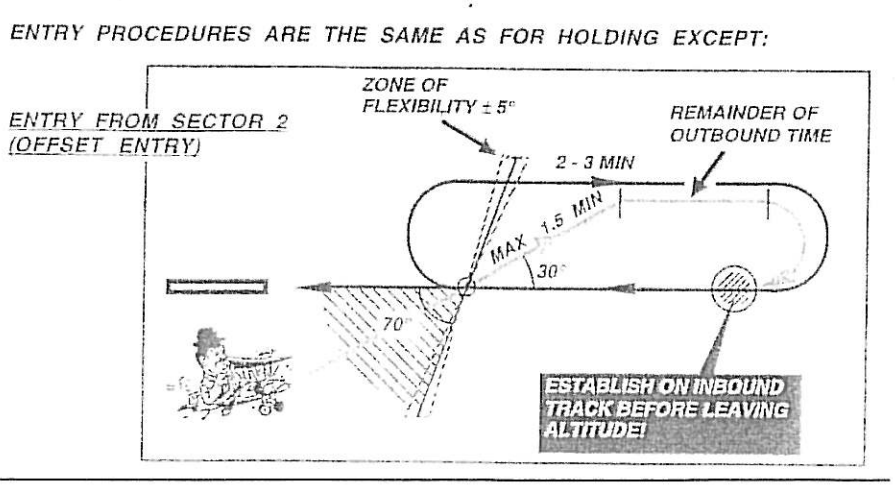
5.4.3 DRIFT

Inbound: 1x drift (= Single Drift = Wind correction angle – Wca))
Outbound: 3xdrift (2xdrift if headwind within 60 of outbound heading)
Or: (2xdrift if outbound heading within 30 of headwind)

5.5 RACETRACK

Unlike holding, the racetrack is an approach procedure.
According to PANS-OPS max speed in the racetrack for Aircraft Category A is **110 KIAS**.
The racetrack for NDB & ILS approach are flown without flaps, activ ation point for flap (10 degrees) and gear is1-2 dots below the GS for the ILS approach.

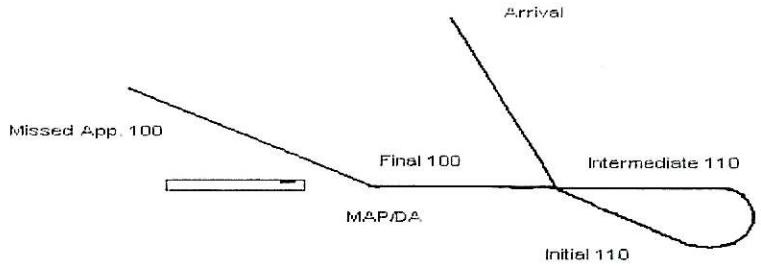
NOTE: At DME 13 from RO, the RBU QDR is109.



5.6 INITIAL AND INTERMEDIATE APPROACH

Ref. enclosure 5 & 6 for details for the ILS and NDB approach.

MAXIMUM SPEEDS FOR PROCEDURES IN CAT A (ACCORDING TO PANS-OPS):



MAXIMUM APPROACH SPEEDS FOR DIFFERENT SEGMENTS - AIRCRAFT IN CATEGORY A

Aircraft Category	Vat	Range of speed for initial approach	Range of final approach speeds	C ircling speed	Max speed for intermediate missed approach	Max speed for final missed approach
A	<91	90/110*	70/100	100	100	110

Vat – Speed at threshold based on 1.3 times stall speed in the landing configuration at maximum certificated landing mass.

* Max speed for reversal and racetrack procedures

When approaching IAF (RBU) request type of approach and intentions.

NDB approach via baseturn:
Initial approach (IAF outbound) is flown with 110KIAS. Activation point for flap 10 is when passing IAF outbound.
For safety reasons, request a QDM when intercepting the localizer.
On the intermediate approach reduce speed from 110 to max 100 kts before passing FAF inbound. Activation point for the gear is when passing the FAF inbound.
Remember standard callouts on the intermediate approach.

ILS approach via baseturn:
Initial approach (IAF outbound) is flown with 110KIAS. Activation point for flap 10 is when passing IAF outbound.
For safety reasons, request a QDM when intercepting the localizer.
On the intermediate approach reduce speed from 110 to max 100 KIAS before passing FAF inbound.
Activation point for flap and gear is 1-2 dots below the glideslope.
Remember standard callouts on the intermediate approach.

NDB approach via racetrack:
Initial and intermediate approach in the racetrack is flown with 110 KIAS without flaps. On the intermediate approach reduce speed from 110 to max 100 KIAS before passing FAF inbound. Activation point for flap and gear is when passing FAF inbound.
Remember standard callouts on the intermediate approach.

ILS approach via racetrack:
Initial and intermediate approach in the racetrack is flown with 110 KIAS without flaps, activation point for flap and gear in the intermediate approach for the ILS is1-2 dots below the glideslope. Reduce speed to 100 KIAS before passing the FAF inbound.
Remember standard callouts on the intermediate approach.

NOTE: For a Circling approach, activation point for flap and gear will be at the keypoint abeam the RWY

5.7 FINAL APPROACH

Establis 90kts and trim for the correct descend rate according on the IAL.
If you are not circling, Remember the GUMPS –Check at 1000 ft. above minima!
For a Non-precision approach, time for the DP and MAP (Ref. enclosure 13 for calculation of DP) The decision point must be situated no later than MAP.

During instrument training - If the flight instructor or Flight Examiner removes your hood it means that you have field in sight and intentions is to land. If not, you shall do a missed approach.

5.8 STABILIZED APPROACH

An approach is stabilized when the aircraft is flown:

- Along the desired flight path in landing configuration. (Transition to landing VMC – at the PAPI)
- With a heading needing only small corrections to maintain the desired flightpath.
- At the correct approach speed including relevant corrections.
- Maintaining an acceptable rate of descent, and
- At a power setting needing only small corrections to maintain the desired flight path.

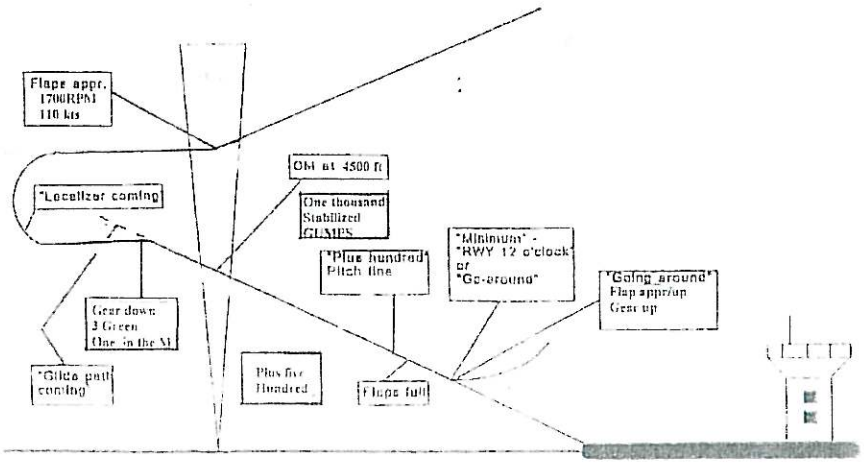
In IMC – all approaches shall be stabilized at 1000 feet AGL, - In VMC 500 at feet AGL.
If not stabilized at 1000/500 feet AGL – a go-around MUST be made.

The aircraft is considered within the stabilized approach window when the following parameters are met:

FLIGHT PATH		CONFIG.	SPEED		RATE-OF-DESCENT		POWER
Precision approach	HALF SCALE LOC/GP	-Flaps in APPROACH -All ENG. OPERATING -GEAR DOWN	1000 ft.	500 ft.	1000 ft.	500 ft.	Stable power setting- NOT idle
Non-precision approach	HALF SCALE LOC +/- 5 NDB		+20/-5kts	+10/-0 kts	Max 1000ft/min	Max 1000 ft/min	

5.9 TRANSITION TO LANDING

Follow the PAPI to ensure stabilized concept and terrain separation.
From minima, since you are flying visually use the glare shield as a horizontal line and try to maintain a constant distance between glare shield & PAPI. When field in sight and landing assured select full flap and continue at minimum 85 KIAS



5.10 CIRCLING

(Ref. Gjerlev page 62-64 – 3.6.2 – 3.6.3 and 3.6.4)

If we know the approach will be a circling we keep the gear retracted
During circling your primary Nav-Aid is visual contact throughout the procedure !

During night you shall follow circling lights. During daytime this is not mandatory.

You shall start the circling when reaching MDA.(3200 for NDB & 3090 for ILS) or at latest when reaching the MAP For circling there is no addition of 50 ft. for single pilot operation. Max speed for CAT A is 100 KIAS.

- **You may descend below MDA when:** (–Ref. enclosure 11)
- Visual reference has been established and can be maintained. You have the landing threshold in sight.
- The required minimum obstacle clearance can be maintained and the aircraft is in a position to carry out a landing.

I.e. if you can see the rwy and the threshold, and you know the area well enough to determine that you can maintain at least 394 ft. of clearance for the remainder procedure, you can leave MDA.

1. Follow the circling procedure above. Speed Max**100 kts –**
2. Key point: Flap down-Gear down, power reduce.
3. If missed approach – turn towards RS –Climb and follow missed approach procedure.
4. If committed to land: CGUMPS + reduce to Vref.. (At the bug)

5.11 GO-AROUND

Call-out "Going around, max power, flap up . When positive climb is established select gear up, accelerate to Vy , select flap up (PA34) and follow the missed approach procedure.

If a go-around is made from a circling approach, follow the missed approach procedure for the runway to which the instrument approach was executed.

5.12 MISSED APPROACH POINT VERSUS DECISION POINT

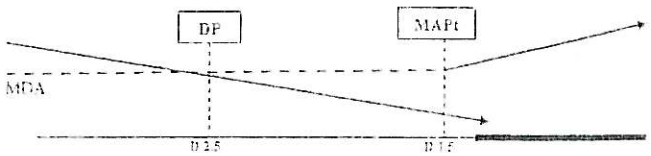
Because of individual aircraft performance, the decision point (DP) is not stated on the IAL plate, as opposed to the Missed Approach Point (MAPt). –Ref. enclosure 18.

The Missed Approach Point is the point at or before which the prescribed missed approach procedure must be initiated in order to ensure that the minimum obstacle clearance is not infringed. Note that the MAPt makes no guarantees towards a safe landing, only a safe missed approach.

For landing considerations, we need to look at the Decision Point (DP). The Decision Point is a pre - calculated point from which a stabilized, safe landing can be made from Minimum Descend Altitude (MDA). Normally, DP is located before MAPt.

When calculating DP, note your altitude above threshold while at MDA, and calculate the distance from threshold. The final visual descend needs to be initiated at the DP in order to perform a stabilized landing. Note that the maximum descend rate for stabilized approach is 1000 ft./min.

See table for ROD in enclosure 10



6 AIRCRAFT INFO FOR MANEUVRES

OPERATING AIRSPEEDS : **GRUMMAN GA 7**

SPEED	KIAS POH	Rørosfly As
V so	63	63
V mc	61	61
V s	71	71
V r short Field	61	61
V r norm/V 2	75	75
V x	81	81
V xse	85	85
V sse		
V y	95	95
V yse	85	85
V ext	145	130
V retr	115	100
V le	145	130
V fe ≤ 10°	145	130
V fe ≥ 11°	110	100
V a 3800 Lbs	120	120
V a 2800 Lbs	105	105
V no	160	160
V ne	188	188
V l/d Max 3800	98	98
V l/d Max 3200	91	91
V l/d Max 2900	85	85
Max X/WIND	15	15
Max glide	2 NM/1000ft	
U/C Warning	M.P. ≤13"	
Power setting for flight training	18"/22	
Zero Thrust	12"/22	

NOTE : Max airspeed for gear & flap are reduced with 10 KIAS for less aerodynamic load.

Reducing manifold pressure with. 1" gives -120 ft./min in descend

FUEL CAPASITY

Right	Left	Total
59 USGLS	59 USGLS	118 USGLS
Unusable	2 GLS	2 GLS
Usable	TOT:	114 GLS
Red Neck	50 USG	50 USG
Yellow Neck	40 USG	40 USG
Sight line Filler	20 USG	20 USG

Fuel 4 pers: tot. prox. 57 USGLS = 3:30 H with 23"/2300 rpm.

7 AIR WORK

MINIMUM ALTITUDE FOR THE FOLLOWING EXERCISES IS 3000 FT. AGL - REMEMBER CONTINOUS LOOKOUT !
For VFR manoeuvres the student shall be familiar with both training areas and also VFR Routes Light Aircraft for ENRO (Bottlang or AIP)

***ALWAYS REMEMBER**: Before doing any VFR exercises you must perform 90 degree turn to the left and right to clear the area and doing the:*

7.1 PRE-MANEUVER CHECK:

1.	One 90° Turn	LEFT
2.	One 180° Turn	RIGHT
3.	Fuel selectors	ON
4.	Fuel Pumps	ON
5.	Mixtures	RICH
6.	Engine Gauges	CHECKED
7.	Carb.heat /Alt.air	OFF
8.	Cowl flaps	AS REQUIRED

7.2 SLOW FLIGHT (CLEAN) TWO ENGINES

1.	Pre-Maneuver Check-list	PERFORM
2.	Cowl flaps	AS REQUIRED
3.	Power-Reduce	MP 17-18"
4.	Approaching Blue line	PROPS FULL FORWARD
5.	Maintain Altitude	75 KIAS
	RECOVERY:	
6.	Maintain	ALTITUDE
7.	Slowly/Smoothly	APPLY FULL POWER (Mix-Prop-Throttle)
8.	Level off and	TRIM
9.	Fuel Pumps	OFF
10.	Cruise Check-list	PERFORM

7.3 SLOW FLIGHT (DIRTY)

1	Pre-Maneuver Check-list	PERFORM
2.	Cowl flap	OPEN
3.	Power-Reduce	MP 18"
4.	Below 130 KIAS	Flap 10
5.	Below 130 KIAS	GEAR DOWN
6.	Below 100 KIAS	FLAP FULL
7.	Approaching Blue line	PROPS FULL FORWARD
8.	Maintain Altitude	70 KIAS
	RECOVERY:	
9.	Maintain	ALTITUDE
10.	Slowly/Smoothly	APPLY FULL POWER (Mix-Prop-Throttle)
11.	Flaps	UP
12.	Gear	UP
13.	Level off and	TRIM
14.	Fuel Pumps	OFF
15.	Cruise Check-list	PERFORM

7.4 STALLS TWO ENGINES - CLEAN CONFIGURATION

Reduce power to 15". To recover, lower the nose slightly while applying power-Check IAS above Vmca, then apply full power, climb at Vy to original altitude.

1. Pre-Maneuver Check-list	PERFORM
2. Cowl Flap	AS REQUIRED
3. Power-Reduce	MP 15"
4. Approaching Blue line	PROPS FULL FORWARD
5. Reduce power	Maintain altitude until stall -
RECOVERY:	
6. At the buffet or horn	NOSE SLIGHTLY DOWN &SLOWLY FULL POWER –climb Vy
7. Level off and	TRIM
8. Fuel Pumps	OFF
9. Cruise Check-list	PERFORM

7.5 TWO ENGINES -APPROACH CONFIGURATION *(SPEED FROM 90 KIAS-FLAPS FULL)*

1. Pre-Maneuver Check-list	PERFORM
2. Cowl Flap	OPEN
3. Power-reduce	MP 15"
4. Flaps	10
5. Gear	DOWN
4. Approaching Blue line	PROPS FULL FORWARD
5. FLAPS	FULL
6. Reduce power	Maintain altitude until stall -
RECOVERY:	
7. At the Buffet or Horn	NOSE SLIGHTLY DOWN & SLOWLY FULL PWR- Climb Vy
8. Flaps	UP
9. Gear	UP
10.Level off and	TRIM
11.Fuel Pumps	OFF
12.Cruise Check-list	PERFORM

7.6 APPROACH TO STALL IN DESC. TURN WITH APPROACH CONFIGURATION (SPEED FROM 90 KIAS)

Perform 1-5 as above, initiate a descent at 500 FPM and turn with 20° bank. Pitch for stall, and then 7 – 12 as above.

7.7 TWO ENGINES "DEPARTURE STALL" IN CLIMBING TURN WITH T/O FLAPS & POWER – (SPEED FROM 95 KIAS & 0 FLAP)

1. Pre-Maneuver Check-list	PERFORM
2. Cowl Flap	OPEN
3. Power	MP 15"
4. Gear	DOWN
4. Approaching Blue line	PROPS FULL FORWARD
6. At 75 KIAS	MP 18-20"
7. Pitch Nose Up	15 DEGREES
RECOVERY:	
8. At the Buffet or Horn	NOSE SLIGHTLY DOWN & SLOWLY FULL PWR
9. With rudder	WINGS LEVEL & climb Vy
10.Flaps	UP
11.Gear	UP
12.Level off and	TRIM
13.Fuel Pumps	OFF
14.Cruise Check-list	PERFORM

NOTE 1: Recover with minimum height loss. Maintain ailerons neutral in recovery.
NOTE 2: ACCORDING TO THE POH - SINGLE ENGINE STALL IS NOT PERMITTED!

7.8 Vmca DEMONSTRATION (Not a skill test item)

1. Pre-Maneuver Check-list	PERFORM
2. Right Cowl Flap	OPEN
3. Power	15"
4. Flaps	UP
5. Gear	UP
6. Mixtures	RICH
7. Approaching Blue-line	PROPS FULL FORWARD
8. Right Throttle	FULL OPEN
9. Left Throttle	CLOSED
10. Bank	3 to 5 Degrees into Good Engine
11. Incr. Pitch/Decr. Airspeed	1 KNOT/SECOND

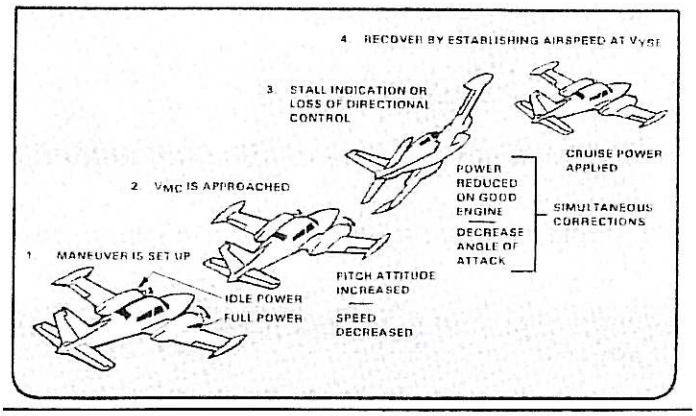
12. Recover when you achieve either:

-LOSS OF DIRECTIONAL CONTROL
-FULL RUDDER TRAVEL
-STALL HORN OR BUFFET

7.9 Vmca RECOVERY PROCEDURE

1. Reduce Power Partially and Lower Nose
2. Regain control and airspeed increasing above Vmca
3. Slowly Apply full power on right engine
4. Maintain 85 KIAS (Blue-line)
5. Right Cowl Flap Close
6. Fuel Pumps OFF
7. Cruise Check-list Perform

NOTE: For training purposes, simulate full rudder at 60-70 KIAS to prevent the aircraft from stalling before reaching Vmca



7.10 DRAG DEMONSTRATION (Not a skill-test item)

1.	Pre-Maneuver Check-list	PERFORM
2.	Right Cowl Flap	OPEN
3.	Power	15"
4.	Flaps	UP
5.	Gear	UP
6.	Mixtures	RICH
7.	Approaching Blue-line	PROPS FULL FORWARD
8.	Right Throttle	FULL OPEN
9.	Left Throttle	Zero Thrust (12" MP)
10	Establish	Vyse
11.	To Demo. Eff of Vyse	VARY THE AIRSPEED
12.	Maintain	Vyse

Demonstrate the effect of each of the following:

Extension of Landing Gear
Extension of Wing Flaps
Extension of both Landing Gear and Wing Flaps
Wind milling of Propeller (Throttle Idle)

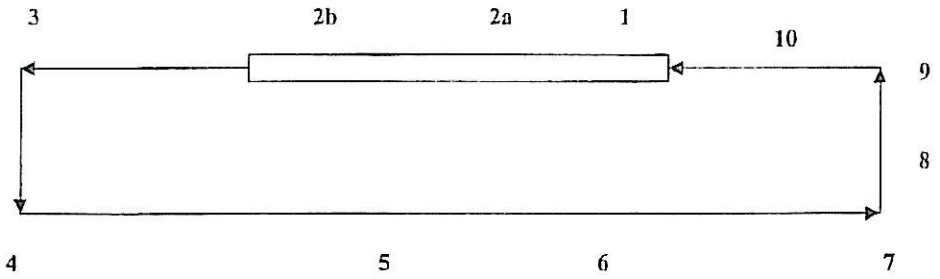
13.	Power on both engines	Restore (Check engine gauges in the green)
14.	Level Off	CRUISE
15.	Right Cowl Flap	Close
15.	Fuel Pumps	OFF
16.	Cruise Check-list	PERFORM

7.11 STEEP POWER **TURNS**

1.	Pre-Maneuver Check-list	PERFORM
2.	Cruise Power	SET 18"/2300
3.	Establish	Va (Ref. POH page 2-3) according to weight
4.	Heading Bug	Set - and establish a reference point on the horizon.
5.	Roll into	45 Degree Bank Turn
6.	Trim	One Full Turn UP
7.	Maintain	Altitude & Airspeed Va
8.	Roll Out	Lead Heading by 20 Degrees
9.	Roll into opposite Direction	45 Degrees Bank Turn
10.	Maintain	Altitude & Airspeed Va
11.	Trim	One Full Turn DOWN
12.	Roll Out	Lead Heading by 20 Degrees
13.	Fuel Pumps	OFF
14.	Cruise Check-list	Perform

7.12 TWO ENGINES TRAFFIC PATTERN (LEFT HAND – 1500 ft. AGL)

Traffic Pattern are RECTANGULAR – No continious turn from Upwind to Downwind or from Downwind to Final.



1) Line-up checklist

2a) Vr 75 KIAS
Vx Calculated acc. to weight
Vy Calculated acc. to weight

2b) Pos rate of climb,
No more useful landing area
Brakes apply
Gear up
Trim

3) GA 7: Power 25/25 at 500ft.
Sync props
Instruments in green
At 3500ft. –Left turn for x-wind (max 30° bank)

4) Power 17-18 @ 1500 ft.
Wings level and **Callout**: Check traffic from Right
Turn downwind

5) **Before landing Chklist**
Abm TWR Call ATC

6) Abeam PAPI: Power reduce
Flap 10
Gear down (3 green & 1 in the M)
Establish Airspeed 90 KIAS-Trim

7) Turn Base (30° Bank) to intercept PAPI on final
Flaps 20

8) Speed 90 KIAS
GUMPS - check:
Gas
Undercarriage
Mixture
Props
Speed (Memorize calc. Vref))
Check landing clearance received or T&G **Callout**: Final checked!

9) Turn final (Max. 15-20° Bank)
Speed Vref+10 KIAS
Flaps Full.
Follow PAPI (2 Red 2 Yellow)
At 500 ft latest: **Established**

10) GUMP check
Airspeed Vref. (Bug)

8 ENGINE FAILIURE PROCEDURES FOR GA-7

8.1 PROCEDURES FOR SIMULATING ENGINE FAILIURES AT RØROSFLY AS.

1. The throttle is SLOWLY pulled back to idle by the instructor **without** informing the student it is an EF. (If at all possible the student shall not see which throttle is set to idle)

2. The student shall now do all the correct call outs - identify the dead engine - and do the correct checklists **without assistance** form the instructor.

3. **TWR shall be informed:** "*Røros TWR L-YM is having a simulated Engine Failure. Intention is.....")*

4. After the throttle is pulled back, the instructor shall as soon as possible set the "failed" engine to zero thrust which is 12" and 2000RPM for the GA 7.

5. The instructor shall point out the importance of correct use of cow-flaps in EF procedures. To avoid overheating on the live engine it is very important to OPEN the cowl-flap.
   If the live engine is overheated you have a great possibility for engine breakdown !

   To avoid the dead engine to stop due to low temperatures the cowl-flap must be CLOSED for the dead engine.

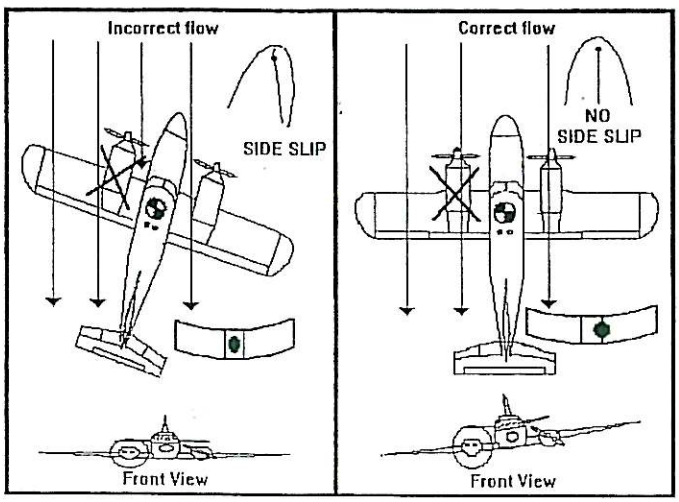
6. **Never** turn into increasing terrain when EF after T/O.
   NOTE: Avoid turning into dead engine!! – But if absolute necessary (Terrain) increase airspeed by lowering the nose before turning and maximum bank 15 degrees.
8. Touch & Go after a simulated EF are NOT allowed. You should then backtrack the rwy before a new T/O.

9. Check-lists shall first be performed by memory, then confirmed by reading from checklist. Below 1500 ft. AGL, checklist only by memory.

10. Approach speed for GA 7 on SE is 90 KIAS.

11. No simulated EF below 500ft AGL

NOTE: We do not practice EF on ground before T/O, but the procedure shall be included in the Emergency brief before T/O



ENGINE FAILURE – AVOID DRAG !

8.2 ENGINE FAILIURE AFTER T/O AND ≥75 KIAS – PRIMARY ACTION

-Maintain Control: Bank/Rudder
-Gear: Up
-Maintain Vxse / Vyse (Blue line)
-Mixture: Forward
-Props: Forward
-Throttles: Forward
Identify: Dead foot – dead engine
Verify: Retard throttle – dead engine
Decide if 8.2A or 8.2B & land as soon as possible.

DECIDE:

8.2A) IF below 2000' VMC: **Call-outs: (Ex.: Right E. is dead)**

Immediate action:

Throttle dead engine:	Verify/Close	Right dead throttle Verify/ close
Prop dead engine:	Feather	Right prop feather
Mixture dead engine:	ICO	Right mixture ICO

At safe altitude – Secondary Action:

Secure:-

Cowl flaps dead engine:	Close	Right cowl-flap close
Magnetos dead engine:	Off	Magnetos Right Engine Off
Alternator dead engine:	Off	Alternators Right Engine Off
Fuel selector dead engine:	Off	Right Fuel selector Off
Fuel pump dead engine:	Off	Right Fuel pump Off

Read and do SE check-list before landing:

SE Approach Check-list:

Fuel:	Fullest
Fuel Pump:	ON
Carb heat	As required
Mix	Best power
Prop	Forward
Speed	90 KIAS
Within gliding dist:	Gear down
When landing assured:	Flaps down

Set flaps as required to keep speed / descent rate within limits

8.2B) If IMC climb out:

-Gear: Up
-Maintain Vxse / Vyse (Blue line)
-Mixture: Forward
-Props: Forward
-Throttles: Forward
Flap: Check up
Identify: Dead foot – dead engine
Verify: Retard throttle – dead engine
Continue on CLP
When established and above 1500' AGL – inform ATC then:

Dead Engine :

Troubleshoot / Restart:

Fuel pressure:	Check fuel pump on	R. fuel pump /R. fuel selector on
Temp / press:	Within limits	
Magnetos L/R	Check ON	Magnetos Right E. on
Mixture:	Adjust until fire	Right mixture adjust
If no start:	Secure check-list.	

Secure dead engine:

Dead engine	Identify	Right engine dead
Throttle dead engine	Close	Right throttle close
Propeller dead engine	Feather	Right propeller feather
Mixture dead engine	ICO	Right mixture ICO
Cowl flaps dead engine:	Close	Right cowl-flap Close
Magnetos dead engine	Off	Magnetos Right E off
Alternator dead engine:	Off	Alternator Right E. off
Fuel selector dead engine:	Off	Right fuel selector off
Fuel pump dead engine:	Off	Right fuel pump off

Live Engine:

Throttle, mixt:	As required	Left throttle-left mixture as req.
Fuel selector	Balance if needed	
Aux Fuel pump:	ON	Left fuel pump on
Cowl-flap:	OPEN	Left cowl-flap open
Trim:	**Bank 5°** live engine	Bank 5 ° twrds left engine
Electric load:	Check/reduce	

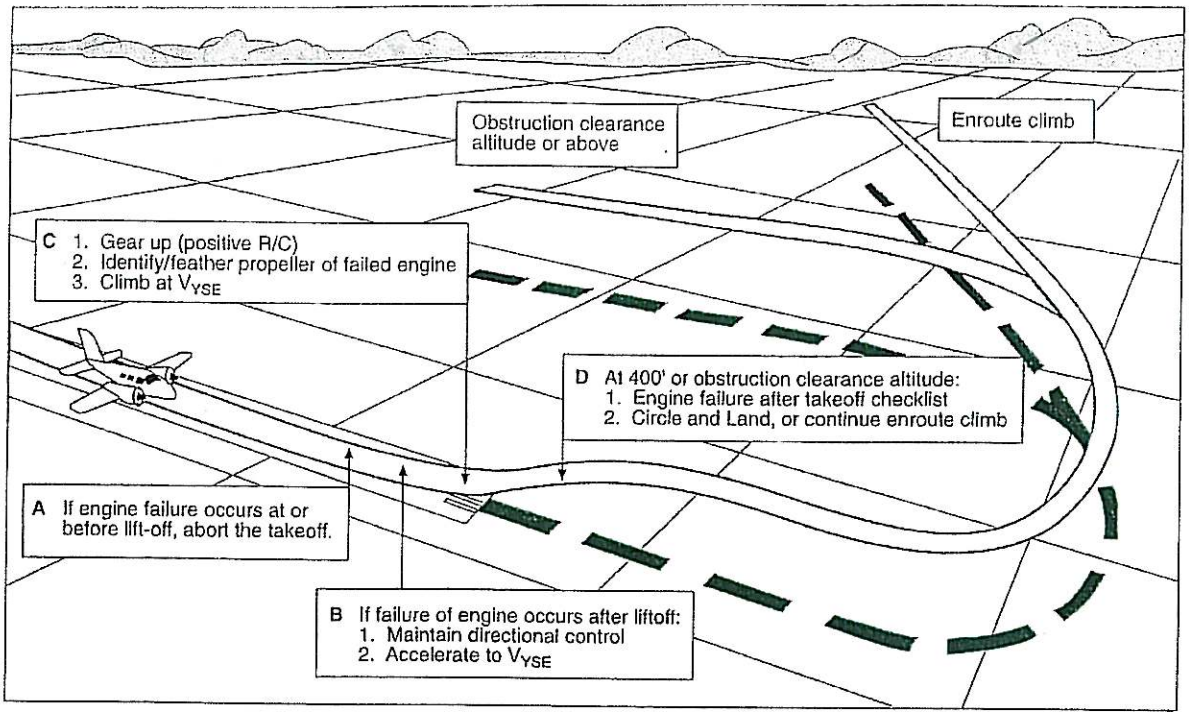
Land ASAP
Read and do SE approach check-list before landing.

SE Approach Check-list:

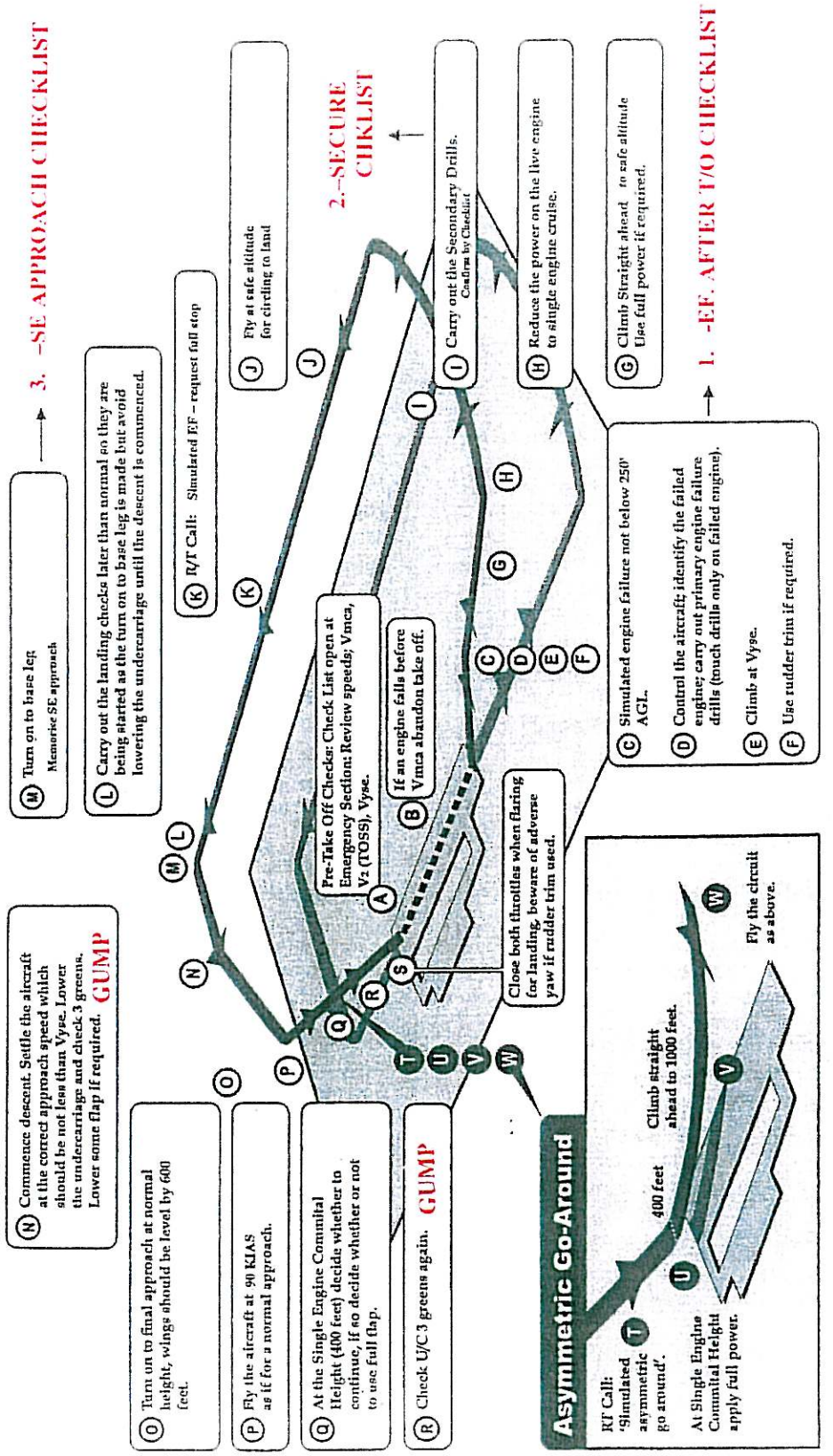
Fuel:	Fullest
Fuel Pump:	ON
Carb heat	As required
Mix	Best power
Prop	Forward
Speed	90 KIAS
Within gliding distance:	Gear down
When landing assured:	Flaps down

Set flaps as required to keep speed / descent rate within limits

8.3 ENGINE FAILIURES AFTER T/O – ILLUSTRATED



8.4 THE ASYMMERTIC CIRCUIT AND GO-AROUND – ILLUSTRATED IN DETAIL



The Asymmetric Circuit and Asymmetric Go Around

8.5 ENGINE FAILIURE IN FLIGHT AND ABOVE 2000FT. (CRUISE)

Throttles:	Forward as required to maintain altitude and speed above 85 (Not max power if not necessary)
Identify:	Dead foot – dead engine
Verify:	Retard throttle – dead engine

Dead Engine :

Troubleshoot / Restart:

Fuel pressure:	Check fuel pump on	R. fuel pump /R. fuel selector on
Temp / press:	Within limits	
Magnetos L/R	Check ON	Magnetos Right E. on
Mixture:	Adjust until fire	Right mixture adjust
If no start:	Secure check-list.	

Secure dead engine:

Dead engine	Identify	Right engine dead
Throttle dead engine	Close	Right throttle close
Propeller dead engine	Feather	Right propeller feather
Mixture dead engine	ICO	Right mixture ICO
Cowl flaps dead engine:	Close	Right cowl-flap Close
Magnetos dead engine	Off	Magnetos Right E off
Alternator dead engine:	Off	Alternator Right E. off
Fuel selector dead engine:	Off	Right fuel selector off
Fuel pump dead engine:	Off	Right fuel pump off

Live Engine:

Throttle, mixt:	As required	Left throttle-left mixture as req.
Fuel selector	Balance if needed	
Aux Fuel pump:	ON	Left fuel pump on
Cowl-flap:	OPEN	Left cowl-flap open
Trim:	**Bank 5°** live engine	Bank 5 ° twrds left engine
Electric load:	Check/reduce	

Land ASAP

Read and do SE approach check-list before landing.

SE Approach Check-list:

Fuel:	Fullest
Fuel Pump:	ON
Carb heat	As required
Mix	Best power
Prop	Forward
Speed	90 KIAS
Within gliding dist:	Gear down
When landing assured:	Flaps down

Set flaps as required to keep speed / descent rate within limits

8.6 ENGINE FAILIURE BEFORE IAF OUTBOUND – GEAR AND FLAP IS UP

Throttles:	Forward as required to maintain altitude and speed above 85
Identify:	Dead foot – dead engine
Verify:	Retard throttle – dead engine

If time permit: Do Troubleshoot / restart checklist. – If NOT –Go to SECURE check-list!

Dead Engine :

Troubleshoot / Restart:

Fuel pressure:	Check fuel pump on	R. fuel pump /R. fuel selector on
Temp / press:	Within limits	
Magnetos L/R	Check ON	Magnetos Right E. on
Mixture:	Adjust until fire	Right mixture adjust
If no start:	Secure:	

Secure dead engine:

Dead engine	Identify	Right engine dead
Throttle dead engine	Close	Right throttle close
Propeller dead engine	Feather	Right propeller feather
Mixture dead engine	ICO	Right mixture ICO
Cowl flaps dead engine:	Close	Right cowl-flap Close
Magnetos dead engine	Off	Magnetos Right E off
Alternator dead engine:	Off	Alternator Right E. off
Fuel selector dead engine:	Off	Right fuel selector off
Fuel pump dead engine:	Off	Right fuel pump off

Live Engine:

Throttle, mixt:	As required	Left throttle-left mixture as req.
Fuel selector	Balance if needed	
Aux Fuel pump:	ON	Left fuel pump on
Cowl-flap:	OPEN	Left cowl-flap open
Trim:	**Bank 5°** live engine	Bank 5 ° twrds left engine
Electric load:	Check/reduce	

Land ASAP

Read and do SE approach check-list before landing.

SE Approach Check-list:

Fuel:	Fullest
Fuel Pump:	ON
Carb heat	As required
Mix	Best power
Prop	Forward
Speed	90 KIAS
Within gliding dist:	Gear down
When landing assured:	Flaps down

Set flaps as required to keep speed / descent rate within limits

8.6A) If it will be circling – Gear & Flap up (If set out)

Throttle live engine:	As required to fly the procedure
When at base leg/final –	
Do SE approach check-list:	
Fuel:	Fullest
Fuel Pump:	ON
Carb heat	As required
Mix	Best power
Prop	Forward
Speed	90 KIAS
Within gliding dist:	Gear down
When landing assured:	Flaps down

8.6B) If Straight in approach:

Throttle live engine:	As required to fly the procedure
When starting final approach –	
Do SE approach check-list:	
Fuel:	Fullest
Fuel Pump:	ON
Carb heat	As required
Mix	Best power
Prop	Forward
Speed	90 KIAS
Within gliding dist:	Gear down
When landing assured:	Flaps down

Set flaps as required to keep speed / descent rate within limits

8.7 ENGINE FAILIURE AFTER IAF OUTBOUND – GEAR AND FLAP STAYS

Throttles:	Forward as required to maintain altitude and speed 90 KIAS
Identify:	Dead foot – dead engine
Verify:	Retard throttle – dead engine

Secure dead engine:

Dead engine	Identify	Right engine dead
Throttle dead engine	Close	Right throttle close
Propeller dead engine	Feather	Right propeller feather
Mixture dead engine	ICO	Right mixture ICO
Cowl flaps dead engine:	Close	Right cowl-flap Close
Magnetos dead engine	Off	Magnetos Right E off
Alternator dead engine:	Off	Alternator Right E. off
Fuel selector dead engine:	Off	Right fuel selector off
Fuel pump dead engine:	Off	Right fuel pump off

Live Engine:

Throttle, mixt:	As required	Left throttle-left mixture as req.
Fuel selector	Balance if needed	
Aux Fuel pump:	ON	Left fuel pump on
Cowl-flap:	OPEN	Left cowl-flap open
Trim:	**Bank 5°** live engine	Bank 5 ° twrds left engine
Electric load:	Check/reduce	

Land ASAP

Read and do SE approach check-list before landing.

SE Approach Check-list:

Fuel:	Fullest
Fuel Pump:	ON
Carb heat	As required
Mix	Best power
Prop	Forward
Speed	90 KIAS
Within gliding dist:	Gear down
When landing assured:	Flaps down

Set flaps as required to keep speed / descent rate within limits

8.7A) If it will be circling – Gear & Flap up (If set out)

Throttle live engine: As required to fly the procedure
When at base leg/final –

SE Approach Check-list:

Fuel:	Fullest
Fuel Pump:	ON
Carb heat	As required
Mix	Best power
Prop	Forward
Speed	90 KIAS
Within gliding dist:	Gear down
When landing assured:	Flaps down

Set flaps as required to keep speed / descent rate within limits

8.7B) If straight in approach – Gear & Flap stays:

Throttle live engine: As required to fly the procedure
When starting final approach – Do SE App checklist

SE Approach Check-list:

Fuel:	Fullest
Fuel Pump:	ON
Carb heat	As required
Mix	Best power
Prop	Forward
Speed	90 KIAS
Within gliding dist:	Gear down
When landing assured:	Flaps down

Set flaps as required to keep speed / descent rate within limits

8.8 SE GO-AROUND (OR MISSED APPROACH)

Mixture live engine:	Forward, lean for best power
Prop live engine:	Forward
Throttle live engine:	Forward
Carb heat:	Off
Flaps:	Up
Gear:	Up
Cowl flap	Open
Speed	Blue line

8.9 ENGINE FAILIURE DURING MISSED APPROACH

As for Engine failure after ≥75 KIAS

8.10 ENGINE FIRE

		Call outs:
Fuel selector aff. Engine:	Off	Right fuel selector off
Boost fuel pump aff. Engine	Off	Right fuel pump off

After fuel is off – follow Secure Check-list for Engine in Fire:

Secure dead engine:

Dead engine	Identify	Right engine dead
Throttle dead engine	Close	Right throttle close
Propeller dead engine	Feather	Right propeller feather
Mixture dead engine	ICO	Right mixture ICO
Cowl flaps dead engine:	Close	Right cowl-flap Close
Magnetos dead engine	Off	Magnetos Right E off
Alternator dead engine:	Off	Alternator Right E. off
Fuel selector dead engine:	Off	Right fuel selector off
Fuel pump dead engine:	Off	Right fuel pump off

Navigation & strobe lights Off

Live Engine:

Throttle, mixt:	As required	Left throttle-left mixture as req.
Cowl-flap:	OPEN	Left cowl-flap open
Cabin heat dead engine	COOL	
Electric load:	Check/reduce	

Land ASAP

Read and do SE approach check-list before landing.

SE Approach Check-list:

Fuel:	Fullest
Fuel Pump:	ON
Carb heat	As required
Mix	Best power
Prop	Forward
Speed	90 KIAS
Within gliding dist:	Gear down
When landing assured:	Flaps down

ENCLOSURE 1: TEMPERATURE CORRECTIONS

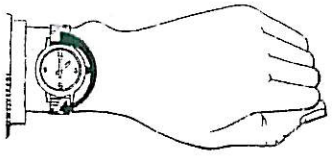
When temperature is below standard, always do corrections as in the table below.
Ref. AIC B 84-97 (ENCLOSURE 1)
Temperatures lower than ISA will cause an altimeter to indicate an altitude higher than the actual altitude.
The responsibility for issuing altitude correction cards for the purpose of compensating for this error rests with the operator.
It should be observed that altitudes (reference datum QNH) assigned to aircraft by ATC, are not temperature compensated, excemptions are when ATC are doing radar vectoring and deviations from ATS routes. There are no radar vectoring below MSA.
An aircraft being cleared by ATC to an altitude found unacceptable by the pilot in command due to low temperature, is expected to request a higher altitude. If such request is not received, ATC will consider clearance to be accepted and that it will be complied with.
When converting MSA, crossover altitudes and minima depending on low temeperatures at a specific airport, use the table below: Ref. also enclosure 14 (AIC 84/97)

Airport Temp C	Height (feet) *above* airport													
	200	300	400	500	600	700	800	900	1000	1500	2000	3000	4000	5000
0	0	20	20	20	20	40	40	40	40	60	80	140	180	220
-10	20	20	40	40	40	60	80	80	80	120	160	260	340	420
-20	20	40	40	60	80	80	100	120	120	180	240	380	500	620
-30	40	40	60	80	100	120	140	140	160	240	320	500	660	820
-40	40	60	80	100	120	140	160	180	200	300	400	620	820	1020
-50	40	80	100	120	140	180	200	220	240	360	480	740	980	1220

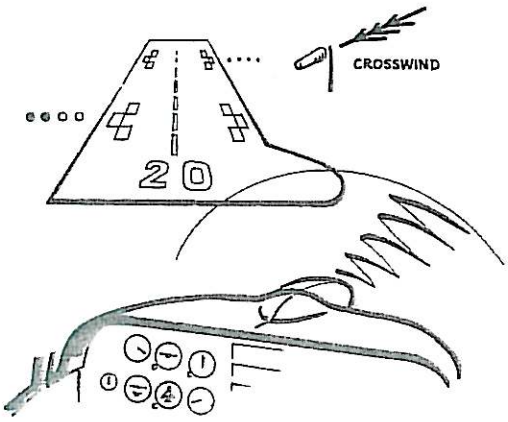
Note: The table is based on aerodrome elevation of 2000ft.

ENCLOSURE 2: X-WIND CORRECTIONS

Simply take the number of degrees off the rwy and match it to the minutes on your watch. 15 min now becomes ¼ of the watch face, 30 min = ½, 45 min = ¾ and 60 min = 1/1.
Example: Wind is 240/20Kts on rwy 20 witch means that you have 40° crosswind 240-200).
40° represents 40/60 (=2/3) of your watch face. 20Kts multiplied with 2/3 gives ~ 14 kts.
The crosswind component is therefore 14 kts..



Wind angle	Portion of max drift
0	0
10	1/6
15	1/4
20	1/3
30	1/2
40	2/3
45	3/4
50	5/6
60	1 ie MAXIMUM DRIFT
>60	1 ie MAXIMUM DRIFT



ENCLOSURE 3: QDM/QDR TRACKING

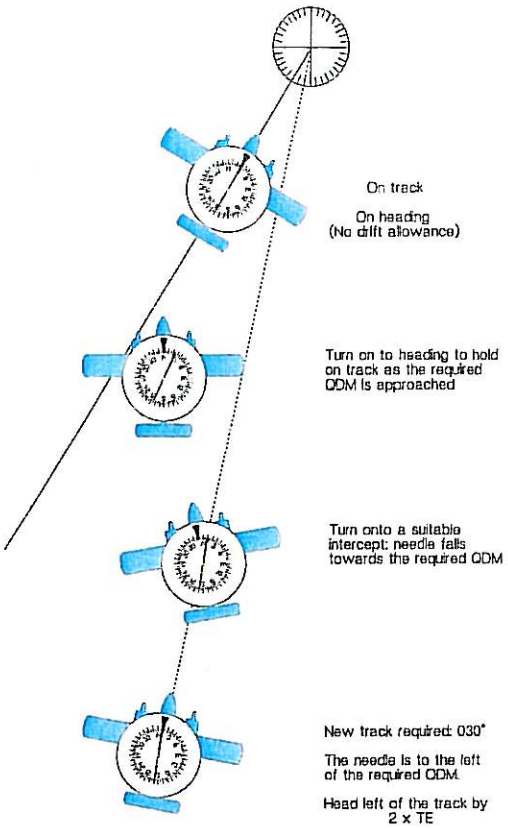


Fig 15 Intercepting a Specific Track (Still Air)

Intercepting a New Track from a Station (Fig 17)

5.1 The previously described principles are unchanged when considering the intercept of a track away from a beacon. Having observed the position of the head of the needle relative to the required track then make the aircraft heading lie on the same side of the track. Once again, when steady on the intercept heading, check that the needle is moving towards the required QDM. Then, as before, anticipate the arrival on track by turning onto a heading calculated to maintain track as the correct QDM is approached.

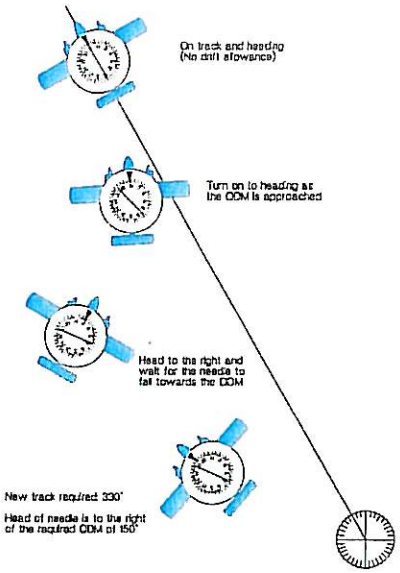
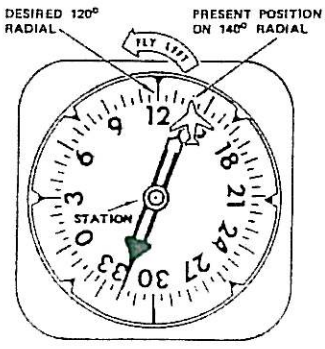
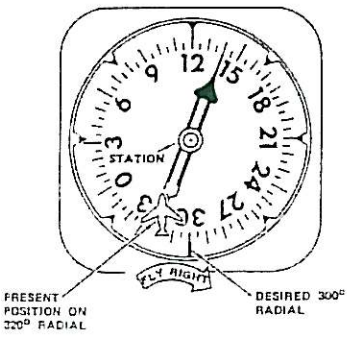


Fig 17 Intercepting a New Track from a Station (Still Air)





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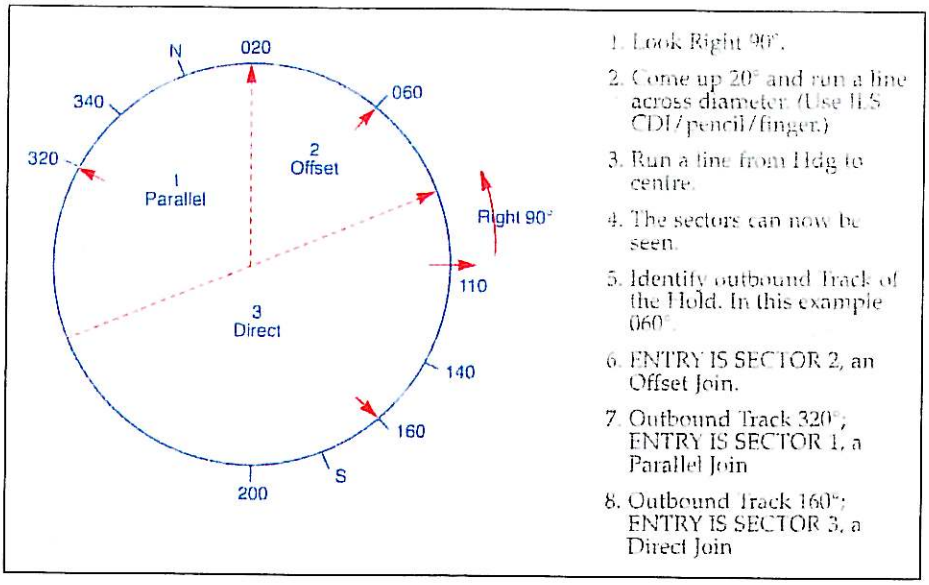
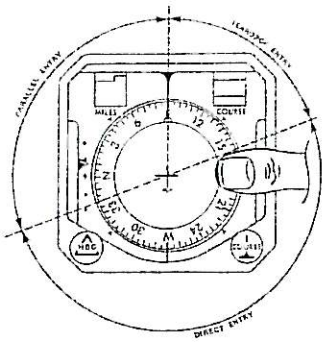
ENCLOSURE 4: HOLDING

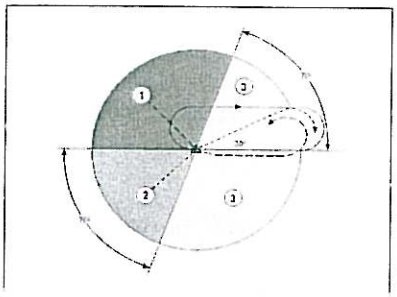
HOW TO DECIDE WHICH ENTRY FOR THE HOLDING:



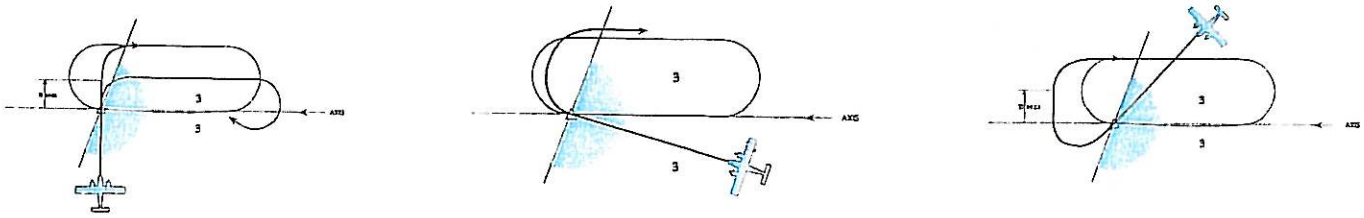
1. Look Right 90°.
2. Come up 20° and run a line across diameter. (Use H.S CDI / pencil / finger.)
3. Run a line from Hdg to centre.
4. The sectors can now be seen.
5. Identify outbound Track of the Hold. In this example 060°.
6. ENTRY IS SECTOR 2, an Offset Join.
7. Outbound Track 320°; ENTRY IS SECTOR 1, a Parallel Join
8. Outbound Track 160°; ENTRY IS SECTOR 3, a Direct Join



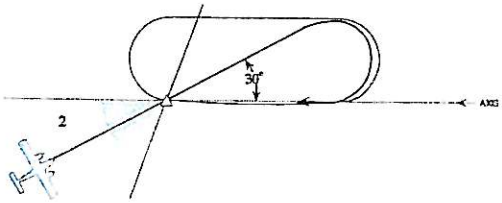
ENTRY PROCEDURES:



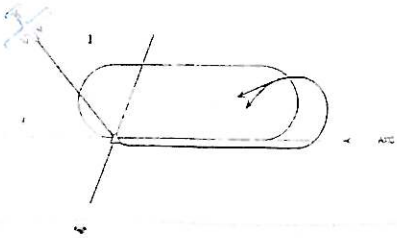
DIRECT ENTRY: **(Sector 3)**



OFFSET ENTRY: **(Sector 2)**



PARALELL ENTRY: **(Sector 1)**



Exercise: 19D

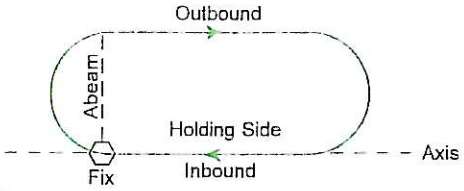
HOLDING PROCEDURES - ENTRY

Aim: To teach the layout of a hold and to fly the standard entry procedures

Airmanship: STIF checks, Radio calls, Initial approach checks, Maximum drift, Clock code

Exercise:

1. Standard Holding Pattern

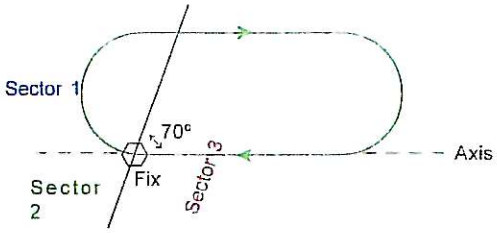


Timing
Outbound leg 1 minute still air

Speed
Maximum 170 kts for holds limited to Cat A & B

AOB
25° or rate 1 whichever requires less AOB

2. Entry Sectors



Sector entry determined by aircraft heading
Within 5° sector boundary use either entry procedure

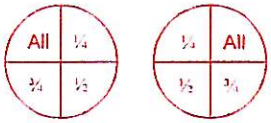
Sector 1 (Parallel)
Over fix turn to fly parallel to axis for maximum 1 minute still air. Then return to fix or intercept inbound

Sector 2 (Offset/Teardrop)
Over fix turn to track 30° from axis for max 1 minute still air. Then turn to intercept inbound

Sector 3 (Direct)
Over fix turn directly follow holding pattern. If within 30° boundary hold wings level for 15 sec after crossing fix

3. Maximum Drift — Maximum drift = 60 x w/v / TAS

4. Clock Code



Exercise: 19D

HOLDING PROCEDURES - FLYING THE HOLD (1)

Aim: To fly the standard holding pattern

Airmanship: STIF checks, Radio calls, Endurance, Maximum drift, Clock code

Exercise:

1. Revision
   Enter a holding pattern

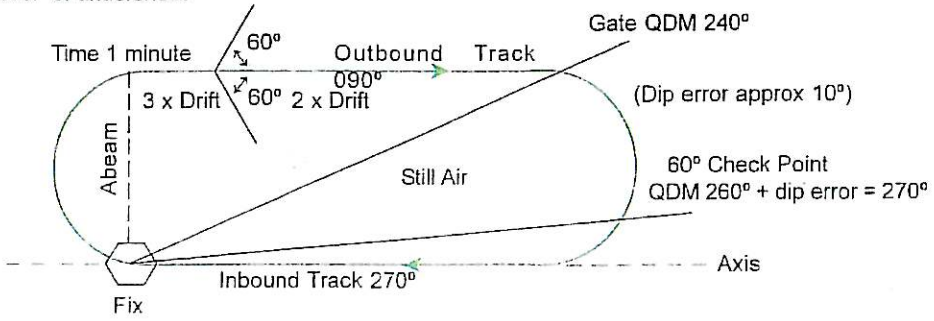
2. Timing
   Wings level or abeam fix whichever is later
   1 minute outbound ± 1 sec per knot head/tail component

3. Gate
   30° off axis QDM ± drift (maximum 10°)
   More, too wide, undershoot inbound
   Less, too close, overshoot inbound
   Arrive at gate before time - track gate

4. Drift

Inbound	Outbound
1 x drift	3 x drift
	(2 x drift if headwind within 60° of outbound)
	or
	(2 x drift if outbound heading within 30° of headwind)

5. 60° Check Point
   10° before the axis + dip error
   Confirms over- or undershoot



Exercise: 19D

HOLDING PROCEDURES - FLYING THE HOLD (2)

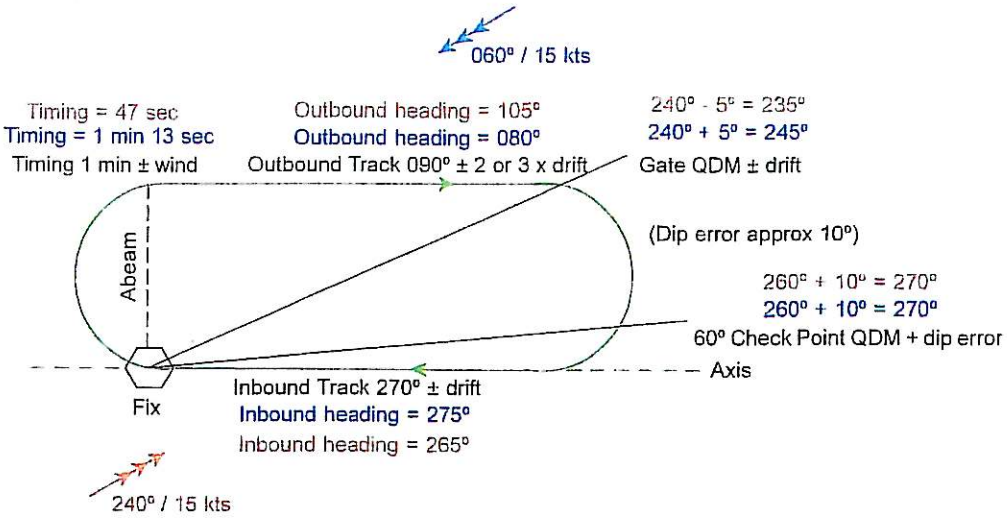
Aim: To fly the standard holding pattern taking account of the effect of wind

Airmanship: STIF checks, Radio calls, Endurance, Maximum drift, Clock code

Exercise:

1. Calculations
   TAS 100 kts, Drift = 5°, Headwind = 13 kts

2. Calculations
   TAS 100 kts, Drift = 5°, Tailwind = 13 kts



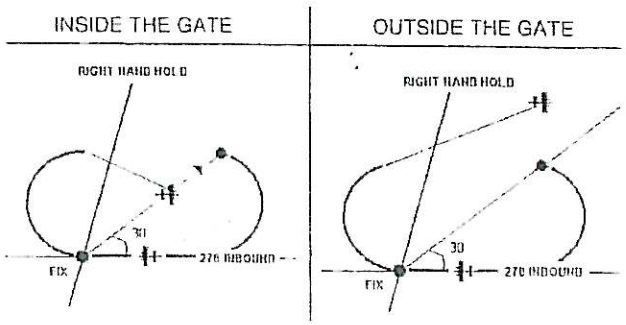
Power settings for holding are described in POH. There should be **no flap** in the holding for this setting.

According to PANS OPS, max speed in holding is 170 KIAS.

Note the differences from holding and racetrack at RBU ! Note also differences in outbound courses (123 and 124)

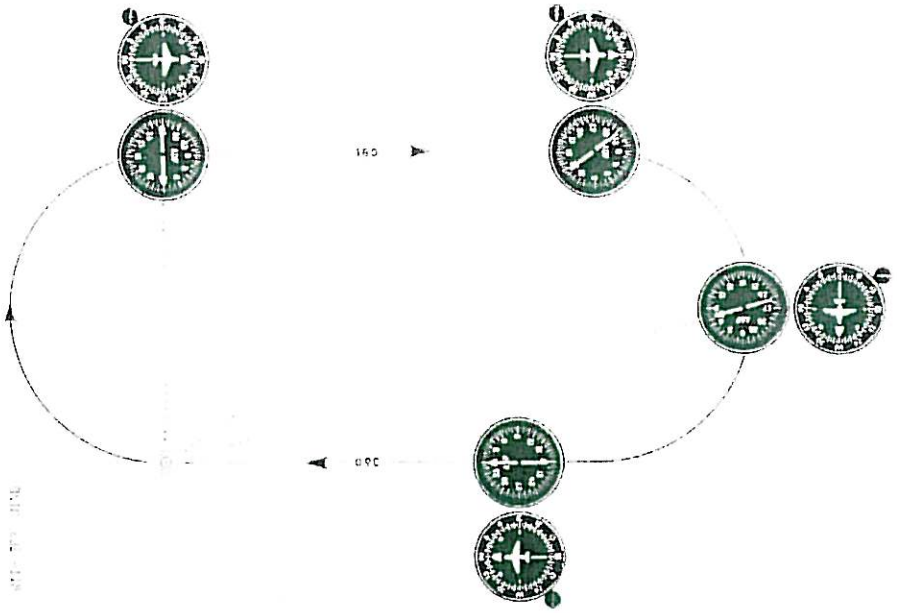
Advice 1: When doing holdings it will be more easy to establish on the RBU inbound track (304) if you hold wings level at the 90 degrees position.

Advice 2: Be aware of the ADF 10 degrees DIP towards the lowest wing.



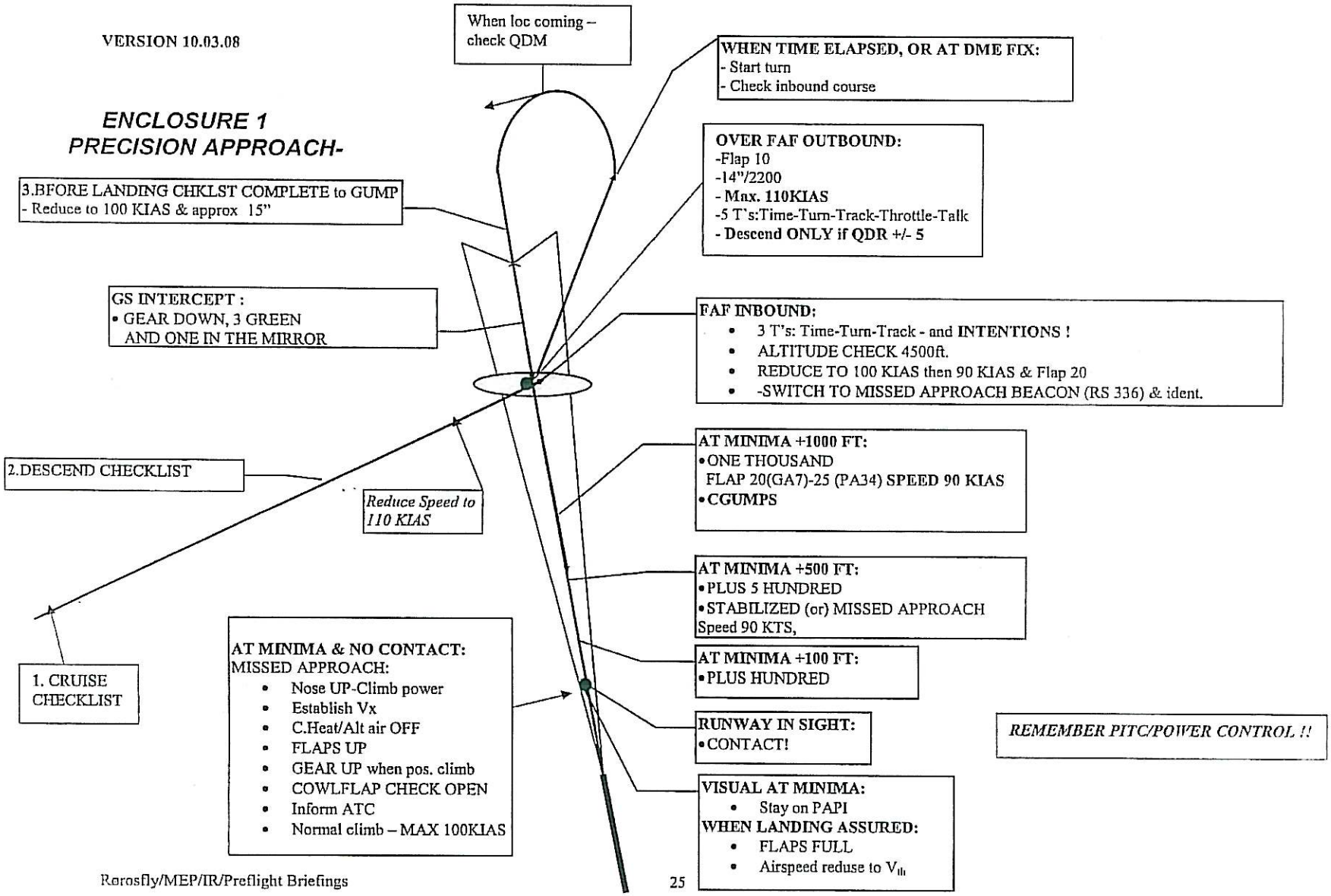
Advice 3: When flying holding outbound – do not cross RBU QDR 093 before time is out (1 min in zero wind conditions)).

If that happens, follow track QDR 093 the remaining time outbound as in the illustration above.

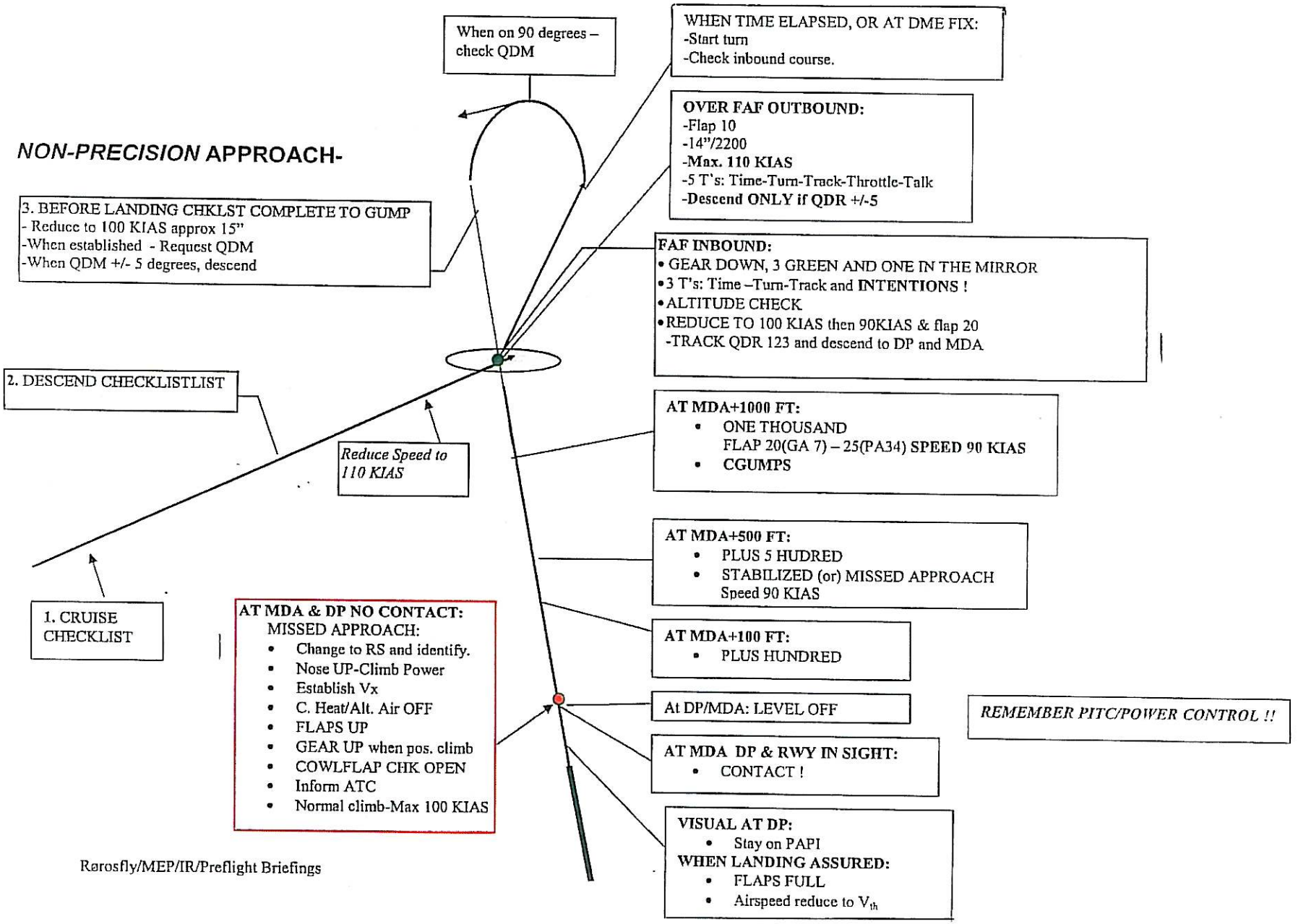


VERSION 10.03.08

ENCLOSURE 1
PRECISION APPROACH-



NON-PRECISION APPROACH-



ENCLOSURE 7 CALLOUTS

The following callouts shall be used on all VFR/IFR flights. They have been divided into four general sections for clarity, although most of them span into several or all sections of flight.

CALLOUT:	CONTEXT:
1. GROUND & DEPARTURE:	
"Starting engines, left and right side clear"	Stated when ready to start engines, and propeller area is checked for objects and persons.
"Clear left" & "Clear right"	Stated when starting taxi, and during taxi if applicable. Also stated during line-up.
"Your controls"	Initiates a control-handover to second pilot. Hand-over is not completed before F. instructor "My controls"
"My controls"	Completed a control-handover from one pilot to another.
"Power set, instruments green"	Stated when takeoff-power is set, and engine instruments are all checked to be within green arc.
"Rotate"	Stated when rotation speed is reached.
"Speed check, positive ROC, gear up"	Stated when gear is selected up, and Speed has been verified below maximum retraction speed.
"Speed check, flaps up"	Stated when flaps are retracted, and speed is verified to be above minimum flap retraction speed.
"Climb power"	Stated at latest at 500ft. AGL when reducing to climb power.
2. CLIMB & DESCEND:	
"1009 set left reading .....feet"	Stated every time QNH is set/changed, or checklists calls for a check during QNH operations. Answered by F. instructor "1009 right reading .....feet"
"1013 set left reading FL....."	Stated when setting 1013 passing TA, and whenever checklists call for a check during FL operations. Answered by F. instructor "1013 set right reading FL....."
"Prelevel...feet/FL..."	Stated 1000ft. before reaching level-off altitude. Altitude/Fl. Stated in callout is altitude/FL climbing to.
3. AIRWORK:	
"Speed low"	Stated when ever airspeed goes below Vmca + 10 (GA 7 71 KIAS)
"Stall warning"	Stated whenever stall warning horn is activated
"Stall"	Stated when the aircraft enters aerodynamic buffet.
4. APPROACH & LANDING:	
"Speed check, flaps ...set"|	Stated when flaps are selected to a certain position, and verifies that the pilot has checked the maximum extension speed for the relevant flap setting.
"Localizer alive"	Stated when the localizer CDI starts moving. (2.5° off inbound track on a localizer)
"Radial alive"	Stated whenthe radial CDI starts moving, (10° off inbound radial.)
"Glideslope alive"	Stated when the glideslope indicator starts moving.
"Speed check, gear down, completing checklist"	Stated when gear is selected down, and speed has been verified to be below maximum gear extension speed. The callout also triggers the pilot to complete the approach checklist.
"Three green and one in the mirror"	Stated when visually the gear is confirmed down and locked
"Gear Stays"	When E. Failure if you prefer to keep gear down
"Flap Stays"	When E. Failure and if you prefer to keep flap down
"OM...feet" (Or FAF ....feet if no OM)	Stated as an altitude check at outer marker (FAF) to verify correct GP on a precision approach. Indicated altitude is checked against stated IAL altitude at OM (or FAF)
"Plus hundred"	Stated 100ft. before DA/MDH
"Minima, Contact .....o`clock"	Stated if visual reference to either lights or runway is made at MA/MDA.
"Decision point, Contact.....o`clock"	Stated if visual reference to either lights or runway is made at DP on a non-precision approach.
"Minima, missed approach"	Stated if visual reference to lights or runway is not made at minima during a precision approach.
"Decision point, missed approach"	Stated if visual reference to lights or runway is not made at decision point during a non-precision approach.

ENCLOSURE 8 AIRCRAFT INFO

SPEEDS AND POWER SETTINGS FOR GA 7:

PHASE	*SPEED*	*POWER*	*CONFIG*	*REMARKS*
CLIMB	95/100	25/25/RICH		Full power to 500ft. AGL CHT≤400°F
CRUISE	140	18/22/EGT-100		Chk. CHT
DESCEND	100	16/22/Mix as req		500ft./min CHT≤250°F
VFR:				
PATTERN	K-point 100 Base 90 Final 85 Vth (Calc)	17-18/22/+125 EGT	K-point Flap 10 Gear down Base 20 Final 30	At K-point Reduce pwr to 15"
IFR:				
HOLDING	110	17-18/20/EGT-100	CLEAN	Pwr. as req. to maintain speed
RACETRACK	110	20/20/EGT-100	CLEAN	Pwr. as. req. to maintain speed
INTERMED SEGMENT	110	18/22/ Stby	Flap 10°	Pwr. as req. to maintain speed
FINAL APPROACH	100 - red to 90 at 1000ft AGL	17/23/Enrich	Flap 10/20	Flap 20 when 90 KIAS
CIRCLING	100	18/22/Rich	CLEAN	Pwr. as req. to maintain speed.
MANEUVRES:				
STEEP TURNS	Va	18/23/Rich		Pwr. as req.
SLOW FLIGHT	75/70	18/25/Rich	Clean/Flap 30	Pwr. as req.
STALLS:				
A)PWR ON	Climb 95	20/25/Rich	Clean	Set pwr. before 75 kts.
B)PWR OFF APP OR LND CONFIG		15/20/Rich	As req.	Prop/Mix fwd. when app stall
SINGLE ENGINE:				
CLIMB	Vxse or Vyse	25/25/Rich		
CRUISE	110	23/23/Rich		Pwr. as req.
DESCEND	110	18/25/Enrich		Mix as req.
VFR SE:				
SE. PATTERN	K-point 100 Base 90 Final 90	20/25/Rich		Within gliding dist: Gear down. When landing assured: Flap down as req.
IFR SE:				
HOLDING	110	22/25/Rich	Clean	Pwr as req.
INTERMED	110	22/25/Rich	Clean	Pwr as req.
FINAL PREC. APPROACH	90	18/25/Enrich	Flap 10 Gear dwn	Complete checklist when Gear dwn
FINAL NON-P APPROACH	90	18/25/Enrich	Flap up or as req. Gear up or as req.	Complete checklist when Gear dwn

Zero thrust = 12"/2000RPM

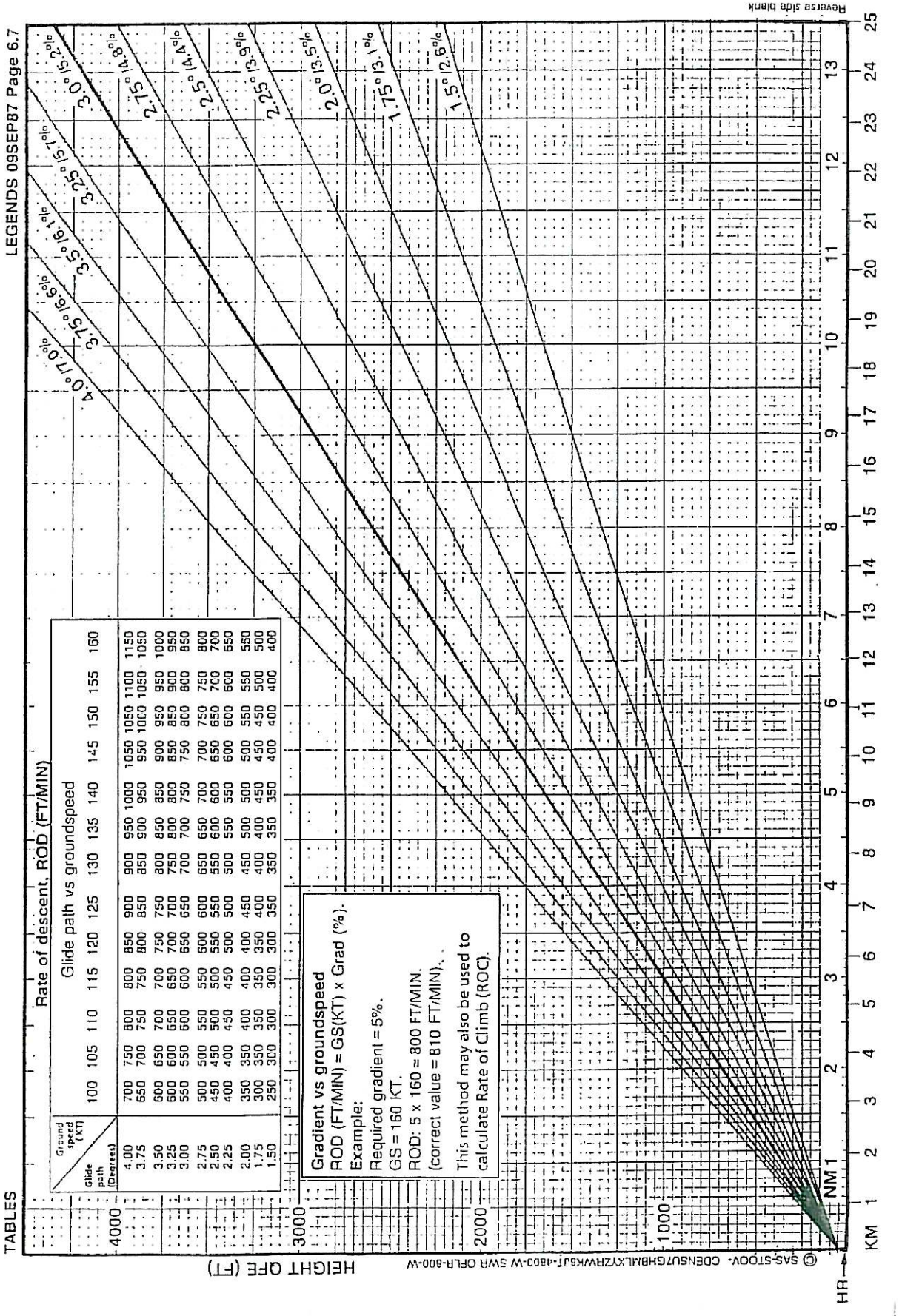
ENCLOSURE 9 TEST TOLERANCES

Tolerance figures are to be used as the basis for assessment on the perfect day in an easily handled aeroplane/helicopter. Since this combination is rare, the examiner shall make allowance for turbulent conditions and the handling qualities and performance of the type of aeroplane/helicopter used.

Applicants may be advised that, during the flight, they should concern themselves only with flying and operating the aeroplane/helicopter to the best of their ability and not attempt to remain within the tolerances to the detriment of smooth handling.

PROFILE	PPL Skill Test	CPL Skill Test	IR, ATPL and all type or class skill test and proficiency checks
Altitude or Height (in feet)			
Normal Flight	± 150	± 100	± 100
With simulated engine failure	± 200	± 150	± 100
Limited or partial panel		± 200	± 200
Starting go-around at decision alt/ht			+ 50 / - 0 *(one engine inoperative + 100 / - 0)*
Minimum descent altitude / height			+ 50 / - 0 *(one engine inoperative +100/ - 0)*
Circling minima			*+ 100 / - 0*
Tracking			
On radio aids	± 10°	± 5°	± 5°
Precision approach			half scale deflection azimuth and glidepath
DME arcing			*± 1nm*
Heading			
All engines operating	± 10°	± 10°	± 5°
With simulated engine failure	± 15°	± 15°	± 10°
Limited or Partial panel		*± 15°*	*± 15°*
Speeds (in knots)			
Take-off / Vr	*+ 10 / - 0*	+ 5 / - 0	+ 5 / - 0
Climb and approach	± 15	± 10	± 5
Vat / Vref	+ 15 / - 5	+ 5 / - 0	+ 5 / - 0
Cruise	± 15	± 10	± 5
Limited or Partial Panel		± 10	± 10
With simulated engine failure	+ 15 / - 5	+ 10 / - 5	+ 10 / - 5
Blue Line speed or Vyse / V_2	*± 5*	± 5	± 5
Maximum airspeed error in any other regime	± 15	± 10	± 10

ENCLOSURE 10 RATE OF DESCEND PROFILE



ENCLOSURE 11 NØDVENDIGE VISUELLE REFERANSER

Tlf. : 23 31 76 00
Telefaks : 23 31 76 95
Telex : 77194 ENCA N
AFTN : ENCAYAYA

NORGE

LUFTFARTSTILSYNET

POSTBOKS 8050 DEP
0031 OSLO

A I C - N
58/00
01 DES

N 58 UTDYPNING AV UTTRYKKET "NØDVENDIGE VISUELLE REFERANSER" I BSL D, SAMT "VISUAL APPROACH" (JAR-OPS 1.435(8))

Annuller AIC B 33/99

I BSL D, under definisjoner side 0-9, vedrørende beslutningshøyde og beslutningspunkt, samt i BSL D 1-11, pkt. 3.3 er uttrykket "nødvendige visuelle referanser" benyttet. BSL JAR-OPS 1 konkretiserer *hva* fartøysjefen må ha i sikte for å kunne fortsette innflygingen. Luftfartstilsynet anser at det er behov for en presisering, og vil derfor revidere BSL D 1-11, Forskrift om værminima for fly" i samsvar med BSL JAR-OPS 1 Subpart E. Presiseringen vil således bli gjort generelt gjeldende for *all* IFR flyging, ikke bare de som omfattes av BSL JAR-OPS 1. Denne forskriftsendringen inklusive en høringsprosess vil ta noe tid. Følgelig innføres etterfølgende punkter som utdypning/klargjøring av bestemmelsestekstene fra nåværende tidspunkt.

1. NØDVENDIGE VISUELLE REFERANSER - BSL D 1-11 PKT. 3.3

Som utdypning av "nødvendige visuelle referanser" BSL D 1-11 pkt 3.3, i 2. avsnitt , siste setning, gjelder følgende tillegg (første del av setningen er gjentatt for å vise helheten samt å gi nødvendig referanse).

Fra beslutningshøyden (DH) eller beslutningspunktet (DP), kan innflygingen fortsette og landing utføres hvis fartøysjefen *har minst én av følgende, nødvendige visuelle referanser til landingsbanen tydelig i sikte og identifiserbar*:

a) Deler av innflygingslysene
b) Baneterskelen
c) Terskelmerking
d) Terskellysene
e) Terskelidentifikasjonslysene
f) Det visuelle glidebanesystem
g) Landingssonemerking
h) Landingssonelysene
i) Banekantlys
j) For ikke-presisjonsinnflyging: Annen visuell referanse godkjent av Luftfartstilsynet.

Anm. 1: Dersom det på enkelte flyplasser er behov for å benytte punkt j) ovenfor, skal godkjennelse foreligge i hvert enkelt tilfelle. Slik godkjennelse kan kun påregnes når det på angjeldende flyplass forefinnes godkjente lyssystemer, eks. ledelys (lead in lights) eller sirklingslys.

Anm. 2: Med "nødvendige visuelle referanser" i forbindelse med beslutningshøyde og beslutningspunkt, forstår at flygeren i tilstrekkelig lang tid har hatt deler av de visuelle hjelpemidler eller av innflygingsområdet i sikte til å kunne foreta en bedømmelse av luftfartøyets posisjon og posisjonsendringer i forhold til den ønskede flygebane.

"VISUELL APPROACH" - BSL D 1-11 pkt. 3.5 a), samt BSL JAR-OPS 1.435(8)

Som anmerkning til BSL D 1-11 pkt. 3.5 a), og som utdypning av BSL JAR-OPS 1.435(8) "visual approach", gjøres følgende tekst gjeldende:
Før en visuell innflyging påbegynnes må fartøysjefen ha flyplassen med visuelle hjelpemidler klart i sikte. Likeledes må terreng og alle hindringer i planlagt innflygingssektor være klart synlige. Det må ikke herske tvil om at det kan opprettholdes visuelle referanser til terrenget, hindringer og flyplassområdet under hele innflygingen, slik at luftfartøyets posisjon og høyde i forhold til terrenget og flyplassen kan verifiseres av fartøysjefen til enhver tid.

Ovennevnte forhold skal innarbeides i Operation Manuals (OM)/driftshåndbok hos operatører som er godkjent for IFR operasjon, samt skal overholdes av fartøysjefen som flyr privat IFR.

- Slutt -

ENCLOSURE 12 APPROACH BRIEFINGS

ILS via racetrack

Parts	Briefing
Initiation	• ILS DME 32 at ENRO via racetrack.
	• *Plate number:* • *Date:*
Main part	6. MSA 6300'. 7. Passing RBU turn to 124 *(Racetrack can be entered via all sectors).* 8. Descend 5300'. 9. At 13 DME right turn to intercept localizer. 10. Glide slope intercept. 11. Check glide slope 4500 feet passing RBU inbound. 12. DA 2534' + 50' for single pilot operations.
Missed approach	• Climb STRAIGHT AHEAD to 3500', then turn RIGHT onto 038° to intercept and climb on 358° from RS Lctr to 6000'. • State intentions to ATC.
Navaid setup	5. NAV 1, 108.7 tuned. RO identified. Set course. 6. NAV 2, 108.7 tuned. RO identified. Set course. 7. DME, 108.7 tuned. RO identified. 8. ADF, 401 – 336 tuned. RBU/RS identified.
Completion	9. Approach briefing complete.

WHEN THERE IS A NEED FOR TEMPERATURE CORRECTIONS ALWAYS INCLUDE THIS IN YOUR BRIEF.

WHEN THERE IS NO NEED FOR TEMPERATURE CORRECTIONS: END YOUR BRIEF BY CALLING OUT "NO TEMPERATURE CORRECTIONS"

ILS via baseturn

Parts	Briefing
Initiation	• ILS DME 32 at ENRO via baseturn.
	• *Plate number:* • *Date:*
Main part	9. MSA 6300'. 10. Passing RBU QDR 153° *(Baseturn can only be entered from a +/- 30° sector).* 11. Descend 5300'. 12. After 1.5 min, left turn to intercept localizer. 13. Glide slope intercept. 14. Check glide slope 4500 feet passing RBU inbound. 15. DA 2534' + 50' for single pilot operations.
Missed approach	6. Climb STRAIGHT AHEAD to 3500', then turn RIGHT onto 038° to intercept and climb on 358° from RS Lctr to 6000'. 7. State intentions to ATC.
Navaid setup	8. NAV 1, 108.7 tuned. RO identified. Set course. 9. NAV 2, 108.7 tuned. RO identified. Set course. 10. DME, 108.7 tuned. RO identified. 11. ADF, 401 – 336 tuned. RBU/RS identified.
Completion	12. Approach briefing complete.

ILS via racetrack with circling

Parts	Briefing
Initiation	– ILS DME 32 at ENRO via racetrack.
	– *Plate number:* – *Date:*
Main part	– MSA 6300'. – Passing RBU turn to 124 *(Racetrack can be entered via all sectors).* – Descend 5300'. – At 13 DME right turn to intercept localizer. – Glide slope intercept. – Check glide slope 4500 feet passing RBU inbound. – MDA 3090', 1500m visibility. – Circling only on north side of airport.
Missed approach	– Climb STRAIGHT AHEAD to 3500', then turn RIGHT onto 038° to intercept and climb on 358° from RS Lctr to 6000'. – State intentions to ATC. – *In case of go-around during circling, climb to RS. Follow published missed.*
Navaid setup	– NAV 1, 108.7 tuned. RO identified. Set course. – NAV 2, 108.7 tuned. RO identified. Set course. – DME, 108.7 tuned. RO identified. – ADF, 401 – 336 tuned. RBU/RS identified.
Completion	– Approach briefing complete.

ILS via baseturn with circling

Parts	Briefing
Initiation	– ILS DME 32 at ENRO via baseturn.
	– *Plate number:* – *Date:*
Main part	– MSA 6300'. – Passing RBU QDR 153° *(Baseturn can only be entered from a +/- 30° sector).* – Descend 5300'. – After 1.5 min, left turn to intercept localizer. – Glide slope intercept. – Check glide slope 4500 feet passing RBU inbound. – MDA 3090', 1500m visibility. – Circling only on north side of airport.
Missed approach	– Climb STRAIGHT AHEAD to 3500', then turn RIGHT onto 038° to intercept and climb on 358° from RS Lctr to 6000'. – State intentions to ATC. – *In case of go-around during circling, climb to RS. Follow published missed.*
Navaid setup	– NAV 1, 108.7 tuned. RO identified. Set course. – NAV 2, 108.7 tuned. RO identified. Set course. – DME, 108.7 tuned. RO identified. – ADF, 401 – 336 tuned. RBU/RS identified.
Completion	– Approach briefing complete.

NDB via racetrack

Parts	Briefing
Initiation	– NDB 32 at ENRO via racetrack.
	– *Plate number:* – *Date:*
Main part	– MSA 6300'. – Passing RBU turn to 123° *(Racetrack can be entered via all sectors).* – 1 minute outbound, descend to 5300'. – Right turn to intercept 303° QDM RBU. – Descend to 4800'. – Passing RBU, switch beacon, start time. – DP calculated *(Standard day, zero wind = 3.1 DME RO, and 2:36).* – MAP 2.0 DME RO, Time 3:24 in zero wind. – MDA 3200' + 50' for single pilot operations.
Missed approach	– Climb STRAIGHT AHEAD to RS lctr, then turn right and climb on 358° from RS Lctr to 6000'. – State intentions to ATC.
Navaid setup	– DME, 108.7 tuned. RO identified. – ADF, 401 – 336 tuned. RBU/RS identified.
Completion	– Approach briefing complete.

NDB via baseturn

Parts	Briefing
Initiation	– NDB 32 at ENRO via baseturn.
	– *Plate number:* – *Date:*
Main part	– MSA 6300'. – Passing RBU fly QDR 158° for 1 minute. – Descend to 5300'. – Left turn to intercept 303° QDM RBU. – Descend to 4800'. – Passing RBU, switch beacon, start time. – DP calculated *(Standard day, zero wind = 3.1 DME RO, and 2:36).* – MAP 2.0 DME RO, Time 3:24 in zero wind. – MDA 3200' + 50' for single pilot operations.
Missed approach	– Climb STRAIGHT AHEAD to RS lctr, then turn right and climb on 358° from RS Lctr to 6000'. – State intentions to ATC.
Navaid setup	– DME, 108.7 tuned. RO identified. – ADF, 401 – 336 tuned. RBU/RS identified.
Completion	– Approach briefing complete.

NDB via racetrack with circling

Parts	Briefing
Initiation	– NDB 32 at ENRO via racetrack.
	– *Plate number:* – *Date:*
Main part	– MSA 6300'. – Passing RBU turn to 123° *(Racetrack can be entered via all sectors).* – 1 minute outbound, descend to 5300'. – Right turn to intercept 303° QDM RBU. – Descend to 4800'. – Passing RBU, switch beacon, start time. – DP calculated *(Standard day, zero wind = 3.1 DME RO, and 2:36).* – MAP 2.0 DME RO, Time 3:24 in zero wind. – MDA 3200' + 50' for single pilot operations. – MDA when circling 3210', 1500m visibility – Circling only on north side of airport
Missed approach	– Climb STRAIGHT AHEAD to RS lctr, then turn right and climb on 358° from RS Lctr to 6000'. – State intentions to ATC. – *In case of go-around during circling, climb to RS. Follow published missed.*
Navaid setup	– DME, 108.7 tuned. RO identified. – ADF, 401 – 336 tuned. RBU/RS identified.
Completion	– Approach briefing complete.

NDB via baseturn with circling

Parts	Briefing
Initiation	– NDB 32 at ENRO via baseturn.
	– *Plate number:* – *Date:*
Main part	– MSA 6300'. – Passing RBU fly QDR 158° for 1 minute. – Descend to 5300'. – Left turn to intercept 303° QDM RBU. – Descend to 4800'. – Passing RBU, switch beacon, start time. – DP calculated *(Standard day, zero wind = 3.1 DME RO, and 2:36).* – MAP 2.0 DME RO, Time 3:24 in zero wind. – MDA 3200' + 50' for single pilot operations. – MDA when circling 3210', 1500m visibility – Circling only on north side of airport
Missed approach	– Climb STRAIGHT AHEAD to RS lctr, then turn right and climb on 358° from RS Lctr to 6000'. – State intentions to ATC. – *In case of go-around during circling, climb to RS. Follow published missed.*
Navaid setup	– DME, 108.7 tuned. RO identified. – ADF, 401 – 336 tuned. RBU/RS identified.
Completion	– Approach briefing complete.

ENCLOSURE 13 DECISION POINT (DP) FOR NON-PRECICION APPROACH

Example NDB Approach rwy 32:

1. DME distance to DP from RO:

NDB approach for rwy 32 has a MDA of (3200ft+50ft)-2051rwy elevation =1199ft.

Descent gradient is 3.67° which is ~6.4% (Ref. table in enclosure)

From the approach plate: GS 90 kts, descend rate 585ft./min

Speed factor for 90 kts=1.5

From the formula: time=distance/speed: 1199ft/585ft/min=2.04 minutes

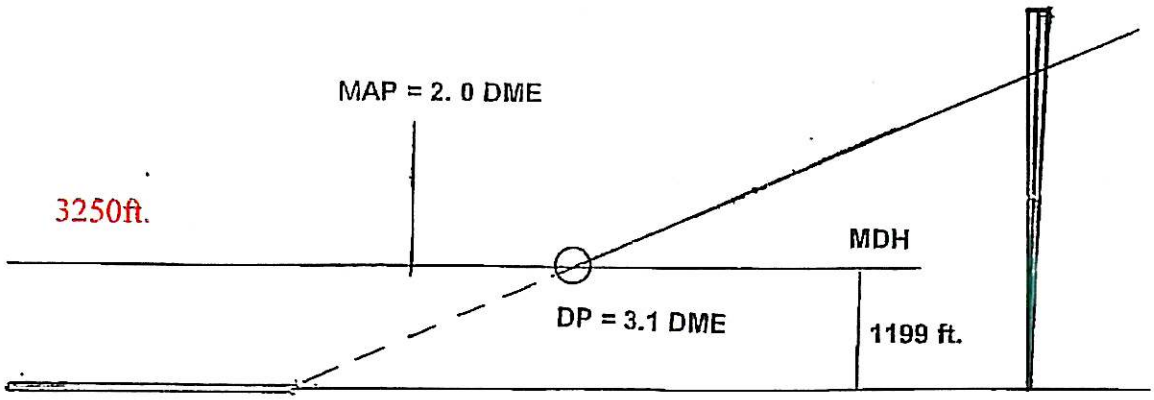
Speed factor for 90 kts=1.5NM/min

From the formula: distance=speed x time: 1.5NM/min x 2.04=3.06 NM~3.1NM - DP=3.1NM from RO

2. Time to DP (From RBU):

(4800ft-3250ft)=1550 ft Descend rate: 585 ft/min. Time=1550ft/585ft/min=2.6 minutes~2:42 minutes

Time from RBU to DP=2:42



NOTE: Without temp. corrections you will reach DP at: (3200 + 50)ft. = 3250.
If temp. is -20°C, the DP will be at: (3250 + 150)ft.=3400 ft. !

$$\frac{\text{MDH}}{\text{ROD}} \text{ X SPEEDFACTOR} = \text{DP}$$

$$\frac{1199\text{ft.}}{585} \text{ X } 1.5 = 3.07 \sim 3.1$$

TIME:
$\text{TIME} = \frac{\text{DISTANCE FROM RBU TO DP}}{\text{GS}}$
Dist.=4.0NM Time=2:42