

FAST Flight Leader Practical Test Guide

Bomber Transport Aircraft

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INTRODUCTION

FAST (Formation And Safety Team) has developed this practical test guide to be used by check pilots when conducting lead pilot practical tests. Instructors are expected to use this guide when preparing students for the practical test.

Required Qualifications for Lead Applicant

- Private pilot certificate*
- 500 hours total time (350 hours for current or former CFI*, military IP or airline check airman)
- 30 hours logged formation time as a credentialed wing pilot
- Demonstrated proficiency in each position of a 4-ship formation
- Complete formal lead upgrade training program
- Current member of an FAA* recognized formation organization
- Practical test recommendation by a current lead pilot
- Successfully complete practical test

*or non-US, country equivalent

2-Ship Lead Qualifications

For formation organizations that choose to use a 2-ship, stepping stone approach, posted below are the qualifications for 2-ship lead. ***This is only valid for an organization that has a formal 2-ship lead program and issues credentials that are restricted to 2-ship lead.***

For Bomber/Transport aircraft the minimum 2-ship Lead Qualifications are the same as outlined above, under Required Qualifications for Lead Applicant.

Instructor Pilot's Responsibility

A qualified and current formation instructor pilot is responsible for training the lead pilot applicant to acceptable standards in all applicable subject matter areas, procedures and maneuvers included in the TASKS within each AREA OF OPERATION in this practical test guide.

Because of the impact of their teaching activities in developing safe, proficient formation pilots, instructor pilots should exhibit a high level of knowledge, skill and the ability to impart that knowledge and skill to students.

Check Pilot's Responsibility

The check pilot who conducts the lead pilot practical test is responsible for determining that the applicant meets acceptable standards for knowledge and skill in the selected TASKS.

Use of the Practical Test Guide

All the subject matter, procedures and maneuvers for lead pilot qualification have been included in the *Flight Leader Practical Test Guide*. The check pilot will select the AREAS OF OPERATION that are appropriate to the organization's standard operating procedures and aircraft. The check pilot should then select enough TASKS within the applicable AREAS OF OPERATION to determine that the applicant is proficient. The check pilot can select as few or as many as he/she feels is appropriate to qualify the applicant.

In preparation for the practical test, the check pilot will develop a "mission profile" that will include the required TASKS in each AREA OF OPERATION. If the applicant is unable to perform a TASK in the mission profile due to circumstances beyond his/her control, the check pilot may substitute another TASK from the applicable AREA OF OPERATION.

Aircraft and Equipment Required for the Practical Test

The lead pilot applicant will provide an airworthy aircraft for use during the practical test. The aircraft will also have:

1. A functional intercom system
2. The capability for the check pilot to transmit and receive on both radios

The check pilot will have final authority as to whether the aircraft meets the provisions of this paragraph.

Formation Aircraft and Pilots Required for the Practical Test

The lead pilot practical test will be conducted in a 2-ship, or 4-ship formation, as applicable.

All members of the flight will be formation qualified and current. With the consent of the check pilot, a formation qualified and current right-seat instructor pilot paired with a student fulfills this requirement.

The check pilot can ride with the applicant or conduct the practical test from another aircraft in the flight. Conducting the practical test from another aircraft is strictly at the option of the check pilot. If this option is chosen, no other training or simultaneous check rides will be conducted during the flight unless there is another instructor or check pilot paired with the other student or applicant.

Materials Required for the Practical Test

To be an effective flight leader and instructor, and to ensure standardization, all applicants for lead pilot should have in their possession the following materials:

- Four-part FAST Intercontinental Formation Guideline:
 1. *FAST Foundation and Principles*
 2. *FAST Maneuvers Guide*
 3. *FAST Radio Communication and Visual Signals*

4. FAST wingman and flight leader practical test guides for bomber/transport aircraft

- Formation manual for applicant's formation organization
- All other applicable SOPs and policy guides for the applicant's formation organization
- Formation proficiency report forms
- Formation checkride forms

Provision for 2-Ship Qualification

Signatories flying Bomber/Transport may choose to qualify pilots in 2-ship formation prior to moving to 4-ship. Those signatories, whose formal training programs are so structured, may perform the practical test in 2-ship formation. In this instance, the organization will issue formation credentials that indicate that the pilot is restricted to 2-ship formation in waived airspace.

Satisfactory Performance

Satisfactory performance to meet the requirements for formation qualification is based on the applicant's ability to safely:

1. Demonstrate proficiency in the applicable TASKS specified in the AREAS OF OPERATION
2. Demonstrate mastery of the aircraft with the successful outcome of each TASK performed never seriously in doubt
3. Demonstrate clear leadership of the flight from the planning phase all the way through to the debriefing
4. Demonstrate sound judgment and situational awareness

Unsatisfactory Performance

If, in the judgment of the check pilot, the applicant does not meet the standards of performance in any of the TASKS performed, the associated AREA OF OPERATION is incomplete and the practical test is unsatisfactory. If there is some question in the check pilot's mind about the satisfactory completion of a TASK, the check pilot may have the applicant repeat the TASK. The check pilot or the applicant may discontinue the practical test at any time when the performance of a TASK is unsatisfactory. If the practical test is discontinued, the applicant is entitled to credit for those TASKS satisfactorily performed. However, during the retest, at the discretion of the check pilot, any TASK may be re-evaluated, including those previously completed satisfactorily.

ORAL PHASE

I. AREA OF OPERATION: FORMATION FUNDAMENTALS

A. TASK: HAND SIGNALS

Objective: To determine that the applicant exhibits knowledge of formation hand signals by:

1. Interpreting or demonstrating—
 - a. Visual signal acknowledgement
 - b. Can't hear
 - c. Can't transmit
 - d. HEFOE

B. TASK: AIRCRAFT SIGNALS

Objective: To determine that the applicant exhibits knowledge of formation aircraft signals by:

1. Interpreting or describing—

- a. Attention in the air

C. TASK: RADIO COMMUNICATION

Objective: To determine that the applicant exhibits knowledge of radio communication by:

- 1. Explaining—
 - a. Frequency change procedures
 - b. Circumstances under which the “terminate” call would be used
 - c. Procedure to follow when “terminate” is called

II. AREA OF OPERATION: TAKEOFF, DEPARTURE

A. TASK: SINGLE-SHIP, INTERVAL TAKEOFF

Objective: To determine that the applicant exhibits knowledge of single-ship, interval takeoffs by:

Explaining—

- a. The procedure for “feeding” formation aircraft onto the runway for takeoff
- b. The reference used for initiating takeoff behind preceding aircraft

B. TASK: DEPARTURE

Objective: To determine that the applicant exhibits knowledge of departure procedures by:

Explaining—

- a. The factors influencing Lead’s decision as to when to initiate a turn after takeoff (for a turning rejoin)
- b. Lead’s responsibilities during the formation departure and rejoin

III. AREA OF OPERATION: BASIC MANEUVERS

A. TASK: WING WORK/STATION KEEPING

Objective: To determine that the applicant exhibits knowledge of wing work/station keeping by:

Explaining—

- a. Lead’s technique for managing power, pitch and roll during the wing-work exercise
- b. The parameters of pitch and bank to be flown during the wing-work exercise
- c. Lead’s responsibilities during the wing-work exercise

B. TASK: CROSS-UNDER

Objective: To determine that the applicant exhibits knowledge of cross-unders by:

Explaining—

- a. The procedures used by Lead to reconfigure a flight using the cross-under
- b. Lead’s responsibilities during the cross-under
- c. Potential dangers when directing a cross-under

C. TASK: ROUTE

Objective: To determine that the applicant exhibits knowledge of the route position by:

Explaining—

- a. The parameters of route position
- b. The circumstances under which route position would be employed

- c. The procedure for sending wing pilots to route
- d. The procedure for bringing wing pilots back into fingertip

D. TASK: ECHELON

Objective: To determine that the applicant exhibits knowledge of the echelon position by:

Explaining—

- a. The parameters of the echelon position
- b. The circumstances under which wing pilots would execute an echelon turn verses a “stacked,” fingertip turn

E. TASK: DIAMOND

Objective: To determine that the applicant exhibits knowledge of the diamond position by:

Explaining—

- a. The parameters of the diamond position
- b. The procedure for sending a wing pilot to the diamond position
- c. The procedure for rejoining a wing pilot from diamond to fingertip

F. TASK: TRAIL

Objective: To determine that the applicant exhibits knowledge of close trail by:

Explaining—

- a. The parameters of the trail position
- b. The procedure for sending wing pilots to trail
- c. The procedure for rejoining wing pilots from trail to fingertip

IV. AREA OF OPERATION: RENDEZVOUS

A. TASK: PITCHOUT AND REJOIN

Objective: To determine that the applicant exhibits knowledge of the pitch out and rejoin by:

Explaining—

- a. The differences between a turning rejoin and a straight-ahead rejoin
- b. Lead’s responsibilities during the pitchout and rejoin

B. TASK: UNDER RUN (*overshoot*)

Objective: To determine that the applicant exhibits knowledge of the rejoin under-run maneuver by:

Explaining—

- a. The circumstances under which the under-run maneuver would be executed
- b. The potential dangers associated with the under-run maneuver
- c. Lead’s responsibilities during the under-run maneuver

V. AREA OF OPERATION: 3-SHIP FORMATION

A. TASK: 3-SHIP VIC

Objective: To determine that the applicant exhibits knowledge of 3-ship vic by:

Explaining—

- a. The configuration of a 3-ship vic

- b. The protocols used to fly 3-ship vic

VI. AREA OF OPERATION: TRAFFIC PATTERNS

A. TASK: OVERHEAD 360° PATTERN

Objective: To determine that the applicant exhibits knowledge of the 360° overhead pattern by:

Explaining—

- a. How and when Lead will configure the flight for the 360° overhead pattern
- b. How Lead will determine where to begin the break to downwind
- c. How Lead will determine where to establish the perch position
- d. Where in the traffic pattern flaps and gear will be extended
- e. How Lead will determine the appropriate landing interval in the traffic pattern
- f. Where in the traffic pattern base turn should be initiated
- g. Where Lead will plan to touch down
- h. Procedure for go-around after the pitch-out

VII. AREA OF OPERATION: EMERGENCY/ABNORMALS

A. TASK: EMERGENCY ACTIONS

Objective: To determine that the applicant exhibits knowledge of emergency procedures during different phases of flight by:

Describing—

- a. The actions Lead will take when experiencing an emergency during takeoff roll
- b. The actions Lead will take when a wing pilot executes a high-speed abort during takeoff roll
- c. The actions Lead will take when a wing pilot experiences a catastrophic emergency immediately after takeoff
- d. The actions Lead will take when a wing pilot experiences an emergency at altitude

Explaining—

- e. HEFOE
- f. NORDO recovery procedures
- g. Chase aircraft procedures
- h. Assistance/coordination procedures following forced landing or other emergency procedures

B. TASK: ABNORMALS

Objective: To determine that the applicant exhibits knowledge of abnormal procedures by:

Describing—

- a. Bingo and joker fuel
- b. Hard deck
- c. The reasons for calling “knock-it-off”
- d. Knock-it-off procedures
- e. The reasons for breaking out of the formation

- f. Break out procedures
- g. Lost sight procedures

FLIGHT PHASE

VIII. AREA OF OPERATION: PREFLIGHT PROCEDURES

A. TASK: BRIEFING

Objective: To determine that the applicant:

1. Is capable of organizing, planning and briefing a 4-ship flight in a clear, concise manner
2. Demonstrates that he/she is clearly the leader and in charge
3. Plans the flight with an orderly, well defined and efficient sequence of maneuvers
4. Takes into account local conditions, traffic and weather
5. Takes into account the qualifications and capabilities of the wing pilots
6. Properly briefs emergency procedures
7. Ensures that all flight members clearly understand the briefing
8. Ensures that all aspects of the briefing are consistent with national formation guidelines, the applicant's formation organization's training manual/SOP, and FAA regulations

B. TASK: START, TAXI

Objective: To determine that the applicant:

1. Properly performs the preflight, is strapped in and ready at the briefed start time
2. Conducts engine start up according to briefed procedures
3. Performs a precise radio check-in and positive communication is established with all flight members
4. Handles any delays or problems in a deliberate manner using radio or hand signals
5. Configures aircraft as briefed when taxiing
6. Taxis at a moderate speed that does not require excessive use of power or brakes and is appropriate for the prevailing conditions and the other flight members
7. Complies with all ATC communications or makes appropriate calls on the CTAF frequency

C. TASK: RUN-UP

Objective: To determine that the applicant:

1. Waits until the wing pilots have called ready prior to making the run-up call
2. Allows sufficient time for all wing pilots to perform their run-up and preflight checks
3. Upon acknowledgement of completion of checks, configures his/her ship for safe takeoff, without missing any check-list items, and selects proper transponder mode/code

IX. AREA OF OPERATION: TAKEOFF, DEPARTURE

A. TASK: SINGLE-SHIP, INTERVAL TAKEOFF

Objective: To determine that the applicant:

Takes proper position on the runway based on wind direction and other prevailing factors

1. Initiates the takeoff roll as briefed

2. Establishes the briefed climb power setting and airspeed
3. Initiates a turn or continues straight ahead, as briefed, to effect the rejoin

B. TASK: REJOIN AFTER TAKEOFF

Objective: To determine that the applicant:

1. Maintains a stable platform with constant bank and airspeed
2. Monitors the altitude, aspect angle, alignment and closure of #2, #3, #4, or the second element, as applicable
3. Maintains a traffic watch
4. Safely departs the local traffic area and sends the flight over to the appropriate enroute frequency

X. AREA OF OPERATION: BASIC MANEUVERS

A. TASK: WING WORK/STATION KEEPING—90° AND 180° CLIMBING TURNS, LEVEL OFF AND POWER REDUCTION

Objective: To determine that the applicant:

1. Provides a stable platform to enhance the ability of #3 or #4 to maintain relative position
2. Monitors engine performance and systems periodically to assure compliance within aircraft limitations
3. Uses smooth, consistent changes in power, pitch and bank throughout the maneuver

B. TASK: ECHELON TURN

Objective: To determine that the applicant:

1. Exhibits precise aircraft control
2. Uses entry and exit roll rates that are smooth and consistent

C. TASK: LAZY EIGHTS, LEFT AND RIGHT USING UP TO 30° BANK TURNS, WITH UP TO PLUS OR MINUS 10° OF PITCH

Objective: To determine that the applicant:

1. Understands and appreciates the acceleration and deceleration effects with respect to the lazy-eight maneuvering
2. Uses smooth and consistent changes in pitch and roll throughout the maneuver
3. Monitors the wingmen for position and capability

D. TASK: CROSS-UNDER

Objective: To determine that the applicant:

1. Uses the proper radio signals to direct the cross-under
2. Ensures that the signaled wingman interprets and acts as intended
3. Ensures that wingmen who are supposed to remain in position do so

E. TASK: ROUTE POSITION

Objective: To determine that the applicant:

1. Gives the appropriate signal to send the wingmen to route position
2. Uses the appropriate signal to bring the wingmen back to parade formation

F. TASK: DIAMOND

Objective: To determine that the applicant:

1. Gives the appropriate signal to send #4 to the diamond position
2. Maintains the existing, stabilized flight platform until #4 calls in position
3. Uses the proper signal to send the wingman back to fingertip position

G. TASK: TRAIL

Objective: To determine that the applicant:

1. Uses the appropriate radio call to send the wingmen into trail
2. Maintains the existing, stabilized platform until the wingmen report in position
3. Exhibits smooth, coordinated control throughout the maneuver
4. Uses the appropriate radio call to send the wingmen back to fingertip

H. TASK: LEAD CHANGE

Objective: To determine that the applicant:

1. Configures the flight for the lead change
2. Gives the new lead a position report to provide situational awareness
3. Uses the proper radio calls to initiate the lead change
4. Maintains a stable platform as the new Lead maneuvers into position
5. Takes up proper station keeping in the reconfigured flight
6. Does not lose sight of the new lead once the lead-change signal has been given

XI. AREA OF OPERATION: RENDEZVOUS

A. TASK: PITCH-OUT AND REJOIN

Objective: To determine that the applicant:

1. Configures the flight properly for the pitch-out
2. Gives the appropriate radio calls for the pitch-out maneuver and interval
3. Clears in the direction of the break and executes a level pitch-out
4. Waits until all wingmen are stabilized in trail prior to initiating the rejoin signal
5. Establishes a stable platform by maintaining the briefed airspeed and bank angle throughout the maneuver
6. Divides attention between clearing for the flight and monitoring the wingmen as they rejoin
7. Monitors the wingmen for bearing, altitude, alignment and closure throughout the maneuver

B. TASK: UNDER RUN (“overshoot”)

Objective: To determine that the applicant:

1. Recognizes the potential under-run situation and takes appropriate action
2. Monitors the under-running pilot throughout the maneuver
3. Is cognizant of the potential conflict of other wingmen during the under-run maneuver
4. Takes appropriate action if the under run is bungled

XII. AREA OF OPERATION: SIMULATED EMERGENCY/ABNORMALS

A. TASK: SIMULATED EMERGENCY

Objective: To determine that the applicant:

1. Maintains situational awareness during a simulated emergency situation
2. Is directive in guiding the flight to a satisfactory solution of the simulated emergency situation
3. Is able to perform the proper, supportive roll when another flight member experiences a simulated emergency

B. TASK: KNOCK-IT-OFF (KIO)

Objective: To determine that the applicant:

1. Takes the appropriate action when a KIO call is initiated
2. Makes the proper radio call when a KIO call is initiated
3. Resolves the issue that created the KIO situation

C. TASK: BREAK OUT

Objective: To determine that the applicant:

1. Takes the appropriate action when a break out is necessary
2. Makes the proper radio call when a break out is initiated
3. Resolves the issue that created the break out situation
4. Rejoins the flight in an efficient manner or is otherwise directive in disbanding the flight

D. TASK: LOST SIGHT

Objective: To determine that the applicant:

1. Takes the appropriate action when a lost sight situation occurs
2. Assures that all flight members are de-conflicted from one another
3. Resolves the lost sight situation in a safe, appropriate manner

XIII. AREA OF OPERATION: TRAFFIC PATTERNS

A. TASK: OVERHEAD 360° TRAFFIC PATTERN

Objective: To determine that the applicant:

1. Configures the flight for the echelon formation appropriate to the direction of break
2. Maneuvers the flight to an initial approach for the landing runway
3. Makes the appropriate ATC or traffic advisory radio calls
4. Monitors other traffic in the pattern and de-conflicts as necessary
5. Gives the appropriate pitch-out radio calls for the break and interval
6. Flies the pattern as briefed using the appropriate altitude and airspeeds
7. Flies a stabilized final approach
8. Lands on the appropriate portion of the runway
9. Monitors the wingmen and ensures all have cleared the runway and are ready to taxi

XIV. AREA OF OPERATION: COMMUNICATION

A. TASK: EXECUTION

Objective: To determine that the applicant:

1. Uses radio calls, as appropriate, in a clear, concise manner
2. Ensures that the wingmen understand the radio calls and acknowledge as is necessary

3. Uses proper visual signals, as appropriate, to direct wingmen
4. Uses proper aircraft signals, as appropriate, to direct wingmen
5. Monitors wingmen for proper action after giving a signal

B. TASK: FREQUENCY CHANGE

Objective: To determine that the applicant:

1. Uses proper check-in/check-out procedures during frequency changes
2. Moves the flight out to route position, as necessary to accomplish the frequency change safely

XV. AREA OF OPERATION: POST FLIGHT OPERATIONS

A. TAXI, ENGINE SHUTDOWN

Objective: To determine that the applicant:

1. Gathers the flight together for the return taxi, as briefed
2. Signals for engine run-up and shutdown as appropriate
3. Secures the aircraft as required

B. DEBRIEF

Objective: To determine that the applicant:

1. Is clearly in control of the debrief and guides it to a successful conclusion
2. Reviews the mission objective at the outset of the debriefing
3. Debriefs those portions of the flight where learning can be achieved
4. Debriefs with emphasis on what took place, why it took place and how corrective action will bring about an improvement
5. Provides individual, detailed instructive guidance for the wingmen, as necessary
6. Allows each wingman to provide additional debriefing commentary to provide perspective or fill in areas not covered by Lead
7. Accepts constructive criticism with appreciation and understanding
8. Demonstrates maturity, objectivity and appreciates his/her responsibility to maintain a positive, professional training experience for the flight

XVI. AREA OF OPERATION: GENERAL LEAD AIRMANSHIP

A. TASK: LEAD AIRMANSHIP

Objective: To determine that the applicant:

1. Exhibits precise aircraft control, including smooth and deliberate manipulation of the flight controls
2. Is consistent with smooth, constant roll rates into and out of turns
3. Manages power such that control is timely, with no erratic or unnecessary throttle movement
4. Keeps power changes to a minimum, makes all power changes smoothly, only as necessary, and always allows the wingmen a comfortable power margin
5. Does not reduce power to idle or any power setting that is so low that it would not allow the wingmen to carry an increment of power that would provide them with differential speed control

6. Does not carry a power setting that would cause a wing pilot to exceed his/her engine operating limitations
7. Does not fly a maneuver so as to cause a wing pilot to exceed the operating limitations of his/her aircraft
8. Flies the sequence of maneuvers as briefed in a logical, consistent manner
9. Remains within the confines of the defined operating area
10. Adheres to all ATC airspace and communication requirements
11. Maintains a traffic watch
12. Is aware of the position and needs of the wingmen at all times
13. Flies in a manner consistent with the proficiency level of the wingmen
14. Maintains situational awareness at all times
15. Conforms to FAA regulations and requirements