

# FAST FORMATION FLIGHT PRACTICAL TEST GUIDE

## WINGMAN

### FOREWORD

In aviation, each rating, certificate, or flying privilege requires the pilot or applicant to demonstrate his knowledge and skill in performance measured against a minimum standard. Each module of performance or individual task usually is demonstrated by a "level of accomplishment."

Each task and the associated level of accomplishment (L.O.A.) is a criteria by which an evaluator is able to judge and measure an individual's depth of knowledge and his/her ability to perform to a minimum standard.

In all instances where aviation knowledge and skill are required, the individual must have, at some time past, taken a "check ride" to demonstrate competence. A check ride or flight test is the aviation community's way of providing for an evaluation of an individual's total knowledge and the ability to maneuver an aircraft precisely according to demands of the rating. Regardless of the rating or certificate, the process is the same.

The flight test process is always the same. A minimum standard of performance is established, and an applicant is required to demonstrate the necessary knowledge and skill necessary to meet the minimum. However, no one is perfect; therefore, each module or task usually will incorporate tolerances in levels of performance. While we are all familiar with the average stated standards of heading  $\pm 10^\circ$ ,  $\pm 100$  ft altitude for general flying, no such criteria has been developed for the civilian evaluation process to judge the quality of formation flying on an individual task basis, objectively!!!

The emerging National Formation Policy Committee, by definition and intent, is promoting a standard. This organization has officially adopted the curriculum of the T-34 Association "Formation Flight Manual" and Darton International's "Formation Flying, the Art" video. The syllabus of each curriculum is dedicated to the basics of formation flight. Each of these teaching aides, the manual and the video, is integral to the process of safe formation flight, the manual for describing the standards, and the video for teaching and visually demonstrating the process.

However, neither the manual nor the video has standardized or codified the evaluative process. Concomitant with the National Formation Policy Committee's goals of standardization in formation flight as it relates to all of the U.S. Warbird community, we are establishing a flight test process which incorporates a criteria for evaluation. This criteria has been developed for each maneuver and is organized as an objective flight test guide to be used by each formation check pilot.

The current evaluative process as specified by the T-34 Association manual provides for formation pilot certification by ... "performance and maneuvers to a (level) acceptable to the check pilot." This objectivity is desirable in a small organization where like aircraft are all being flown. Merging all Warbird organizations in the process of standardizing formation flight demands more structure. The primary emphasis of new structure is a standardization of check pilots from all organizations through the use of annual meetings and a "standards of performance" manual or flight test guide for formation pilot wingmen and leaders.

A "standards of performance" manual need not be complex or burdensome, only objective, with minimum standards of performance based on the concept of quality airmanship attainable by a reasonably well qualified Warbird pilot. Basic airman qualifications will include:

- Private pilot, minimum (preferably commercial)
- 500 hours total time
- Current third class medical with limited waivers (specify)
- Minimum of 100 hours complex time; i.e., retractable gear, constant speed prop, etc.
- Flight test recommendation by a currently qualified lead

"Partial waiving of these standards will be considered only by the F.A.S.T. committee in accordance with the appeal process."

The "S.O.P." guide for each level of formation pilot; i.e., wing, lead, or check, incorporates a simplified grading system. In keeping with the military theme, we are adopting the Navy NATOPS system of judging. Competence is described three ways — QUALIFIED, CONDITIONALLY QUALIFIED, and UNQUALIFIED.

Further defined, a check pilot may be able to use the following guidelines to determine a formation pilot applicant's level of competence and grade accordingly. Each task has a range of grades. An evaluation of "unqualified" in any flight phase while airborne, including takeoff or landing, will cause a "down" for the flight, and the applicant should be required to obtain further training. If the applicant downs a second time, this failure should trigger a consultation with the individual who recommended the applicant.

The qualification format will be the T-34 Association "Wingman Qualification Report" for a wing patch and the T-34 Association "Flight Leader Qualification" for lead patch. These two guides are excellent and generic. There is enough subject latitude in each guide so as to allow a check pilot grading discretion. This guide has been approved by the F.A.S.T. Committee and its respective members

The check pilot must ride with the applicant for the check ride. See addendum for single place aircraft exception.

All formation flight check ride candidates must have received and logged formation flight training from one of the following sources to qualify for a formation flight check ride. In addition, an approved F.A.S.T. lead or check pilot must endorse and recommend the applicant for the check ride.

- a. Military flight training.
- b. Confederate Air Force Traron formation training.
- c. Kalamazoo Aviation History Museum formation transition program.
- d. Any other formation training program certified by a F.A.S.T. check pilot who states the training was in accordance with the T-34 Association Flight Manual/Darton International Formation Flying Video, syllabus and curriculum.

EVALUATION GRADING  
BASIC GUIDELINE

QUALIFIED:

Applicant demonstrates thorough, comprehensive knowledge, and performs all required maneuvers without prompting or counsel. Applicant flies aircraft smoothly and coordinated, without exceeding aircraft or engine limits. All maneuvers required are performed with precision and a degree of finesse. The successful and safe outcome of any maneuver is never in doubt.

CONDITIONALLY QUALIFIED: NOTE: The check ride is only graded Qualified or Unqualified. Applicant demonstrates adequate knowledge and performs maneuvers required. Performance of maneuvers is within allowable tolerances, but improvement in smoothness and precise aircraft control is recommended. Applicant safely applies principles of formation flight and qualifies for wingman patch. Additional training and practice are required to reach the QUALIFIED level.

UNQUALIFIED:

Applicant's knowledge and performance of maneuvers is not adequate. Applicant's planning is deficient and aircraft control is rough. Occasionally some aircraft or engine limits are exceeded. Applicant's demonstrated capability does not meet minimum standards for issuance of formation pilot "wing" credentials.

STANDARDS GRADING FORM

ORAL PHASE

OBJECTIVE #1:

Applicant should demonstrate knowledge and understanding of all airborne hand and aircraft signals.

Run-up	Climb
Frequency changes	Descent
Number signals	Fuel state inquiry
Head nod	In-flight emergency
Wingman cross	Can't hear
Element cross	Can't transmit
Break-up and rejoin	Lead change
Gear and flap cycling	Stack up
Power addition & reduction	Stack down
Level off	#4 to slot

QUALIFIED:

Applicant knows all airborne hand and aircraft signals and when they are used in formation flight.

CONDITIONALLY QUALIFIED:

Applicant knows most or all of the signals with some prompting. Applicant's description of airborne signals does not exhibit full understanding without discussion and review during the oral test.

UNQUALIFIED:

Applicant does not know all the airborne hand and aircraft signals without prompting or open book reference. Applicant confuses or inverts the meaning of two or more signals during test.

**OBJECTIVE #2:**

Demonstrates understanding of the mechanics and safety factors for the following formation procedures. Additionally, applicant is able to explain the basic concepts of formation flight:

- Standard formation configurations: trail, echelon, fingertip, enroute, diamond.
- Cross-unders, rejoins, aircraft configuration changes.
- Break-up and rejoin, radius of turn cut-off, overshoot energy management.
- Turns in fingertip, echelon, trail, enroute, terminal maneuvering.
- Lead change, emergency signals, HEFOE system.
- 360° overhead approach, breaks, intervals, section landings, wave off.
- Taxi-in, shut-down procedures.
- Radio discipline: check-in, frequency changes, traffic calls.
- Emergency abort on take-off.
- In-flight emergency procedures.
- Section go around procedures (wave-off)

**QUALIFIED:**

Applicant understands the process and mechanics of all formation flight conditions. Applicant is able to discuss and explain the dynamics of the different formations, the correct methods of aircraft control to assure safety, and is able to describe proper wingman techniques for formation changes. Applicant understands flight discipline and wingman's responsibility to the integrity of the flight.

**CONDITIONALLY QUALIFIED:**

Applicant understands the mechanics of the different maneuvers but needs prompting to understand the safety aspects of each flight condition. Also, the applicant does not exhibit full and comprehensive knowledge of different methods of aircraft control to maintain or change position in formation relative to other flight members. Applicant understands flight discipline and wingman's responsibility to the integrity of the flight.

**UNQUALIFIED:**

Applicant is unable to describe basic formation flight mechanics and concepts without prompting. Applicant is unable to describe the dynamics of each formation flight condition and does not exhibit knowledge concerning the safety basic of each formation or configuration change.

## STANDARDS GRADING FORM

### FLIGHT PHASE

#### OBJECTIVE #3:

Start time, start, taxi, response to signals.

#### QUALIFIED:

Applicant properly plans pre-flight, is strapped in and ready at start time. Applicant concentrates on leader and complies with start, radio check-in, and taxi signals. Applicant configures aircraft as leader turns into proper ground taxi position, and maintains taxi position without excessive use of power or brakes.

#### CONDITIONALLY QUALIFIED:

Applicant properly plans pre-flight and is strapped in and ready at start time. Applicant does not concentrate on leader after mount-up and delays flight or misses signals. Applicant maintains relative position on taxi, but power or brake use is erratic and not smooth.

#### UNQUALIFIED:

Applicant is generally not prepared at pre-brief start time. Applicant does not accomplish start in flight number sequence or uses excessive time. Applicant misses signals, taxi position is incorrect, and/or uses excessive power and brakes to maintain position.

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#### OBJECTIVE #4:

Radio discipline: check-in, frequency change.

#### QUALIFIED:

Applicant has recorded all pre-brief frequencies in proper order of use. Applicant anticipates radio calls from lead and responds "crispily" with flight position number on all commands. Applicant checks on and off all assigned channels, and frequency changes are made timely so as not to disrupt flight member sequential check-in. If applicant's aircraft is NORDO, he is able to precisely and effectively communicate his situation to his leader by use of hand signals, including recognition of all numerical digits.

#### CONDITIONALLY QUALIFIED:

Applicant is aware of all pre-brief frequencies and responds to radio check-ins, but occasionally is out of sequence and uses extra or non-standard phraseology. Applicant is slow in frequency changes to new channel and occasionally misses a check-in. Applicant needs prompting to understand some NORDO signals.

#### UNQUALIFIED:

Applicant is aware of all pre-brief procedures but uses them out of sequence. Applicant misses two or more radio check-ins or selects incorrect frequency and delays flight. Applicant does not respond to hand signals from his leader or misunderstands numerical digit instructions. Applicant's general awareness concerning radio discipline is not at a level consistent with what is required for safe formation flight.

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**OBJECTIVE #5:**

Run-up: check list and standard procedures.

**QUALIFIED:**

Applicant taxis into proper parade position in sequence, space permitting, and smoothly stops with no wing overlap. Applicant complies with lead run-up signal and performs run-up and pre-takeoff checks in timely manner. Upon completion of checks, applicant configures his ship for safe takeoff without missing any check list items, selects proper transponder code (standby), and acknowledges ready with a thumbs up to his leader. Thumbs-up signal must be in sequence only when all flight members are ready.

**CONDITIONALLY QUALIFIED:**

Applicant reaches run-up and taxis into position not aligned with other flight members. Applicant complies with run-up signal and performs pre-takeoff checks but misses or rushes some items. Applicant neglects to pass "up the line" the thumbs-up signal, prompting a radio call from lead.

**UNQUALIFIED:**

Applicant lines up in pad with wingtip overlap and/or angular mismatch with lead. Applicant does not concentrate and misses run-up signal, causing flight delay. Applicant rushes run-up and pre-takeoff checklist, squawks active, and prematurely passes thumbs up to lead without checking down-line formation members. Applicant's concentration and discipline are lacking and may cause flight safety hazard.

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**OBJECTIVE #6:**

Section take-off: position and power management.

**QUALIFIED:**

Applicant uses proper spacing and taxis into correct wing position for section takeoff. At brake hold, applicant acknowledges run-up signal, checks instruments, then concentrates on leader. At leader head nod commencing takeoff roll, applicant smoothly adds power and maintains position during takeoff roll. While maintaining position during acceleration, applicant does not use excessive power adjustments, is smooth on all controls, and rotates to liftoff with his leader. After liftoff, applicant maintains position on the wing and promptly complies with gear up and power adjustment signals from his leader. Throughout the maneuver, the applicant performs smoothly without over-control or excessive relative motion.

**CONDITIONALLY QUALIFIED:**

Applicant uses proper spacing and taxis into correct wing position for section takeoff. Applicant complies with all leader signals and, at head nod commencing takeoff, is slightly sucked or overruns lead. Applicant corrects position during roll but is not consistently smooth. Liftoff is relatively smooth, although the timing and fuselage angles are not precisely matched. Applicant's corrections are prompt, but some slight evidence of over-control is present. Applicant complies with leader's gear up signals and settles into a safe parade position.

**UNQUALIFIED:**

Applicant is hesitant about proper position for section takeoff and needs prompting. Applicant complies with run-up signal and, at head nod commencing takeoff, becomes sucked or acute. Applicant's response is excessive power control which does not correct position error. Aircraft control is not smooth, and applicant's position at liftoff is not consistent with procedures. Applicant either remains acute or sucked after takeoff, necessitating large power changes. Parade position is attained after takeoff only by asking lead for course modification to establish cutoff.

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OBJECTIVE #7:

Station keeping, climbing turns 90° and 180°, level off, and power reduction.

QUALIFIED:

Applicant exhibits precise aircraft control, resulting in little or no relative motion. Applicant's maneuvering and his power control are timely, with no erratic throttle control. Vertical and horizontal positions are stable while in either fingertip or echelon turns. Applicant is able to smoothly and precisely maneuver his aircraft, assuring proper station keeping position. Applicant's smoothness enhances the ability of "3" or "4" to maintain relative position. Applicant monitors engine performance and systems periodically to assure compliance within aircraft limitations. Applicant stays alert and aware while consistently maintaining concentration and discipline assuring the integrity of the flight.

CONDITIONALLY QUALIFIED:

Applicant exhibits reasonable aircraft control and understanding of the wingman requirements to maintain flight integrity. Applicant's power, pitch, and yaw control to maintain position are adequate but not smooth. Applicant is slightly late in power adjustments, especially when turns are commenced. Applicant may also have a tendency to get sucked or go acute but corrects. Power control is occasionally excessive for the condition but not beyond engine limits. Applicant would be considered safe in formation, but the lack of position control and smoothness would make No. 3 or 4 flight position difficult. Applicant concentrates, stays alert, and exhibits the proper attitude necessary to become a formation pilot.

UNQUALIFIED:

Applicant exhibits poor level of concentration, which manifests itself by rough aircraft control. Station keeping is erratic and not predictable. Power usage is excessive, with M/P excursions of 8–10 H.G. or more. Applicant routinely goes acute or gets sucked and/or does not maintain wing tip clearance. Applicant fails to monitor aircraft systems periodically and is behind the airplane. Applicant's aircraft control is uncoordinated and not definitive. Applicant's attitude is good, but his skill and performance in formation flight may pose a safety hazard.

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OBJECTIVE #8:

Cross unders: power management smoothness — proper nose/tail clearance.

QUALIFIED:

Applicant's use of power and primary flight controls is smooth, coordinated, and predictable. Cross unders are performed using the correct technique with proper stepdown, nose to tail clearance, and prompt power usage. Applicant understands and acknowledges lead signals. Cross unders are at the correct rate, and station keeping after cross under is in the correct position.

CONDITIONALLY QUALIFIED:

Applicant understands and acknowledges lead's cross under signal. Applicant performs cross under with too much crossing speed or fails to properly add power to stop aft movement. Applicant occasionally uses insufficient step down and encounters prop wash from lead aircraft. Cross-unders are performed safely, but occasionally applicant is not smooth or uses excess control input.

UNQUALIFIED:

Applicant is unable to repeatedly cross under safely. Applicant typically removes excess power and becomes sucked or removes too little power and cross under is performed with insufficient nose to tail clearance. Applicant also uses incorrect heading change when commencing cross under, causing crossing speed to be too fast or too slow.

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OBJECTIVE #9:

Break-up and rejoin: signal recognition, proper interval, radio call, cut-off angle, 45° line, overshoot energy management.

QUALIFIED:

Applicant understands and is able to describe the mechanics and geometry of radius of turn and energy management with respect to breakups and rejoins. Applicant responds correctly and acknowledges lead breakup command. When the maneuver begins, applicant breaks at the command interval and turns into trail with lead on the horizon at approximately 1000–1200 feet astern. Applicant demonstrates radius of turn principal in breakup phase so as not to overrun or lag in trail on lead. When lead signals rejoin and commences maneuver, applicant demonstrates understanding of maneuver by slight power application to gain approximately a 5–10 kt speed advantage over lead and simultaneously turns with leader at a rate that places him inside lead's radius on a 45° bearing line. From this point, applicant demonstrates his understanding of the maneuver by adjusting bank and/or intercept track to arrive at a wing station keeping position in no more than 180° of turn. Applicant uses power as required when within 2–4 plane lengths of lead but does not substitute power usage for proper cutoff, or exceed engine limits during power changes.

In the event of an impending overshoot, the applicant uses the proper under run procedure and does not position himself on the outside of the leader's turn, vertically, any higher than an echelon wing position. Applicant demonstrates, during overshoot, proper use of clear air space outside leader's radius of run and reserves enough energy to effect the rejoin by turning back inside of leader's turn without becoming sucked. Applicant exhibits no tendency to go wing up, lose sight of his leader, and is always smooth and predictable on the controls.

CONDITIONALLY QUALIFIED:

Applicant adequately describes mechanics and geometry of breakup and rejoin. Applicant demonstrates reasonable aircraft flight path control on breakup. Applicant performs rejoin maneuver in less than 360° of turn but has tendency to over control slightly and use large throttle movements to compensate for slightly sucked or acute position on bearing line. Aircraft control is safe and applicant exhibits no tendency to go "belly up" or lose sight of his leader.

During overshoot demonstration, applicant demonstrates competence in the under-run procedure, uses clear airspace outside of leader's turn radius, but does not preserve enough energy to effect a rejoin without beginning another radius of turn cutoff routine. All maneuvering during breakup and rejoin is safe.

UNQUALIFIED:

Applicant has difficulty understanding and describing the geometry necessary to be applied in the rejoin process. Applicant requires tutoring and/or graphic descriptions, including drawings, to perceive the rejoin process. While in flight, applicant has difficulty maintaining correct spacing during the break-up and in-trail phase of the maneuver. When the rejoin is commenced by lead, the applicant either uses too little or too much angle of bank and positions himself on an incorrect bearing line. When on a sucked bearing line, the applicant does not perceive the angle necessary to effect the rejoin and attempts to use excessive power to overcome the sucked condition. When the applicant establishes a bearing angle which is acute, once again he attempts to use the power to manage the closure rate as opposed to establishing the correct intercept line. When the closure rate becomes excessive, the applicant has a tendency to go belly up or lose sight of his leader. Alternately, in an overshoot condition, the applicant uses excessive aircraft heading change, and in doing so is positioned so great a distance from the lead that he blows the possibility of re-intercepting the lead's radius of turn. With counsel and demonstration, the applicant is still not able to perceive the correct sight picture and effect a safe rejoin.

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OBJECTIVE #10:

Landing gear and flap recycling, turns in "dirty" configuration, power and position management, signal recognition.

**QUALIFIED:**

From a position of station keeping, lead will signal the wingman applicant to extend the landing gear and the flaps. The applicant promptly recognizes the configuration changes signaled by the leader and acknowledges them with a head nod. When the leader is ready to execute the configuration change, he signals the wingman applicant with a head nod, and the applicant promptly effects the configuration change. During the configuration change, the applicant controls his aircraft so as to maintain precise station keeping position, especially pitch changes about the lateral axis. During the configuration changes, the applicant modulates the power smoothly, as required, to maintain his relative fore and aft position. While in the dirty configuration, the applicant maintains precise station keeping position, as in cruise flight. The applicant acknowledges and complies with power changes initiated by the lead while in the dirty configuration and maintains his position. Reconfiguring the flight from a dirty configuration to a clean configuration, the applicant acknowledges and complies with lead signals, adding power, retracting the gear, and retracting the flaps while maintaining precise station keeping position.

**CONDITIONALLY QUALIFIED:**

From a station keeping cruise condition, the wingman applicant acknowledges and complies with lead signals, slowing the flight in preparation for configuration changes. During the deceleration phase, the applicant does not precisely control fore and aft movement, but corrects adequately. When the lead signals for a configuration change, the applicant acknowledges the signal; and, when lead signals execution with a head nod, the applicant complies. During the configuration change, the applicant's control is somewhat imprecise and some relative motion occurs. When the configuration changes are complete, the applicant is able to return to the proper station keeping position, but power and aircraft control is not smooth. Applicant is able to maintain station keeping position during dirty turns. When lead signals for configuration change from dirty to clean, and indicates execution, applicant once again slightly over-controls with power usage or aircraft flight controls, but his station keeping position is relatively safe. When the lead's aircraft and the wingman's aircraft are clean and re-accelerating to cruise, the wingman applicant does not promptly re-trim the aircraft for cruise configuration and possibly exhibits some tendencies for uncoordinated flight.

**UNQUALIFIED:**

The wingman applicant receives and acknowledges the leader's command for configuration changes. When the leader executes the configuration changes, the applicant's position changes substantially and he either becomes acute, sucked, or goes wide. Additionally, he does not match pitch changes about the leader's lateral axis and overcompensates with large power modulations. When the wingman's aircraft is configured for landing, he is able to move into a station keeping position but over-controls and does not trim his aircraft properly. When leader commences aircraft cleanup and re-acceleration, the applicant once again breaks formation by not precisely matching the leader's attitude and power changes.

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**OBJECTIVE #11:**

Aircraft recognition signals: yaw, porpoise, wing rock.

**QUALIFIED:**

The wingman applicant, on receiving the yaw signal from the leader's aircraft, promptly makes a coordinated small heading change and power reduction so as to move out to cruise formation flight position. Applicant recognizes proper cruise formation as being slightly stepped down from leader but slightly forward of the normal station keeping position on an approximate 20° bearing line. The applicant establishes proper cruise spacing of approximately four to six plane widths on the 20° bearing line. The applicant, upon receiving the leader's aircraft porpoise signal, awaits the leader's slight turn and then takes additional step-down and slightly reduces power to assume the close trail position. When stable in the close trail position, the wingman calls, "Two's in," or as the flight position number dictates. The wingman applicant, upon receiving the leader's wing rock signal, promptly proceeds from whatever formation position he is in to the standard station keeping position on the inside of the leader's turn. If the position change is from cruise formation, the applicant adds the appropriate amount of power and makes a slight heading change to "move up the line" and establish a normal station keeping position.

**CONDITIONALLY QUALIFIED:**

The applicant recognizes and promptly complies with yaw aircraft signal. On occasions, the applicant moves too far aft or takes too much step down in the process of assuming cruise formation. The applicant unintentionally allows himself to be put in a distant position, which possibly will require large power applications to reassume station keeping position. The applicant, upon receiving the porpoise signal, acknowledges the signal and begins the process of moving in to close trail. The applicant occasionally removes too much power or maneuvers his aircraft so as to be in excess of the recommended one to two plane lengths close trail position. Applicant occasionally forgets the position call, which prompts a radio hail from the leader. The applicant, upon receiving the wing rock signal, begins the process of moving back into station keeping position but occasionally uses excess power, is uncoordinated or not smooth in reassuming station keeping position. The applicant, when rejoining from cruise formation, uses excessive power, does not establish himself on the proper bearing line, and occasionally requires large power manipulations to control high closure rates.

**UNQUALIFIED:**

The applicant misunderstands and/or does not acknowledge the lead aircraft yaw, porpoise, or wing rock signals. Applicant misinterprets signals and performs the wrong position change. Applicant's concentration is not adequate and requires radio communication from the leader to perform position change. When in close trail or cruise formation, applicant does not understand wing rock signal and does not comply with leader's instructions; or, applicant understands wing rock signal, but aircraft control and energy management in the rejoin to station keeping necessitates large power manipulation or utilizing the under run procedure.

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**OBJECTIVE #12:**

Lazy-eights, left and right and 45° bank, plus or minus 20° pitch.

**QUALIFIED:**

The applicant maintains precise station keeping position and understands and appreciates the acceleration and deceleration effects with respect to the lazy eight maneuvering. Applicant uses power with anticipation, smoothness, and well within engine limits. As required, applicant advances the propeller control to a higher rpm so as not to exceed engine limits in engines that are supercharged. On the inside and the outside of the turns, applicant's position does not change fore and aft as the result of acceleration or deceleration effects in the maneuvering. In the event that the leader positions the wingman applicant in extended trail for the lazy eight maneuvering, the applicant sets a fixed power setting and maintains position, using appropriate vertical and horizontal cut-off so as not to exceed spacing variations in excess of two plane lengths.

**CONDITIONALLY QUALIFIED:**

The applicant maintains relatively stable station keeping position but has a tendency to be late with power usage, and the acceleration and deceleration effects cause fore and aft movement. The applicant's aircraft coordination and smoothness are fair to good but need some improvement. Applicant occasionally, on the inside turns, goes to a wing overlap condition, and on the outside turns, occasionally goes wide. During extended trail maneuvering, the applicant exhibits a tendency to control nose-to-tail position via use of the throttle instead of using cut-off. When applicant uses only cut-off to maintain in-trail spacing, he accords between four and six plane lengths and does not compensate precisely for acceleration and deceleration errors.

**UNQUALIFIED:**

Applicant is unable to maintain station keeping position precisely during maneuvering. During inside turns, applicant continually goes to wing overlap and/or acute. During outside turns, applicant gets sucked and then over controls with power in an attempt to regain position. Applicant is rough on the controls, not coordinated, and on occasion there is a potential for a safety hazard. The applicant, in extended trail maneuvering, cannot master the process of cut-off to maintain nose-to-tail position. The applicant continually over controls with the throttle and, in combination with attempting to use cut-off, exceeds the recommended 60° maneuvering cone specified for extended trail flight.

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**OBJECTIVE #13:**

Terminal maneuvers: overhead approach, break and landing or section landing at check pilot's discretion (check pilot option, not required in tail wheel aircraft).

**QUALIFIED:**

Applicant maintains precise station keeping position during echelon formation on initial approach to the airport. Applicant acknowledges lead's break-up interval and times his break precisely to the interval and takes proper spacing, turning from the initial approach to down wind. Applicant maintains precise in-trail position on the leader at the same altitude, configures his airplane for landing, and precisely flies the pattern to land on the appropriate side of the runway in accordance with his flight number position. Applicant touches down on the runway in the first 1,000 feet, and his spacing is in accordance with the break-up interval and/or that spacing set by flight member number 2.

During section landing, wingman applicant exhibits precise station keeping skills during that period of time that the leader has commanded the flight to configure their airplanes for landing. On final approach, applicant maintains the appropriate acute stack level position, with approximately 20 feet of wing tip spacing. When on 500 foot straightaway or short final, applicant increases wingtip spacing, not to exceed 25 feet, and alights his aircraft on his side of the runway. Applicant continues precise station keeping position of acute and stack level over the threshold and flares with his leader to touchdown. During flare, touchdown, and roll-out, applicant uses appropriate power so as not to get sucked or move ahead of his leader.

**CONDITIONALLY QUALIFIED:**

Applicant flies acceptable station keeping position on initial approach to the target airport. Applicant acknowledges lead's break interval signal and breaks appropriately at the timed interval. Applicant does not maintain precise in-trail position on the leader, either horizontally or vertically. Applicant's spacing from the abeam point to touchdown is not precisely controlled with reference to other flight members, but applicant proceeds to the correct side of the runway and makes a normal, safe landing in the first 1,000 feet.

Wingman applicant does not maintain precise station keeping position when lead commands aircraft configuration for section landing. After configuration change, wingman applicant re-attains station keeping position but needs prompting by leader to move acute and stack level. Throughout the approach, applicant has a tendency to return to normal station keeping position or stack too low. Applicant's section landing precision is not precisely controlled throughout final approach and touchdown but is safe and in accordance with minimum standards. Applicant touches down on his side of the runway and slightly accelerates past the leader or becomes more sucked during the roll-out.

**UNQUALIFIED:**

Applicant exhibits poor station keeping capabilities, lack of confidence, and lack of concentration, especially in the terminal area while approaching the airport. Applicant attempts to fly too close to his leader or encounters reasonably severe difficulty in maintaining a safe station keeping position. Applicant acknowledges lead's break-up signal and interval but does not comply with the interval. Applicant's flight position after the break is not precise, and the pattern is sloppy. Applicant ignores or misjudges his landing position on the runway and lands on the wrong side of the runway or on the center line against local course rules.

In preparation for section landing, wingman applicant is unable to maintain precise station keeping position during the process of reconfiguring the aircraft for landing. After configuration as commanded by the lead, wingman applicant goes acute, wide, or gets sucked to an extent that power modulation within engine limits will not allow for re-attaining appropriate section landing station keeping position. Applicant exhibits lack of confidence, lack of concentration, and flight capability to maintain precise section landing station keeping position, and may pose a flight hazard. Applicant is unaware of the safety hazard involved with radical position changes during a section landing approach and uses poor judgement in evaluating options such as wave in,

**OBJECTIVE #14:**

Runway clearing, taxi-in, shutdown, and debriefing.

**QUALIFIED:**

Applicant clears runway in accordance with standard formation safety rules. Applicant rolls to the end and clears at the last taxi-way and turns into trail on his leader with pre-briefed spacing. Applicant configures his aircraft as the leader and maintains appropriate nose-to-tail clearance during the taxi-in. Applicant turns into the ramp space in flight number sequence, with the appropriate fuselage line-up and spacing. Applicant shuts aircraft down in accordance with the command cut signal from the leader and the execution head nod. During debriefing, applicant is attentive and, when the case arises, accepts constructive criticism with appreciation and understanding. Applicant demonstrates maturity and objectivity and appreciates his responsibility to maintain the integrity of the flight.

**CONDITIONALLY QUALIFIED:**

Applicant clears the runway at the end, using the last tie-in in accordance with formation flight safety rules. Applicant turns into trail on the taxiway behind his leader but occasionally neglects to configure his aircraft like his leader's. During taxi-in, applicant occasionally uses excess power and/or brakes to maintain nose-to-tail spacing on his leader. During taxi-in, applicant turns into the ramp with appropriate spacing and complies with leader's shut-down command, but occasionally misses the timing of the shut-down procedure and is early or late. During debriefing, applicant presents a mature and objective outlook concerning the flight and accepts constructive criticism.

**UNQUALIFIED:**

Applicant exits the runway before the end and/or possibly causes a ground conflict with other flight members on the landing roll-out. Applicant turns to taxi behind leader but does not configure his aircraft as the leader. Applicant uses excessive power and/or brakes during the taxi-in portion and does not maintain consistent spacing between his aircraft and his leader. Upon reaching the ramp, applicant ignores or misunderstands the leader's shut-down command and is either premature or late in shutting his aircraft down. Applicant's post flight aircraft securing is incomplete. During debriefing, applicant does not accept criticism well, makes excuses for errors in flight performance, and exhibits immature emotions. Applicant does not realize the importance of his responsibility in maintaining the integrity of the flight.

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## ADDENDUM

To accommodate the greatest number of potentially qualified pilots and Warbird operators for the purpose of formation check rides, the following modifications to the standards of performance Flight Test Guide are incorporated.

### Check pilot options (Include/Exclude)

- a. Formation take-offs and landings in tailwheel aircraft.
- b. Lazy-eights in fingertip or echelon
- c. Type-specific hand or aircraft signals, if standard for the aircraft type or operating entity, such as a museum. However, this DOES NOT preclude adoption and use of ALL standard signals, hand and aircraft, as described in the T-34 Association Formation Flight Manual. Use and understanding of standard hand and aircraft signals is a mandatory requirement to pass a formation flight check ride.
- d. Airborne configuration changes.

### SINGLE-SEAT SINGLE-CONTROL FIGHTER CHECK-RIDES

To accommodate single seat aircraft, a check ride may be performed by use of a "chase aircraft." The applicant must meet all the conditions for formation flight, and must meet F.A.R. regulations for pilot in command. For the purpose of this check ride, a qualified lead must be in charge of the section. All flight member aircraft must be capable of two-way radio communication, using permanently installed aircraft radios. The F.A.S.T. check pilot must be rated in the chase aircraft and be flying pilot in command.

The flight must be conducted in accordance with the FORMATION FLIGHT PRACTICAL TEST GUIDE, excepting as noted herein or where type specific operations prohibit a maneuver or configuration.

**A THOROUGH BRIEFING MUST BE GIVEN PRIOR TO ANY CHECK RIDE, AND EXTREME!!!!  
CAUTION MUST BE OBSERVED WHEN PERFORMING FLIGHT TEST CHECK RIDES USING  
DISSIMILAR AIRCRAFT.**