

AIR AMERICA
OPERATORS MANUAL

Section 9.60E



C-123 K

0032

Effective: 1 May 1969

AIR AMERICA OPERATORS MANUAL

Section: IX

Section 9.60 E

Page: 1

PILOT FLIGHT TRAINING MANEUVERS

INTRODUCTION

General

This section of the Company Operators Manual outlines the flight training requirements, procedures and acceptable performance in the C-123K airplane. It will also be used as a grading standard during all pilot training and proficiency flight checks.

The flight maneuvers and procedures outlined herein reflect the performance data and recommended procedures of USAF Technical Order IC-123K-1. Hereafter, any reference to the flight manual will be synonymous with T.O. IC-123K-1.

Crew Coordination

It is essential that each crewmember on the C-123 be aware of the Captains intentions, whether it be during normal operation or an emergency situation. Each crewmember must know what his duties are in relation to these situations. Therefore, the Captain will conduct a crew briefing prior to the initial take-off which will include, but will not be limited to, the following:

1. Takeoff and landing data.
2. First Officers duties during takeoff roll and climb out.
3. Procedures and Captains intentions in the event of an engine failure during takeoff or initial climb.
4. Procedures for identifying malfunctions.
5. First Officers duties during landing.

Subsequent before takeoff briefings will include items:

1. Takeoff and landing data, and 3. procedures and Captains intentions in the event of an engine failure during takeoff or initial climb. The remaining items (2, 4 & 5) may be omitted provided they have not changed.

During pilot training, the pilot in the left seat will perform the duties of the Captain. However, it is the instructors responsibility to insure that the pilot undergoing training does not place the airplane into an unsafe situation.

Use of Check Lists

The check lists will be used at all times. Read and complete each item before going to the next, even if it is necessary to delay completion of the check list.

The Captain will call for the check list by its proper name and the replies listed on it will be used. When a check list is completed, the First Officer will so state, i.e. "After Take-off check list completed." Proper use of the check list will eliminate cockpit confusion, resulting in a smooth and well coordinated team capable of handling the airplane under normal and emergency conditions.

Command Response Phraseology

All commands given in the cockpit by the pilot during normal operations will consist of alerting commands and executing commands.

EXAMPLE: RPM (alerting command) - 2600 (executing command.) The First Officer will acknowledge execution of the command. This method promotes crew coordination and rapid execution of the commands in a standard manner.

When the Captain wishes to retract the landing gear, he signals for "gear-up" with a positive motion of his hand. The palm of the hand is up, with the fist fully open, fingers and thumb

AIR AMERICA OPERATORS MANUAL

Section: IX

Section 9.60 E

Page: 2

straight and touching each other. The hand is raised vertically and at the same instant commands "GEAR UP."

Similarly when the Captain wishes to extend the landing gear, he signals positively with the palm of his hand turned down. The hand is lowered vertically and the command "GEAR DOWN" is given.

Performance Data

The performance data indicated in this section has been taken from the Airplane Flight Manual and will be used where applicable.

<u>Abbreviation</u>	<u>Definition</u>	<u>Remarks</u>
V _a	Design Maneuvering speed	No specific airspeed has been established.
V _{app}	Approach Speed except 60° flaps	1.30V _s
V _{app}	Approach Speed 60° flaps	1.15V _s
V _b	Design speed for maximum gust intensity (turbulence)	V _s + 60 knots
V _{fe}	Flap Extended speed (1°-60°)	132 knots
V _{le}	Landing Gear extended speed	135 knots
V _{mc}	Minimum control speed with the critical engine inoperative	See chart above right

Power	BHP(SL)	Angle Bank	IAS Prop Feather	IAS Prop Windmill
Max Wet	2500	0	108	116
		5	84	92
Max Dry	2300	0	105	113
		5	82	89
METO	1900	0	98	106
		5	77	84

V _{ne}	Never exceed speed	245 KIAS
V _r	Refusal speed	Section A-3 T. O. IC-123K -1
V _s	Stalling speed or minimum steady flight speed at which the airplane is controllable	See Figure 1
V _{to}	Takeoff speed	1.1V _s
V _{td}	Touchdown	1.1V _s
V ₁	Critical Engine failure speed	Not determined
V ₂	Takeoff Safety speed	Not determined
V ₅₀	Obstacle clearance speed	1.2V _s

Standards and Grading Criteria

While in training, the pilot is expected to improve as each flight progresses. Improvement must take place in knowledge and flying ability if a successful checkout is to be accomplished; therefore, as a measurement for expected performance during the proficiency check, the following tolerances are established for the maneuvers:

AIR AMERICA OPERATORS MANUAL

Section: IX

Section 9.60 E

Page: 3

<u>MANEUVER</u>	<u>ITEM</u>	<u>ALLOWABLE TOLERANCE</u>	<u>GRADE</u>	<u>EXPLANATION</u>
Steep Turns	Angle of bank	$\pm 10^{\circ}$	1 Well above average	(90-100)
	Airspeed	$\pm 10^{\circ}$ Knots	2 Above average	(85-89)
	Altitude	± 100 Ft.	3 Average	(80-84)
	Roll out	$\pm 10^{\circ}$	4 Below average	(70-79)
Slow Flight	Airspeed	± 5 Knots	5 Unsatisfactory	(0-69)
	Altitude	± 50 Ft.		
	Heading	$\pm 5^{\circ}$		
Approach to Stalls	Altitude	+ 50 - 100 Ft.		
	Heading	$\pm 5^{\circ}$		
Normal Turns (and holding)	Angle of bank	$\pm 5^{\circ}$		
	Airspeed	± 5 Knots		
	Altitude	± 50 Ft.		
Level Flight (and holding)	Altitude	± 50 Ft.		
	Heading	$\pm 5^{\circ}$		
Tracking	Altitude	± 50 Ft.		
	Track	$\pm 5^{\circ}$		
Instrument Approaches (including rapid descent and pullup)	Airspeed	+ 5 Knots		
	Glide path	within 50 Ft.		
	Altitude	± 50 Ft. (except at minimum + 50 - 0)		
	Track	$\pm 5^{\circ}$		
	Localizer	$\pm 2^{\circ}$		

All other areas will be graded on knowledge, judgment and aircraft control. This is especially true during takeoff, landing, and engine out maneuvers. Deviations (momentary) from the above tolerances should not be cause for alarm; however, continued flight outside these tolerances will result in lower grades.

Grading within this section will follow FAA standards which are listed above:

AIR AMERICA OPERATORS MANUAL

Section 9.60 E

Section: IX

Page: 4

C - 123 SPEED CHART

(Indicated Air Speed)

GROSS WEIGHT POUNDS	POWER OFF STALL V_s			NORMAL APPROACH $1.3 V_s$			OBSTACLE CLEARANCE $1.2 V_s$			TAKE-OFF & TOUCHDOWN $1.1 V_s$			FULL FLAP AP- PROACH	S. E. BEST CLIMB
	FLAPS			FLAPS			FLAPS			FLAPS				
	0°	T/O	LAND	0°	T/O	LAND	0°	T/O	LAND	0°	T/O	LAND		
40,000	77	73	66	100	95	86	92	88	79	85	80	73	75	118
42,000	79	75	67	103	97	87	95	90	80	87	83	74	77	120
44,000	80	76	69	104	99	90	96	91	83	88	84	76	78	121
46,000	82	78	70	107	101	91	98	94	84	90	86	77	80	122
48,000	83	79	72	108	103	94	100	95	86	91	87	79	81	123
50,000	85	81	73	110	105	95	102	97	88	94	89	80	83	125
52,000	87	82	74	113	107	96	104	98	89	96	90	81	85	126
54,000	89	84	75	116	109	98	107	101	90	98	92	83	86	127
56,000	90	85	77	117	111	100	108	102	92	99	94	85	88	128
58,000	92	87	78	120	113	101	110	104	94	101	96	86	89	129
60,000	94	88	79	122	114	103	113	106	95	103	97	87	91	131

- NOTE: 1. All speeds listed above are indicated (IAS.)
 2. S. E. Best Climb Speeds are based on sea level altitude and maximum wet power, with propeller feathered, gear and flaps up.

Figure 1

AIR AMERICA OPERATORS MANUAL

Section 9.60 E

Section: IX

Page: 5

Requirements For Training and Flight Proficiency Checks

PROFICIENCY CHECKS AND TRAINING

	PIC	SIC	ATR
I. GROUND OPERATIONS			
A. Personnel Documentation & Logbook Check	X	X	X
B. Oral/Written Examination	X	X	X
C. Preflight & Visual Inspection	X	X	X
D. Engine Starting & Runup	X	X	X
E. Taxiing	X	X	X
F. Area Departure & ATC Procedures	X	X	X
II. TAKE-OFF & CLIMB			
A. Normal Take-off	X	X	X
B. Instrument Take-off	X	X	X
C. Rejected Take-off	X	X	X
D. Take-off Engine Failure After Vmc	X	X	X
E. Crosswind Take-off	X@	X@	X
F. Minimum Run (STOL) Take-off	X		
G. Climbs & Climbing Turns	X	X	X
III. BASIC AIRWORK			
A. Steep Turns	X	X	X
B. Approaches to Stalls	X	X	X
C. Maneuvering at Slow Speeds	X	X	
D. Rapid Descent & Pull-Up. (Canyon Approach)			
E. Recovery From Unusual Attitudes			
IV. LANDINGS			
A. Normal Landing	X	X	X
B. Single Engine Landing	X	X	X
C. No Flap Landing	X		X
D. Crosswind Landing	X@	X@	X
E. Short Field Landing	X		
F. Balked Landing. (Two Engine)		X	X
G. Balked Landing. (Single Engine)	X		
V. INSTRUMENTS & RADIO NAVIGATION			
A. VOR Orientation	X*		
B. Radio Compass/Aural Null Orientation	X*	X*	

AIR AMERICA OPERATORS MANUAL

Section 9. 60 E

Section: IX

Page: 6

PROFICIENCY CHECKS AND TRAINING

	PIC	SIC	ATR
C. Area Arrival & Holding Procedures	X	X	X
D. ADF Approach	X+	X+	X+
E. VOR/TACAN Approach	X+	X+	X+
F. ILS Approach	X+	X+	X
G. GCA Approach	X+	X+	X+
H. Missed Approach	X	X	X
I. Instrument Approach with Engine Failure	X		X

VI. EMERGENCY PROCEDURES

A. Engine Failure/Fire	X	X	X
B. Propeller Unfeathering	X	X	X
C. Fires	X	X	X
D. Engine Overspeed - Runaway Propeller	X	X	X
E. Emergency Landing Gear Extension	X	X	X
F. Smoke Evacuation	X	X	X
G. Passenger Evacuation	X	X	X
H. Emergency Descents	X	X	X
I. Brake Failure	X	X	X
J. Fuel System	X	X	X
K. Backing the Aircraft	X		

NOTE : On initial PIC checks and training all maneuvers listed above will be completed.

* Either one or the other will be given.

+ Only those approaches that the pilot might be required to utilize will be required.

@ Crosswind operations are required only if crosswind is available. Flights will not be extended for this requirement.

NOTE : It is recognized that the complete operation cannot be conducted and evaluated in many ground operations. When this is apparent, the pilots will be graded on the performance of their particular duties.

AIR AMERICA

OPERATORS MANUAL

Section:IX

Section 9.60 E

Page: 7

PILOT FLIGHT TRAINING - MANEUVERS

GROUND OPERATIONS

Personnel Documentation and Logbook Check

Prior to commencing flight training, and prior to all flight proficiency checks, the pilot will present his current logbook, pilot licenses, physical examination certificates and radio operators permits to the person conducting the flight training and or flight proficiency check.

Oral/Written Examination

Below is a summary of the items which are covered during the oral/written examination for pilots.

Aircraft general description - location of components.

Performance limitations, weight and balance and knowledge of airspeeds and power requirements for various configurations of the airplane.

Powerplants and Propellers - General operation corresponding to the descriptions in the C-123 Aircraft Manual and those items which concern cruise control, engine and propeller limitations.

Systems:

Fluid systems - fuel, oil, water alcohol, and hydraulic.

Heating and cooling.

Electrical.

Emergency Procedures - specific emergency procedures and use of the emergency checklist, including the following:

Location and operation of all emergency controls (propeller feathering, shut-off valves, circuit breakers and fuses, fire-wall shutoff and extinguisher controls, etc.)

Location, operation, and requirements for all emergency gear including life rafts, life vests, first aid kits, fire extinguishers, portable oxygen, emergency radio and crash axes.

Knowledge of emergency procedures outlined in the Aircraft Flight Manual.

Preflight And Visual Inspection

The pilot will be expected to conduct an Interior and Exterior inspection of the airplane, preferably in accordance with the check list. This check covers the airplane's readiness for flight, including fuel and oil supply, the presence of all required equipment and documents and its airworthiness so far as can be determined by this inspection. He should know the significance of each item checked, and not overlook any obvious unairworthy condition. He should know the appropriate remedial action for a pilot to initiate for the correction of each unsatisfactory item detected.

Engine Starting and Runup

The pilot will perform the proper procedures outlined in the aircraft manual in engine starting, runup, use of the checklist and check of the radio equipment. He will be evaluated on the basis of the accuracy of the procedures used and the thoroughness of the engine, systems and airplane checks.

Taxing

The pilot will demonstrate acceptable taxi techniques including smooth use of the throttle and brakes, safe taxiing speed, correct use of controls with reference to wind direction,

AIR AMERICA OPERATORS MANUAL

Section 9.60 E

Section: IX

Page: 8

use of nose wheel steering, proper compliance with tower instructions while taxiing and proper checking of hydraulic pressure and engine temperatures.

Area Departure & Air Traffic Control Procedures

Knowledge of the following procedures will be reviewed or demonstrated:

Definitions of control zones and areas.

Rules concerning altitude to be flown according to magnetic track VFR and IFR.

Standard instrument departures.

Compulsory reports.

Clearance limit.

Holding procedures.

Copy and adhere to clearance.

Voice procedures.

Briefing of First Officer to prepare navigational aids for the clearance received.

NOTE

FAA Airmans Information Manual Part I Basic Flight Manual and ATC Procedures, International Flight Information Manual, and FAA Advisory Circular 61-27 (Instrument Flying Handbook) will be the basis for the review, examination and procedures used throughout pilot training maneuvers.

General Notes.

During training or proficiency check, engine failure and emergencies may be simulated at any time; including ground operations.

At altitudes below 5000 feet above the terrain propeller feathering and reciprocating engine shut down will only be simulated.

At altitudes more than 5000 feet above the terrain and in proximity to a suitable airport a propeller may be actually feathered. Unfeather will be accomplished at least by 5000 feet terrain clearance.

The Instructor/Check Pilot will designate the times for jet engine operation.

The jet engines will not normally be used during the sequence of approaches to stall.

TAKEOFF AND CLIMB

Normal Takeoff - Figure 2

A normal takeoff is considered to be made from a hard-surface runway with flaps at Takeoff position. Refer to Appendix I of the flight manual for ground run distance and takeoff speed. Notice that takeoff speed is a constant 110% of the power off stall speed and thus changes with gross weight. Upon completion of the LINE-UP checklist, the aircraft is lined up on the runway and brought to a complete stop with the nose wheel centered. Smoothly advance the reciprocating engine throttles, stabilize at field barometric pressure, and check engine instruments. Advance jet throttles to obtain maximum thrust and allow engines to stabilize. Release brakes and advance reciprocating engines to Maximum Power. Maintain directional control by steering with the nose wheel steering until sufficient speed is obtained for adequate rudder control at approximately ~~110~~⁶⁰ knots IAS. Aileron control should be exercised by the First Officer as necessary to hold the wings level until rudder control becomes effective and the Captain assumes control of the ailerons. Speed should be allowed to build up until takeoff speed is attained after which the aircraft is flown off the runway.

AIR AMERICA

OPERATORS MANUAL

Section: IX

Section 9.60 E

Page: 9

NOTE

Water injection will normally be used for all takeoffs. However, it may be omitted during training to simulate heavier gross weight conditions.

Rejected Takeoff - Figure 3

If an engine fails prior to reaching takeoff speed, close both throttles and use brakes as necessary to stop the airplane. Use single engine reverse with caution. Maximum braking is far more effective than the use of moderate braking and single engine reverse. If the rejected takeoff was for any reason other than engine failure use full reverse on both engines and braking as required.

Takeoff With Engine Failure After Reaching Minimum Control Speed - Figure 4

If engine failure occurs after reaching Minimum Control (V_{mc}) speed, maintain directional control with rudder and aileron and when a positive climb is established, command the First Officer to raise the landing gear. Identify the failed engine and command the First Officer to feather the propeller. Maintaining straight coordinated flight is of utmost importance if a climb is to be expected. Turns are not normally permitted until obstruction clearance altitude (usually 500 feet); however to avoid obstacles, turns may be performed above 50 feet if required.

The success of continuing a takeoff with engine failure after life off and prior to obtaining best single engine climb speed depends largely on gross weight and airspeed at the time of engine failure. With the operative engine at maximum power (2500 BHP) the minimum control speed with the other propeller windmilling is 116 knots; however, by feathering the propeller immediately, the minimum control speed is reduced to 100 knots. Further reduction of minimum control speed to 84 knots can

be accomplished by a 5 degree bank into the good engine. This can still be reduced by reducing power on the operative engine. However, the reduced power may be insufficient to sustain flight.

Other factors to be considered are altitude, airspeed, gross weight and remaining runway. By sacrificing altitude, minimum control speed and single engine best climb speed may be attained and flight continued.

Minimum Run (STOL) Takeoff - Figure 5

A STOL takeoff will permit operations on those airfields where insufficient runway is available for a normal takeoff. It is also used where obstacles to the takeoff path prevent a normal climb out after takeoff. Short field takeoff technique permits the airplane to become airborne as soon as practical and climb at maximum performance until clear of obstacles. It must be understood, however, that while performing this maneuver the aircraft is airborne before V_{mc} and any loss of power prior to attaining V_{mc} could result in the loss of aircraft control.

NORMAL TAKEOFF

Gross Wt.	Takeoff Speed		Best S/E Climb Speed
	Flaps 0	Flaps T/O	
40,000	85	80	118
42,000	87	83	120
44,000	88	83	121
46,000	90	86	122
48,000	91	87	123
50,000	94	89	125
52,000	96	90	126
54,000	98	92	127
56,000	99	94	128
58,000	101	96	129
60,000	103	97	131

Hold brakes and advance recip. engines to field barometric. Jet throttles to max power. Release brakes and advance recip throttles to maximum power.

Rudder control effective at ~~40-45~~ knots.
60

Fly off at Takeoff Speed.

After reaching Vmc (116 KIAS) and a positive climb: GEAR UP.

Accelerate to Best Single Engine Climb Speed and maintain until obstacles are cleared.

Accelerate to 130 knots and command METO POWER, WATER INJECTION OFF.

Maintain 130 knots. 1000 ft. above the terrain, complete After Takeoff Checklist.

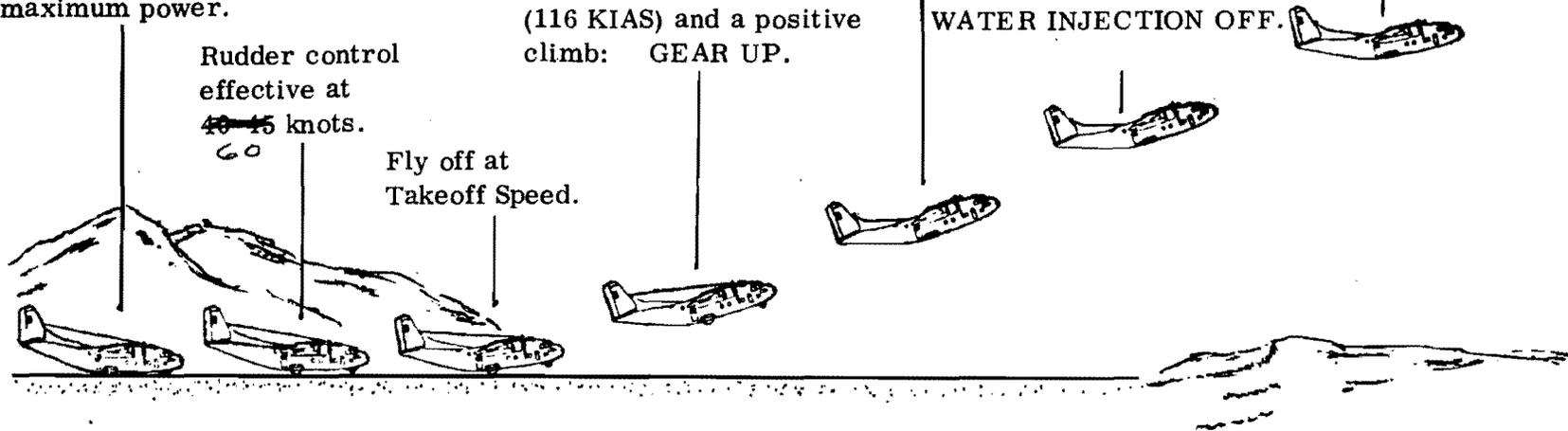


Figure 2

REJECTED TAKEOFF

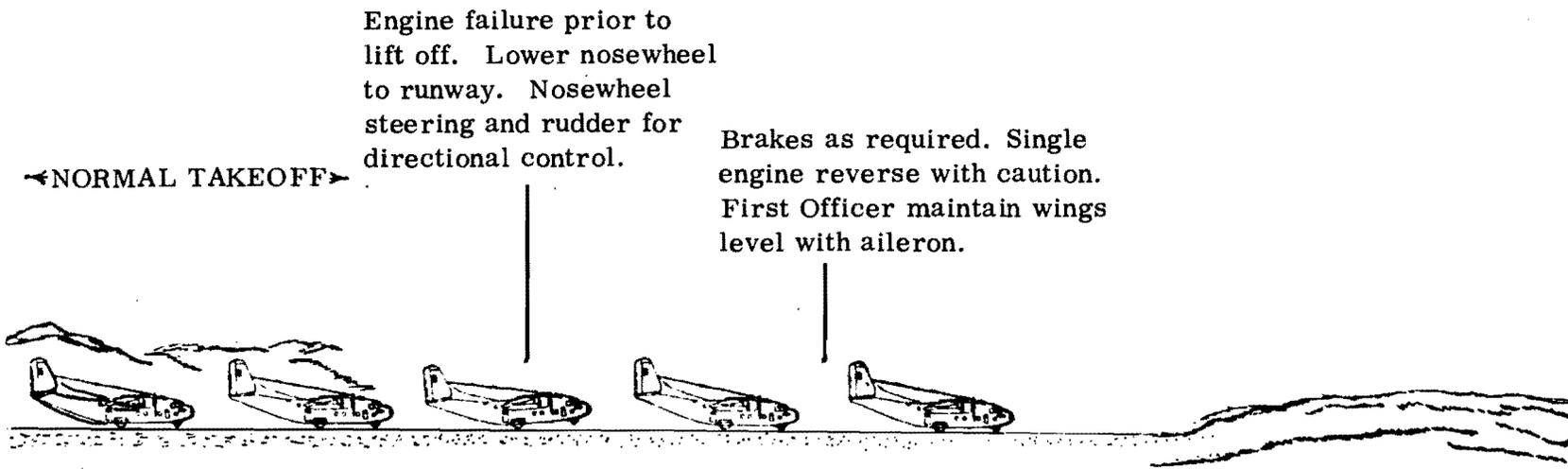


Figure 3

TAKEOFF WITH ENGINE FAILURE AFTER V_{mc}

BEST S/E CLIMB SPEED

40,000	118
44,000	121
48,000	123
52,000	126
56,000	128
60,000	131

Observe 5 minute max power on reciprocating engines and 30 minute max power on jets. If returning to land, accelerate to 115 kias minimum at obstacle clearance altitude. Perform Clean-Up Checklist.

Engine Failure After V_{mc}

Positive climb established:
GEAR UP. Identify and feather failed engine while accelerating to Best Single Engine Climb Speed.

Maintain Best Single Engine Climb Speed until obstacle Clearance Altitude.
(Usually 500' above the terrain.)

Climb at Best Single Engine Climb Speed. Complete Engine Failure Memory items.

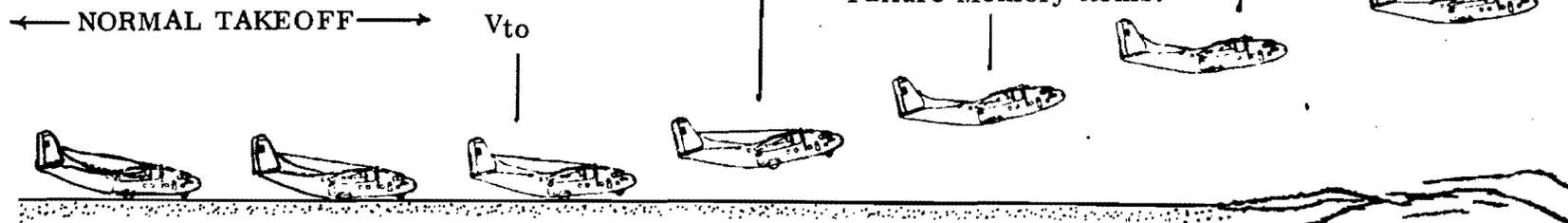


Figure 4

MINIMUM RUN (STOL) TAKEOFF

STOL TAKEOFF SPEED FLAPS TAKEOFF

40,000 LBS - 80 KIAS
44,000 LBS - 84 KIAS
48,000 LBS - 87 KIAS
52,000 LBS - 90 KIAS
56,000 LBS - 90 KIAS
60,000 LBS - 97 KIAS

When clear of obstructions,
reduce power to METO.
Observe Max. power limits.
Continue as during Normal
Takeoff.

Flaps Takeoff.
Hold brakes and
apply Max. Power.
Release brakes.

Rudder effective
40-45 knots.

Fly off not less
than Takeoff
Speed.

Retract the gear
when definitely
airborne and
climbing

Accelerate to 1.2Vs
and continue climb
until clear of obstacles.

Accelerate to Best
Single Engine Climb
Speed while retracting
flaps as airspeed passes
100 knots.



Figure 5

AIR AMERICA OPERATORS MANUAL

Section 9.60 E

Section: IX

Page: 14

BASIC AIRWORK

Steep Turns

Steep turns are performed at a minimum altitude of 4000 feet above the terrain and are accomplished in a cruise configuration, (RPM 2100.)

AIRSPEED 130

The attitude indicator should be set with the miniature airplane level with the horizon bar. The pilot should roll smoothly into a 45° banked turn, cross checking the altimeter and rate of climb to maintain altitude. Approximately 3" MAP should be added as a 30° bank is approached and adjustments made as necessary to maintain airspeed. Primary instrument for pitch correction is the attitude indicator. Altimeter and rate of climb are secondary.

Roll out is begun approximate one-third the angle of bank (15°) before reaching the desired heading utilizing the same rate of roll as in the entry. The pilot will normally be required to roll smoothly from a steep turn of 360° in the opposite direction. The first turn is usually made to the right to enable the check pilot to "clear" the area.

The pilot will be expected to maintain an altitude within 100 feet of the entry altitude, a bank within less than 10° of variation after the turn is established, and complete recoveries within 10° of the assigned heading. Emphasis will be directed to smoothness, coordination and orientation.

Approaches to Stalls - Figure 6

Recovery from approaches to stalls will be completed at a minimum altitude of 5000' above the terrain. They will be performed from straight flight and turns using full panel instruments. They will also be accomplished with various configurations of landing gear

and flap extension.

Normally they will be accomplished in the following configurations:

Cruise:

Gear	UP
Flaps	UP
RPM	2000
MAP	12
Mixture	Auto-Rich
Boost Pumps	LOW

Takeoff and Approach

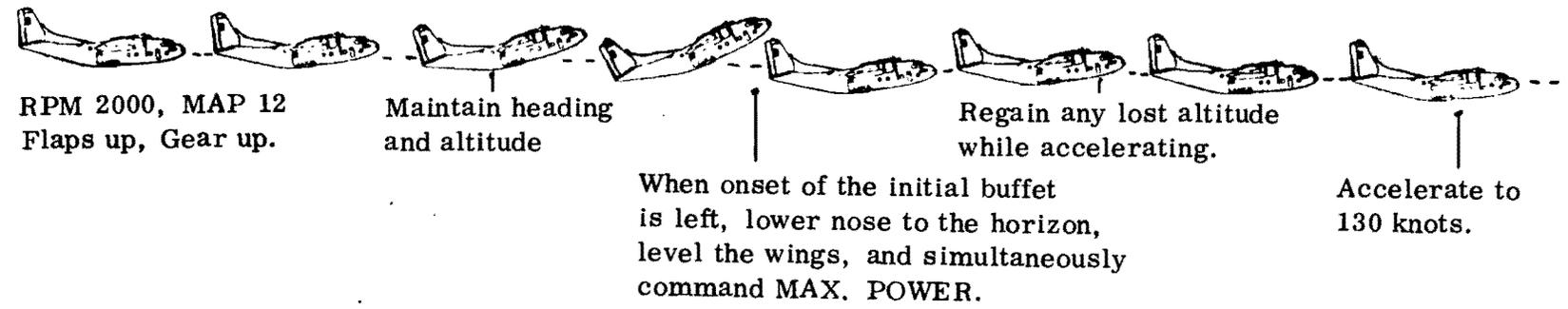
Gear	DOWN
Flaps	Takeoff
RPM	2400
MAP	12
Mixture	Auto-Rich
Boost Pumps	LOW

Landing

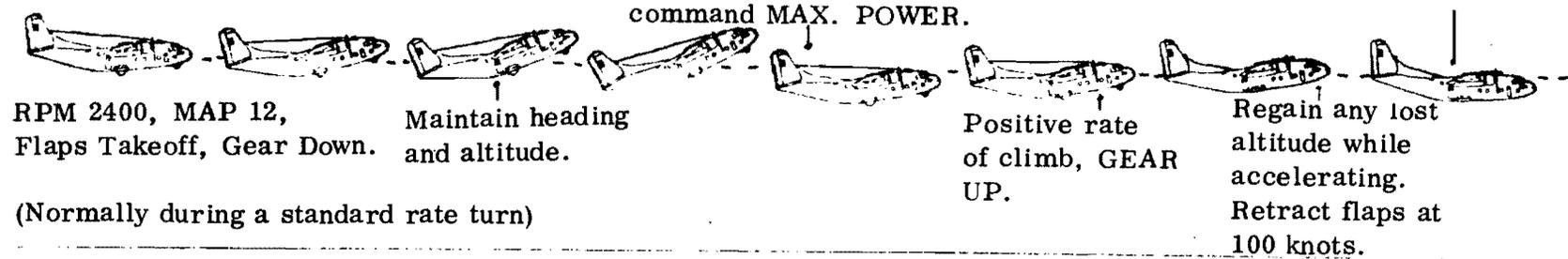
Gear	DOWN
Flaps	LAND
RPM	2600
MAP	12
Mixture	Auto-Rich
Boost Pumps	LOW

Performance will be judged on ability to recognize the approach to stall, prompt action in initiating recovery, the holding of a heading and smooth recovery with a minimum loss of altitude. Each stall maneuver will begin and terminate at 130 KIAS.

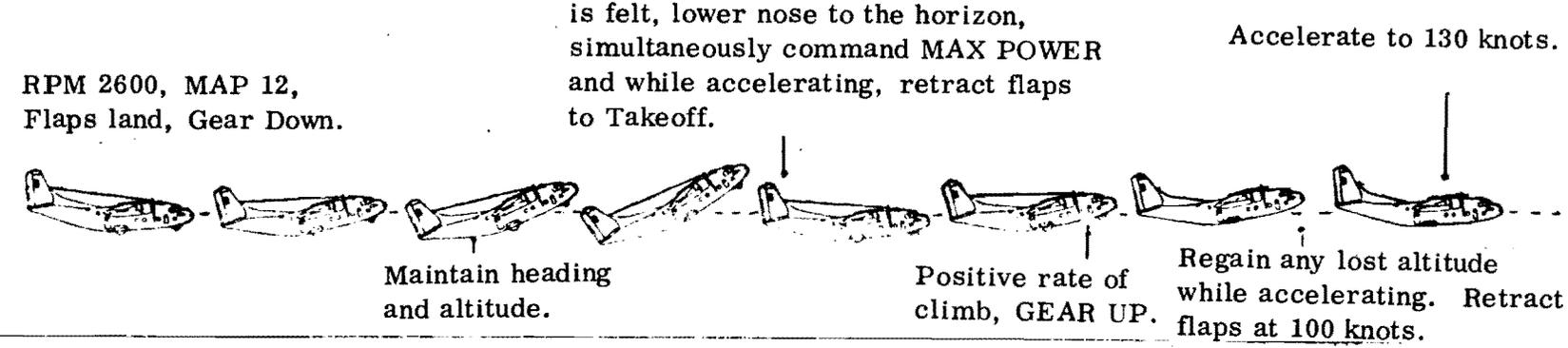
CRUISE CONFIGURATION



TAKEOFF & APPROACH CONFIGURATION



LANDING CONFIGURATION



NOTE: For stall recovery 1500 BHP will be used during training; however, if a full stall is encountered the pilot will use maximum power for recovery. Jets will not normally be used for the stall maneuvers.

APPROACHES TO STALL

Figure 6

Effective: 1 May 1969

AIR AMERICA OPERATORS MANUAL

Section: IX

Section 9.60 E

Page: 16

APPROXIMATE STALLING SPEEDS

INDICATED AIRSPEED

LEVEL - POWER OFF

GROSS WT. (LBS)	0° FLAP	TAKEOFF FLAP	LAND FLAP	FULL FLAP
Kts.	Kts.	Kts.	Kts.	Kts.
54000	89	84	75	75
48000	83	79	72	72
44000	80	76	69	69
40000	77	73	66	66

Figure 7

Maneuvering At Slow Speed

Maneuvering at slow speed is accomplished at 95 knots, RPM 2400, mixture Auto-Rich and MAP as required. The check pilot will ask for straight and level flight, level flight turns, and climbing and gliding turns. The pilot will be expected to maintain a speed within 5 knots of the desired airspeed and, during straight and level flight, a heading within 5 degrees of the original heading and an altitude within 50 feet of the original altitude.

SLOW FLIGHT - 95 knots - RPM 2400

Clean	25" MAP
Gear Down	26" MAP
Gear Down - Flaps Takeoff	28" MAP
Gear Down - Flaps Land	38" MAP

Rapid Descent & Pull-Up
Canyon Approach - Figure 8

This maneuver tests a pilot's ability in many aspects of instrument flying and aircraft control. The station portrayed in Figure 8 is imaginary and is based purely on a time to begin the maneuver. When this time is established, the pilot must complete the sequence according to a set schedule.

The maneuver is to be completed at least 5000 feet above the terrain. In the event an engine is failed, the pilot will be expected to complete the maneuver as described.

Altitude, airspeed, rate of descent, timing and missed approach must be controlled with precision.

When an engine failure/fire is given the pilot will execute the memory items of the Engine Failure/Fire check list while continuing the maneuver. Completion of the clean up items of the Engine Failure/Fire check list should be accomplished as soon as practicable. This is, however, secondary to the precise control of the aircraft to the completion of the maneuver.

Recovery From Unusual Attitudes

Recovery from unusual flight attitudes is performed at least 4000 feet above the terrain on partial or full instrument panel.

The instructor/check pilot will ask the pilot to close his eyes and lower his head. The check pilot will place the aircraft in an unusual attitude and have the pilot effect recovery.

Recovery is accomplished in the following manner:

Partial Panel

Determine whether you are in a climb or dive by referring to the airspeed, altimeter and vertical velocity indicator.

Apply or reduce power as appropriate.

Center the turn needle with rudder, center the ball with aileron and recover from the climb or dive. Reversal of the airspeed, altimeter and at times the vertical velocity trends will show that you have reached a level flight attitude.

AIR AMERICA OPERATORS MANUAL

Section: IX

Section 9.60 E

Page: 17

If the nose is extremely high (airspeed very low or decreasing rapidly,) recovery may be aided by maintaining approximately a standard rate turn until the nose reaches the horizon.

FULL PANEL

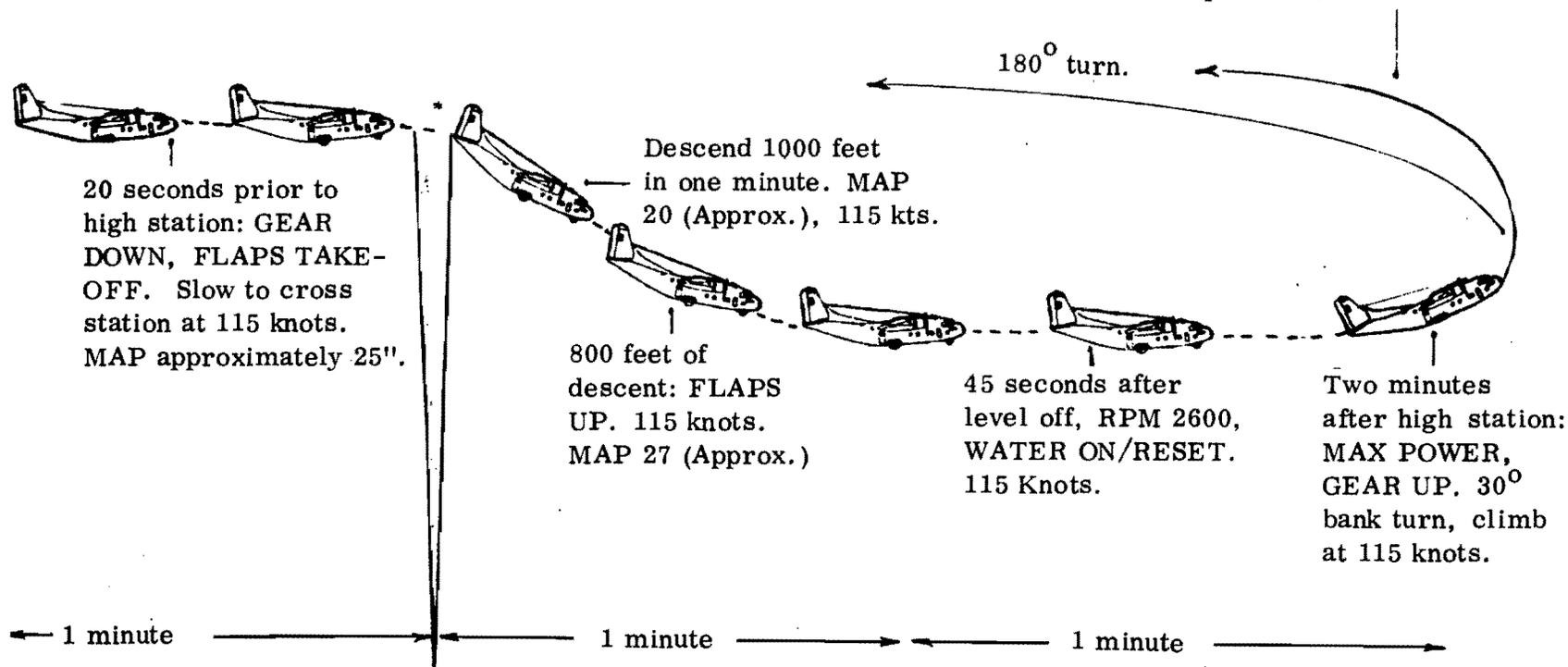
Recovery from unusual attitudes, by reference to full panel flight instruments, is made in basically the same manner as above. Reference to the attitude indicator enables a more rapid and positive interpretation of the aircraft attitude and greatly facilitates an accurate correction.

* Instructor/Check pilot will assign time for simulated high station passage.

RAPID DESCENT & PULL UP (CANYON APPROACH)

INITIAL APPROACH

Before Landing Checklist complete except Gear and Flaps. MAP approximately 30". 130 Knots.



If engine fails, shallow bank to 15°, maintain 115 knots and continue climb if possible.

NOTE: All simulated engine out maneuvers assume propeller feathered. Jet use as directed by instructor/check pilot.

Figure 8

AIR AMERICA OPERATORS MANUAL

Section: IX

Section 9.60 E

Page: 19

LANDINGS

Traffic patterns must be flown in accordance with local rules; however, most traffic patterns are flown at 1000 feet above the airport elevation. Adjustment of the traffic pattern must be made to compensate for local rules and terrain; however, in all cases the aircraft should be positioned on final approximately one mile and a half from the end of the runway at an altitude of 500 to 600 feet above the runway elevation. Landings will be required at various flap setting, including no flap landings.

Normal Landing (Figure 9 & 9A)

Figure 9 and 9A depict the normal sequence of events in the traffic pattern and final approach. Approach and landings will be judged on alignment with the center of the runway, touchdown and directional control throughout the landing rollout.

Engine Out Landing (Figure 10 & 10A)

Immediately upon failure of an engine, identify the failed engine and apply the correct emergency procedures, i. e. increase power and retract the flaps and landing gear as required, complete the immediate action items and complete the Engine Failure/Fire checklist. The desired airspeed throughout the landing pattern is 115 KIAS until the landing is assured. The use of flaps for landing is not mandatory unless runway conditions (length) require their use.

CAUTION

V_{mc} is the absolute minimum speed for all regimes of single engine flight until the landing is definitely assured.

No Flap Landing

A normal traffic pattern will be flown for a no flap landing. Power adjustments must be made in sufficient time to arrive at the speeds

shown for the clean configuration on the approach speed chart; otherwise the only significant difference from a normal landing will be the approach in a nose high attitude and an increased ground roll distance due to the higher approach and touchdown speeds.

Crosswind Landings

The technique used for aligning the airplanes longitudinal axis with the runway centerline should be the Wing Down method.

CAUTION

During gusty wind conditions, increase final approach speed. As a rule of thumb, increase final approach speed by at least one half of the gust velocity.

Minimum Run Landing - Maximum Performance (STOL) Figure 11 & 11A

Minimum run landings are undertaken in order to stop the aircraft in the shortest possible distance. Usually this maneuver is performed only on those airfields which have unprepared surfaces, and the length of which is inadequate to accomplish a normal landing.

WARNING

Final approach speeds are lower than V_{mc} . It is imperative that the approach be planned and carefully flown, and that the aircraft speed remain above V_{mc} until the landing is assured. A normal traffic pattern is depicted in Figure 11; however, it may be adjusted to fit local conditions where necessary. Figure 11A outlines the final approach segment and is designed to give the best possible performance commensurate with safety.

AIR AMERICA

OPERATORS MANUAL

Section 9.60 E

Section: IX

Page: 20

NOTE

The factors affecting the long term success of short field operations are varied and numerous. It is imperative that pilots who engage in short field operations be intimately knowledgeable of all performance data pertaining to the aircraft and power plant and be completely acquainted with the physical characteristics of the landing sites. Due consideration and compensation must be given to aircraft gross weights, temperatures, elevation, wind, runway gradients and surface condition braking action and surrounding terrain, plus many other factors and items of knowledge. All of this must be included in a plan of careful action with a further plan for action in the event that the initial plan should fail or be abandoned at any point. The plan must be carefully executed with skill tempered by good judgment.

Balked Landing (Figure 12).

TWO ENGINE

A balked landing (go-around) may be accomplished from any position on the final approach:

Command MAX. POWER, FLAPS (if extended) TAKEOFF.

When rate-of-descent is arrested, command GEAR UP.

After gear is retracted and a positive rate-of-climb established command FLAPS UP AT 100 KNOTS.

Proceed as during a normal takeoff.

ENGINE OUT

Engine out balked landing (go-around) below

400 feet of altitude cannot be expected after flaps and gear have been fully extended.

Apply power on reciprocating engine to maximum power. Advance jet engine throttle on inoperated reciprocating engine side to maximum, check engine instruments. When power is assured on jet engine, advance power on other jet engine as required.

Wing flaps, if extended, to take off.

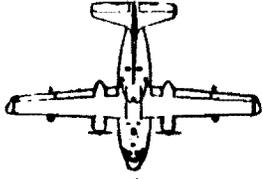
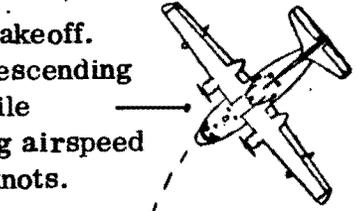
When descent is arrested, gear up.

Wing flaps up at 100 KIAS.

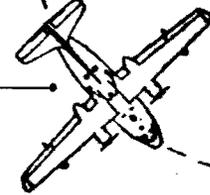
Accelerate to best single engine climb speed and proceed as during take off with engine failure.

NORMAL LANDING

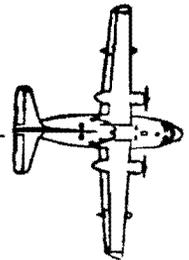
Flaps Takeoff.
Begin descending
turn while
reducing airspeed
to 120 knots.



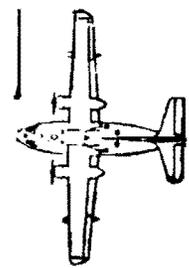
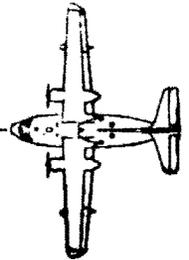
500-600 ft.



Flaps Land.
Before Landing Checklist
completed. 110 knots.

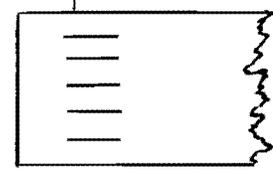


Before Landing Checklist
through Gear Down.
Altitude 1000 feet.



130 knots

1 - 2 miles.



For final approach
segment, see figure 9a.

Figure 9

Effective: 1 May 1969

NORMAL LANDING (FINAL APPROACH SEGMENT)

	APPROACH SPEED FLAPS 45°	TOUCHDOWN SPEED FLAPS 45°
40,000 LBS	96 KIAS	72 KIAS
44,000 LBS	99 KIAS	75 KIAS
48,000 LBS	102 KIAS	78 KIAS
52,000 LBS	104 KIAS	81 KIAS
54,000 LBS	105 KIAS	83 KIAS

← Before Landing
Checklist Completed.

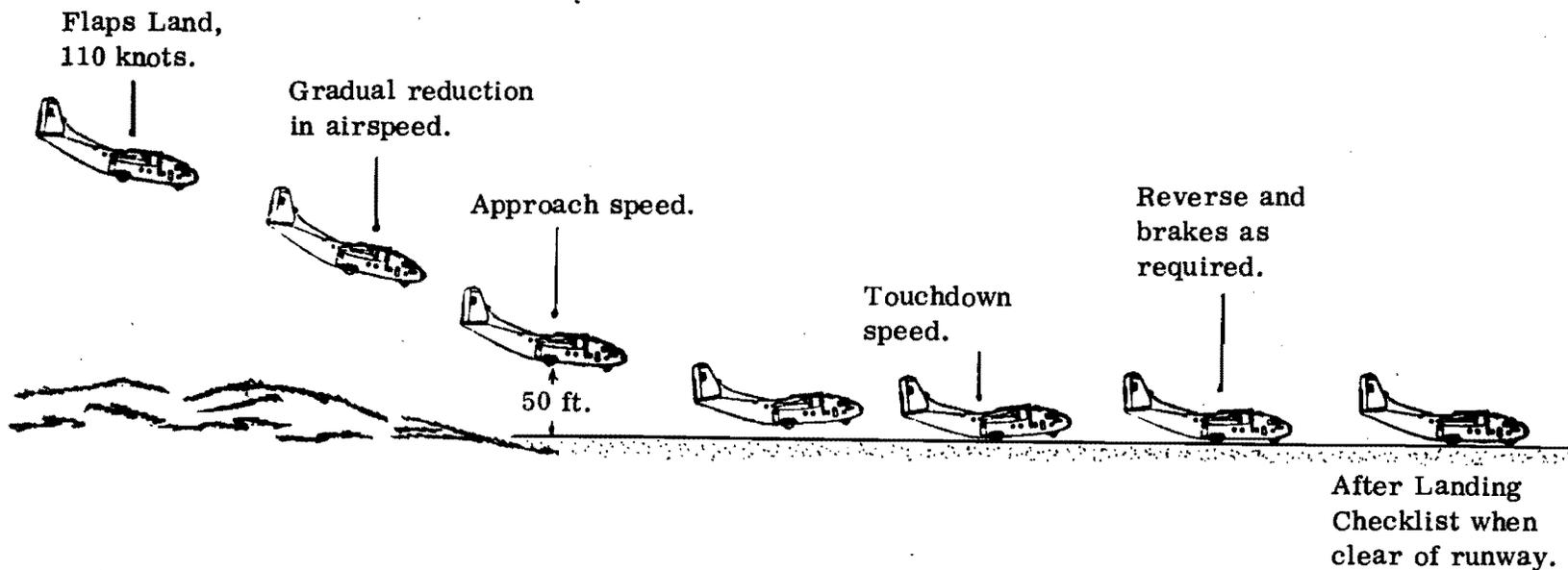


Figure 9a

ENGINE OUT LANDING

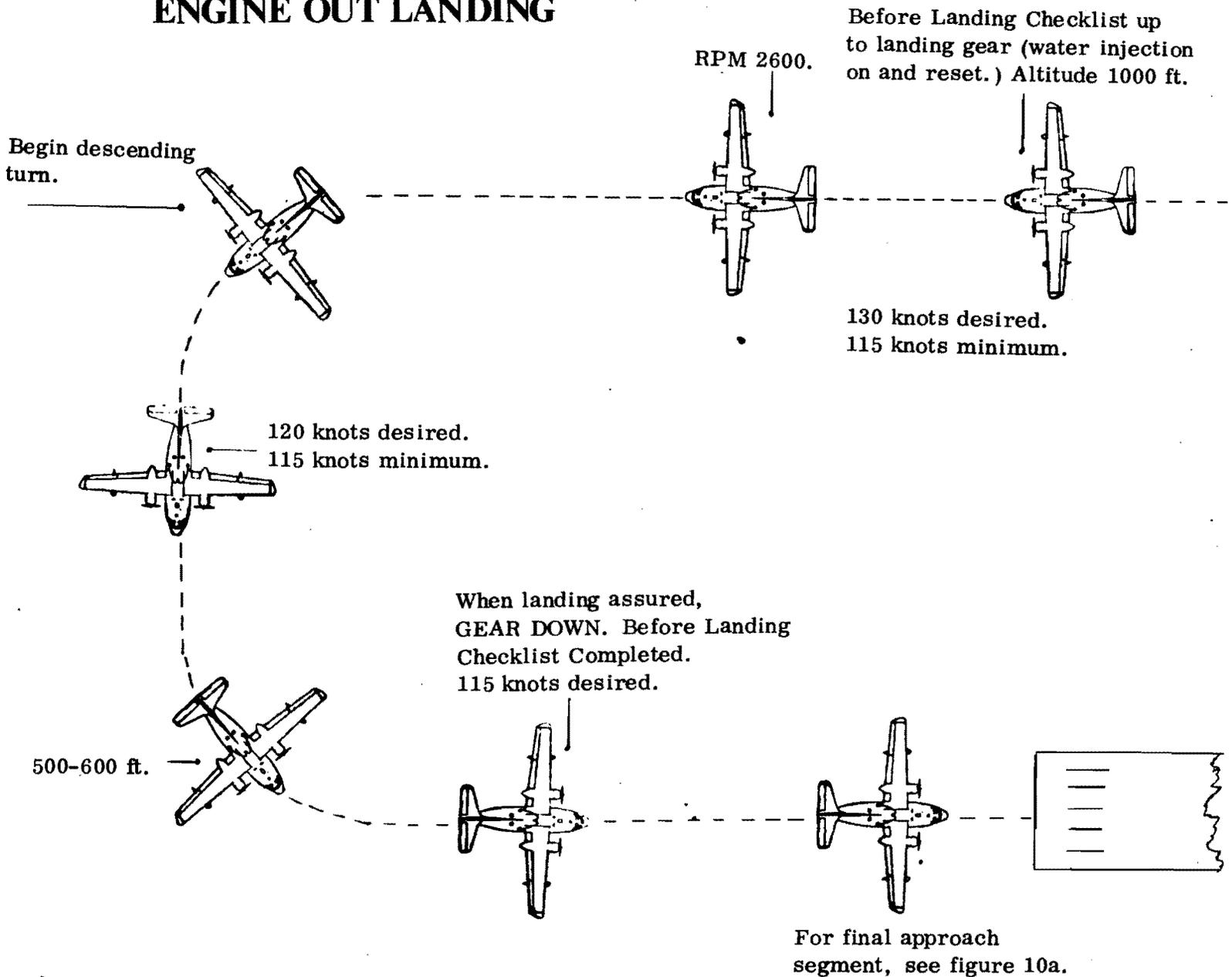


Figure 10

ENGINE OUT LANDING FINAL APPROACH

	APPROACH SPEED			TOUCH DOWN SPEED		
	FLAPS 0°	T/O	LAND	0°	T/O	LAND
40,000 LBS	100	95	86	85	80	73
44,000 LBS	104	99	90	88	84	76
48,000 LBS	108	103	94	91	87	79
52,000 LBS	113	107	96	96	90	81
56,000 LBS	117	111	100	99	94	85
60,000 LBS	122	114	103	103	97	87

When landing assured,
GEAR DOWN. Before Landing
Checklist completed.
115 knots desired.

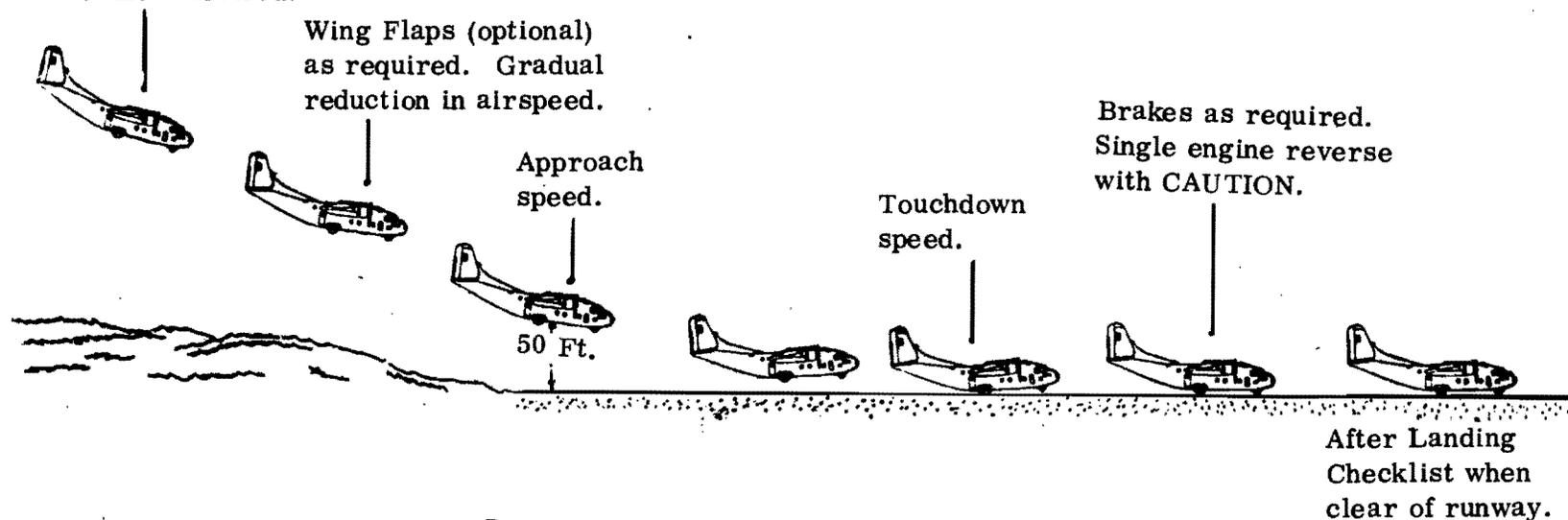
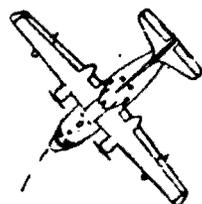


Figure 10a

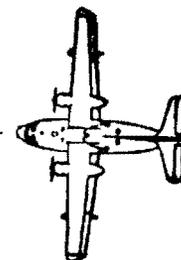
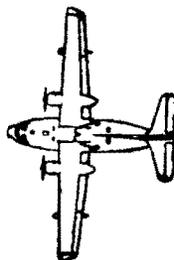
SHORT FIELD LANDING (MAXIMUM PERFORMANCE)

Before Landing Checklist
through GEAR DOWN. RPM 2400,
Water injection ON/RESET.

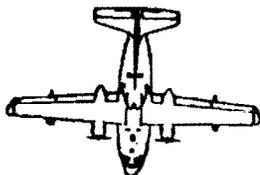
Flaps T/O.
Reduce airspeed
to 120 knots.



130 knots.

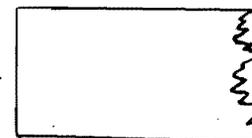
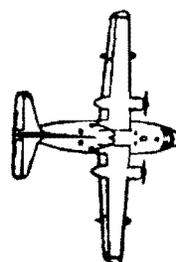
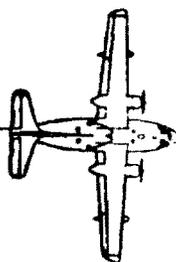
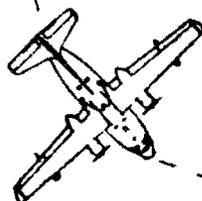


Descending base
leg. RPM 2600.



Before Landing
Checklist Completed.
110 knots.

Flaps Land.
110 knots



For final approach
segment, see figure 11a.

Figure 11

SHORT FIELD LANDING (MAXIMUM PERFORMANCE)

	<u>APPROACH SPEED</u>	<u>TOUCHDOWN SPEED</u>
	<u>FLAPS FULL DOWN</u>	<u>FLAPS FULL DOWN</u>

40,000 LBS	75 KIAS	73 KIAS
44,000 LBS	78 KIAS	76 KIAS
48,000 LBS	81 KIAS	79 KIAS
52,000 LBS	85 KIAS	81 KIAS
56,000 LBS	88 KIAS	85 KIAS
60,000 LBS	91 KIAS	87 KIAS

Before Landing Checklist completed. Flaps Land. 110 knots.

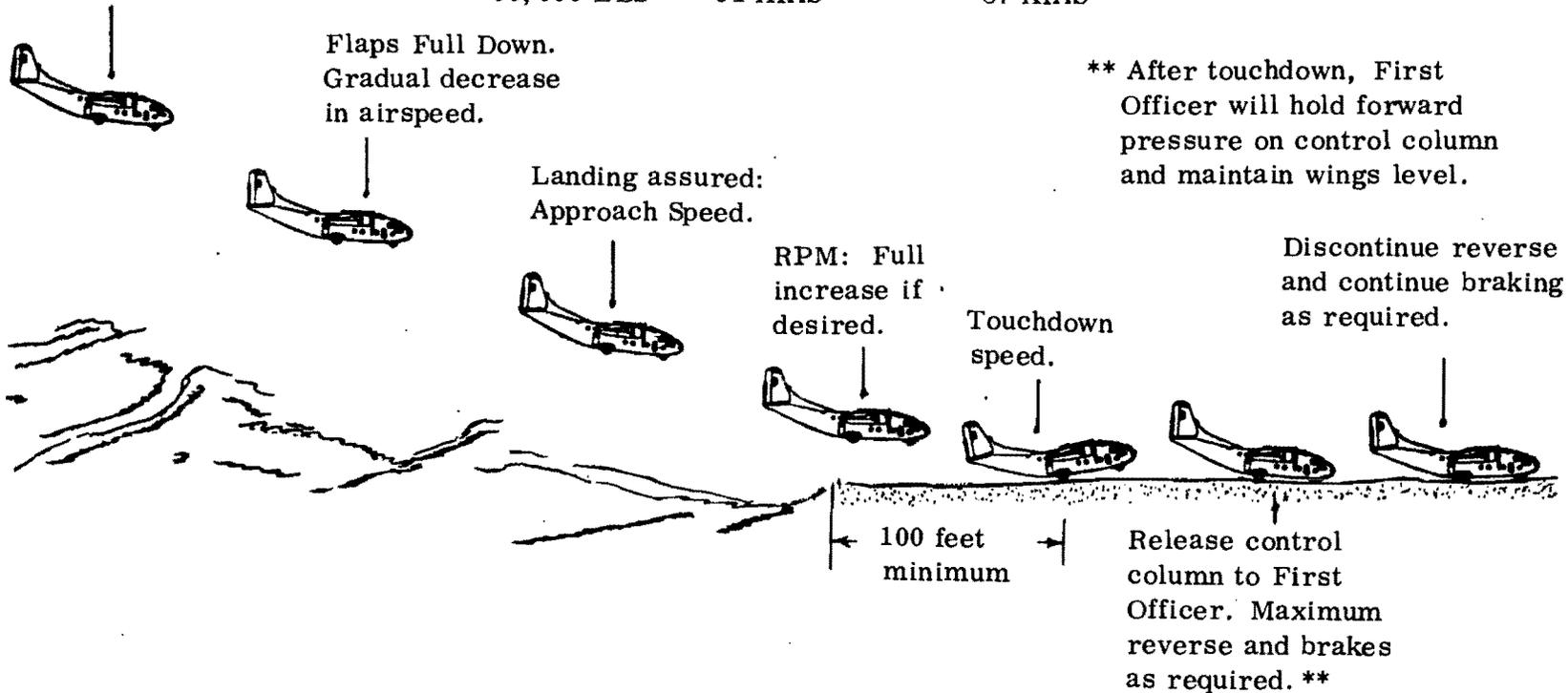


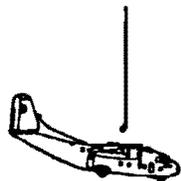
Figure 11a

BALKED LANDING

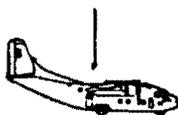
BEST SINGLE ENGINE CLIMB SPEED

40,000 LBS - 118 KIAS
44,000 LBS - 121 KIAS
48,000 LBS - 123 KIAS
52,000 LBS - 126 KIAS
56,000 LBS - 128 KIAS
60,000 LBS - 131 KIAS

NORMAL APPROACH



* Balked Landing
Command POWER
as required, FLAPS
TAKEOFF.



Rate of descent
arrested: GEAR
UP.



FLAPS UP at 100
KIAS while accelera-
ting to Best Single
Engine Climb Speed.



Proceed as during
Normal Takeoff or
Takeoff with Engine
Failure.



* If flaps have been extended beyond takeoff, they will be raised to takeoff.

Figure 12

AIR AMERICA OPERATORS MANUAL

Section 9.60 E

Section: IX

Page: 28

INSTRUMENT AND RADIO NAVIGATION

VOR Orientation

After tuning the VOR to the proper station and identifying it, complete a VOR orientation utilizing the CDI only:

1. Rotate the course selector to determine which radial the aircraft is on.
2. Turn the aircraft to a 90° (wing tip) intercept heading.
3. Begin a 10° time check.
4. After completing the time check advise the ETA over the VOR.

The following formula can be used to determine the time to the station:

$$\frac{\text{TIME IN SECONDS}}{\text{DEGREE OF BEARING CHANGE}} = \frac{\text{Time to Station in minutes}}{\text{minutes}}$$

Radio Compass/Aural Null Orientation

Tune the radio compass to the proper station, identify it, and using the LOOP, complete an orientation and time check as outlined below:

NOTE

Be sure CW or BFO switch is on when using the LOOP for orientation.

Adjust the radio compass volume to maintain a null width of $5 - 8^{\circ}$.

Using the radio compass bearing indicator, complete the orientation and time check as outlined under VOR procedures.

Ambiguity is solved by the following:

If the bearing to the station INCREASES,

the station is on your right.

If the bearing to the station DECREASES, the station is on your left.

Area Arrival and Holding Procedures

An area arrival will be accomplished and may be simulated or actual. This will include holding, tracking, and intercepting theoretical intersections. Standardized holding (Figure 13) is accomplished at 130 KIAS (clean.) Begin deceleration to holding speed within three minutes of the station. Normally 1800 RPM will be used during holding.

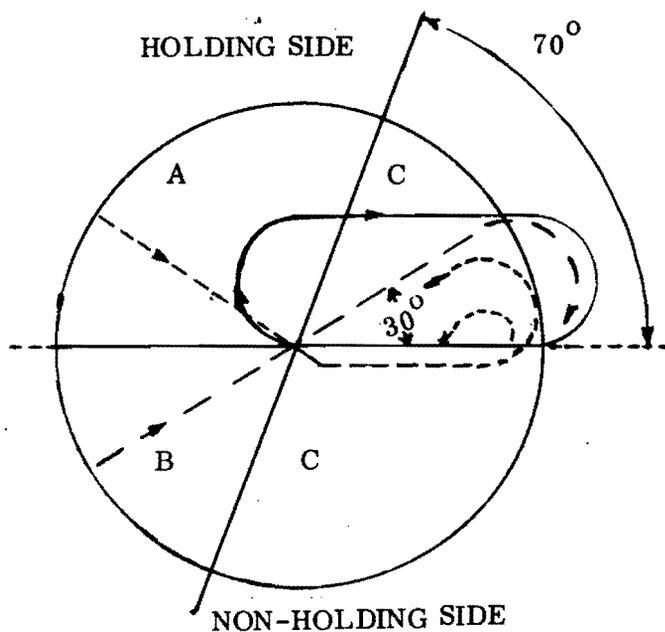


Figure 13

AIR AMERICA OPERATORS MANUAL

Section: IX

Section 9.60 E

Page: 29

Entry Procedures

Parallel Procedure

Parallel the holding course, turn left and return to the holding fix or intercept the inbound holding course.

Tear Drop Procedure

Proceed on outbound track of 30° off holding course for one minute turn right to intercept holding course.

Direct Entry Procedure

Turn right and fly the holding pattern.

For non-standard patterns the above procedures are reversed.

ADF Approach - Figure 14

VOR Approach - Figure 15

ILS Or GCA Approach - Figure 16

NOTE

During instrument approaches, the landing gear and flaps may be used as drag devices to keep airspeed within limits; however, during straight-in approaches, depart Low Station in the approach configuration: Landing Gear - DOWN; Flaps - 20°.

During approaches with engine failure, all procedures remain basically the same; however the pilot must decide when to add power and when to lower gear and flaps (or when to retract them.)

Missed Approach - Figure 14

A missed approach must be accomplished when it is determined that the aircraft is not in the correct, or safe, position to continue the approach, or when directed by ATC. Pertinent instructions are either printed on the approach plate or issued by ATC.

Circling Approach - Figure 16

If an approach is made with the intent of circling for a landing maintain 120 KIAS until on final approach. After the runway is in sight, maintain 120 KIAS until opposite point of touchdown where gear will be lowered and a normal landing can be executed. Circling approaches may be made from any of the examples outlined in Figure 16. As the drag induced by the landing gear is negligible, it may be kept down throughout the approach if desired.

GCA OR ILS APPROACH

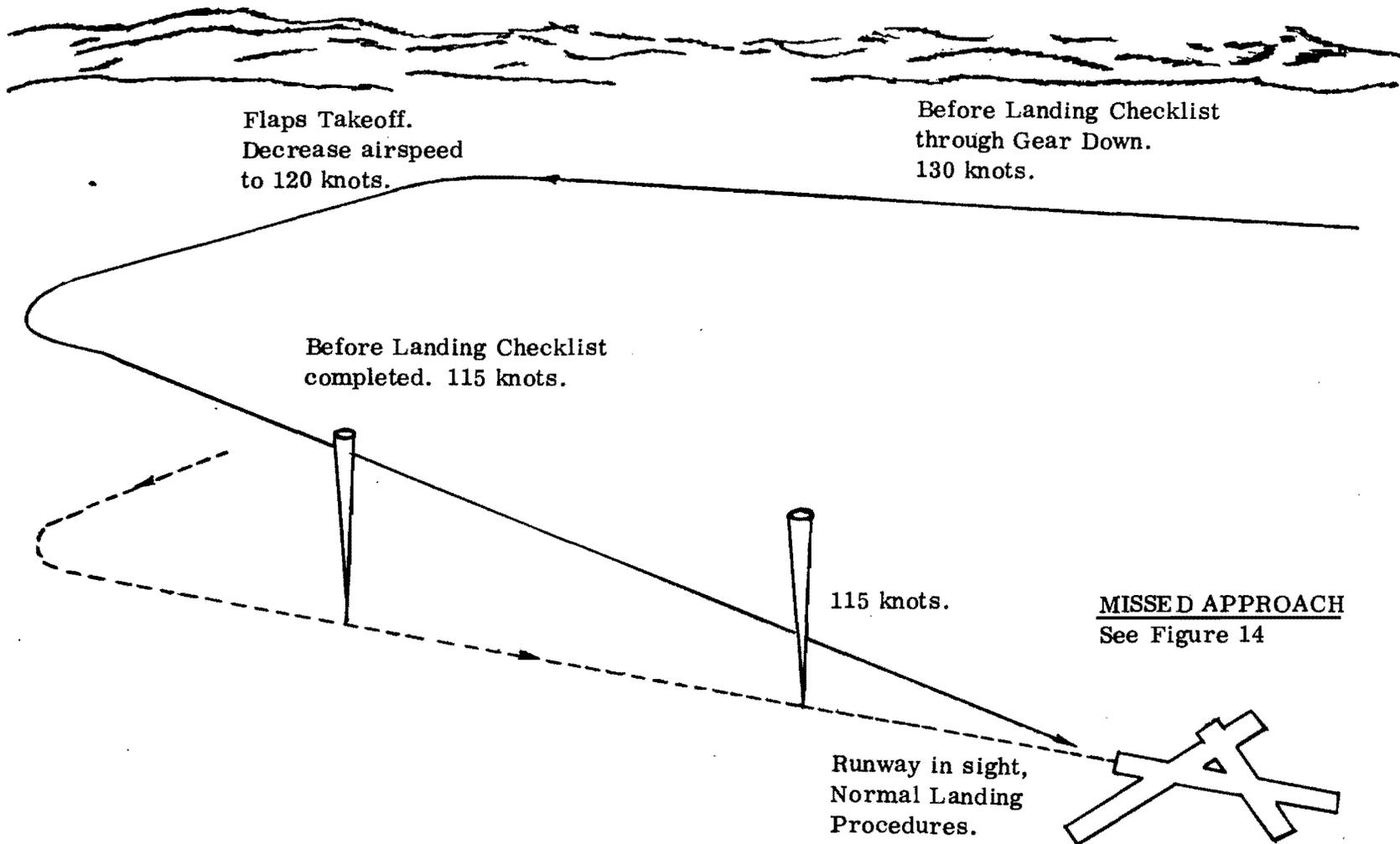


Figure 15

ADF OR VOR APPROACH (WITH MISSED APPROACH)

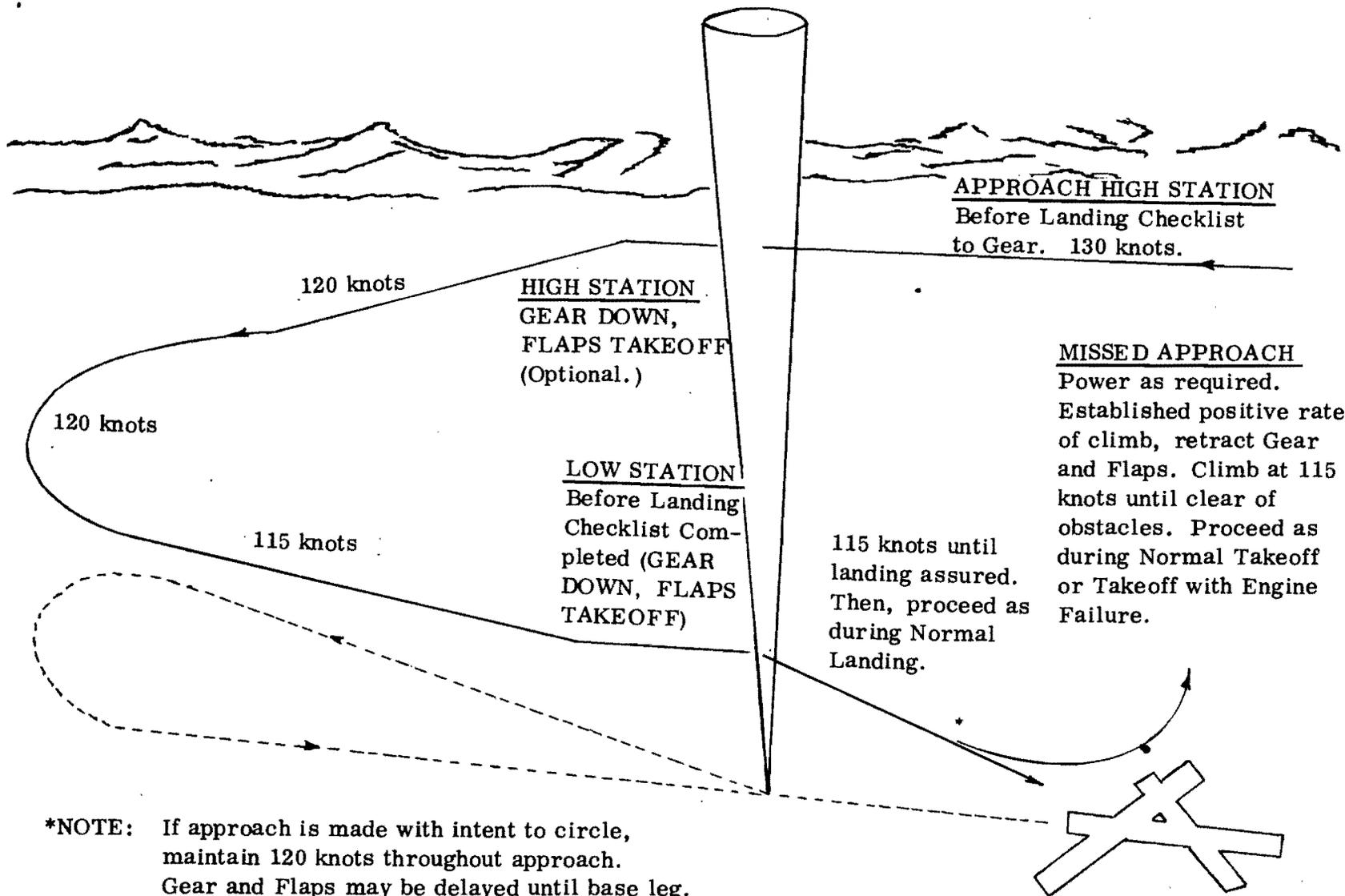
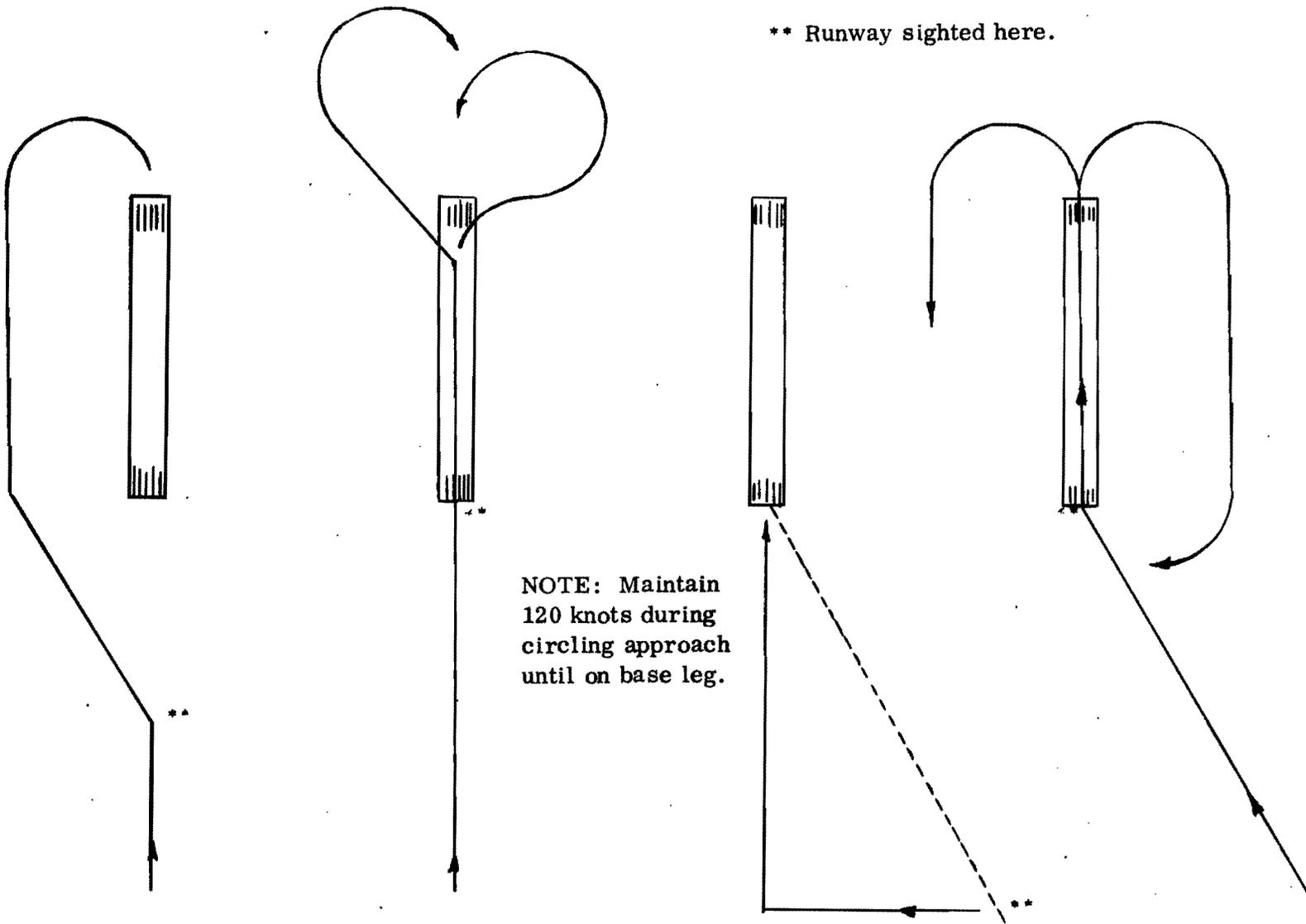


Figure 14

CIRCLING APPROACHES

** Runway sighted here.



NOTE: Maintain 120 knots during circling approach until on base leg.

Figure 16

EMERGENCY PROCEDURES

Emergency procedures will be reviewed during preflight and post flight briefings. While taxiing and airborne, various emergencies will be called out or simulated by the instructor. For emergencies that require immediate action the pilot, while continuing the assigned maneuver, will be expected to call out from memory the immediate action items as he performs (simulates) them. In all cases the appropriate Emergency Check List will be used to confirm the performance of memory items and to ensure that other items are performed in sequence to their entirety.

The pilot will be graded on:

1. Correct analysis of the emergency.
2. Correctness of immediate action items from memory.
4. Adherence to the check list.
5. Judgement and planning.
6. Correct management of power, landing gear, and flaps, etc.
7. Control of the aircraft.
8. Proper radio procedure and flight plan action for the emergency.

Engine Failure/Fire

Engine failure/fire may be simulated at any time that the engines are started, running, or being shut down. A propeller will be feathered only when at an altitude above the ground of 5000 feet or greater. Below 5000 feet, propeller feathering will only be simulated.

Propeller Unfeathering

The propeller will be unfeathered with strict conformity to the Unfeathering Check List.

NOTE

The following emergency procedures will be discussed and performed (where

applicable) during flight training. During proficiency flight checks, actual performance of these emergencies may be eliminated at the discretion of the instructor, if, in his opinion, the pilot receiving the flight check demonstrates adequate knowledge of the emergency procedures.

Fires

Electrical and Cabin Fire

The procedure for handling electrical fires in the cockpit and cabin will be discussed with particular emphasis on immediate action items and smoke evacuation.

Brake Fire. During taxi operations, before takeoff or after landing, a simulated brake fire will be given to acquaint the trainee with the most effective method of combating the fire. When this occurs:

1. Bring the aircraft to a complete stop.
2. Use reverse thrust to assist in stopping the aircraft.
4. Request fire and rescue equipment.
5. Shut down the engines.
6. Evacuate the passengers.
7. Abandon the aircraft.

Runway Propeller - Engine Overspeed

A review will be conducted to ensure that the pilot understands thoroughly:

1. The technical reason for a runaway propeller or an engine overspeed.
2. Control of the propeller.
3. The affect of true airspeed and altitude on a runaway propeller.
4. Performance of the airplane in this situation.

AIR AMERICA

OPERATORS MANUAL

Section 9.60 E

Section: IX

Page: 34

Emergency Landing Gear Extension

The pilot will discuss the landing gear system and demonstrate the proper procedures for extending the landing gear by the emergency system.

Smoke Evacuation

A discussion will be conducted of the procedures involved in smoke evacuation.

Passenger Evacuation

This item will be discussed and demonstrated during a simulated brake fire.

Emergency Descent

Emergency descents are performed when it is necessary to descend from altitude as rapidly as possible.

The high speed descent is normally performed when there is a fire in an engine nacelle and there is a possibility of extinguishing the fire as a result of increases speed. The high speed configuration is clean, and:

POWER : RPM 2800; Throttles Closed
DESCENT : 245 KIAS Maximum

The slow speed descent is used when there has been structural damage and high airspeed would damage the aircraft further or when it is desirable to descend in a relatively short horizontal distance. The slow speed configuration is gear down and flaps full down, and:

POWER : RPM 2800; Throttles Closed
DESCENT : 132 KIAS Maximum

During descent in either of the above configurations, initiate recovery approximately 500 feet above the desired level-off altitude.

Brake Failure

A simulated brake failure will be given to evaluate the pilots judgement, his knowledge of the aircraft brake system, air brakes, and his ability to control the airplane with the use of propeller thrust.

Fuel System

The pilot will be expected to discuss the fuel system and the failures which could occur, and emergency action which may be applied.

Backing The Aircraft

Backing the aircraft will be done only in an emergency, however if this situation should arise the following must be observed:

Clear the area to the front and rear of the aircraft.

A wing walker must be stationed forward of the right wing-tip.

A signalman must be stationed to the left of the pilot to provide hand signals for stopping the aircraft.

Back the aircraft with the use of reverse thrust until the aircraft is in the desired position.

Arrest the rearward movement of the aircraft with forward thrust, and then apply brakes.

CAUTION

Do not use brakes to stop the aircraft while it is moving rearward as the aircraft may settle on it's empenage.