



**FORMATION FLYING, INC (FFI)**

## **Formation Standards and Proficiency Program**

### **Program Manual**

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## 1. OVERVIEW

In response to a perceived need within the warbird community to standardize formation flying and increase its safety, the “**Formation And Safety Training**” National Standard Program was developed. Various warbird organizations had created and were using procedures and signals unique to their membership background. In 1993, the Warbird Operators Conference agreed to adopt a common national program for formation flying. Committee action resulted in acceptance of the T-34 Association “Formation Flight Manual” and the Darton Video “Formation Flying, The Art” as common standards by five organizations within the warbird community (Canadian Harvard Aircraft Association, Confederate Air Force, EAA Warbirds of America, North American Trainer Association, and the T-34 Association). A Formation and Safety Team (**FAST**) was charged to develop formation standardization materials, appoint check pilots, determine evaluation and flight check administration methods, and create manuals. In 1995, the Valiant Air Command and the YAK Pilots Club joined FAST, and the Joint Liaison Formation Committee was approved to use FAST documents and manuals.

In 1997, the Federal Aviation Administration (FAA) began requiring the local Flight Standards District Offices (FSDO) to include in their airshow waiver approvals a stipulation that anyone participating in non-aerobatic formation flight during the airshow must possess a valid industry formation training and evaluation credential acceptable to FAA. The FAST had developed cards to show as appropriate credentials and the International Council of Airshows (ICAS) had a non-aerobatic formation card. However, since the FAST was recognized by FAA as a warbird only organization, the many and diverse groups of formation flyers outside the warbird community were now excluded from participating in formation within waived airspace during an airshow unless they had an ICAS non-aerobatic formation card. Then, in late 1998, ICAS terminated issuance of non-aerobatic formation cards.

Discussions between EAA, FAST and FAA in late 1997 resulted in FAST authorization for EAA to use copyrighted FAST materials to create its own formation flying program dedicated to the EAA aircraft community. Subsequent discussions resulted in the forming of an independent organization, Formation Flying, Inc., to which EAA would become a signatory. What follows is a description of the FFI Formation Standards and Proficiency Program (hereafter called “The Program”) patterned after the FAST program. To enhance formation standardization across the formation community the program uses the T-34 Association “Formation Flight Manual” in its entirety. Additionally, the program liberally uses FAST program format and excerpts from its various documents.



## 2. MISSION STATEMENT

The mission of the FFI Formation Standards and Proficiency Program is to provide standards for formation training and flying, a system for proficiency evaluation, and a method for monitoring currency. The program is for use by all the various types of non warbird aircraft whether in a similar or dissimilar aircraft formation, as long as performance and visibility are judged sufficiently similar for safe formation flight. Explicit in the program is the use of the T-34 Association “Formation Flight Manual”, the FFI Formation Guidelines and Standard Procedures, and this manual, which includes the FFI Formation Standards Evaluation Guides and Forms. The FFI Program Administrator will approve the issuance of formation pilot credentials based on demonstrated competency and maintained currency.



### 3. PROGRAM PRINCIPLES

- The Program is one of standards and demonstrated proficiency, not a training program. This Program uses the T-34 Association Formation Flight Manual and the FFI Formation Guidelines and Standard Procedures (hereafter called FFI Guidelines) as a standard for thought, terminology, and procedures. It is expected that individuals wishing to participate in the Program, to be evaluated for their proficiency, and to be issued credentials, will have already been trained and achieved a high level of competency in formation flying.
- Formation flight is demanding and must be approached with a sense of professionalism, dedication and a safety first attitude.
- Proper attitude and flight discipline are core values of safe formation flight.
- FFI is dedicated to the promulgation of safe formation flight. Unsafe practices negatively impact the formation community. All Program pilots are encouraged to impart constructive criticism and positive counsel to any who demonstrate unsafe formation practices.
- The criteria for evaluation and credential issuance is a thorough understanding of information contained in the Formation Flight Manual and FFI Guidelines, attaining minimum requirements, a recommendation by a Program flight lead or check pilot, and demonstrated in-flight formation competency. Program check pilots will conduct the evaluation using the FFI Formation Standards Evaluation Guides and Forms.
- A successful formation evaluation and card issuance applies across the FFI formation community.
- Flight leaders and check pilots are responsible to check formation credentials and aircraft currency and have an absolute right to determine flight make up.
- The Program credential is not to be considered as a merit badge but rather as a certificate of a successful formation competency evaluation, which would allow participation in an airshow as non-aerobatic formation in waived airspace.
- Aerobatic formation is not addressed in this Program and will not be evaluated by its check pilots. Those wishing aerobatic formation credentials should go the ICAS route.
- Program pilots at all levels are subject to review for noncompliance. The Program Administrator can and will withdraw credentials for cause.
- Any formation mishaps occurring while conducting formation within the FFI system will be reported to the FFI Administrator for his review and action.



## 4. REQUIREMENTS

To participate in this Program, a formation pilot must fulfill the requirements below. The requirements are based on the understanding that a base level of flight exposure is necessary to insure experience and background, but beyond that, individual skill, discipline, attitude, motor reflexes, situational awareness, and aggressiveness are the determining factors of a good formation pilot.

The Program comprises three levels: wingman, flight lead, and check pilot. Check pilot level will be determined by regional needs and is subject to Administrator review.

### **Wingman Level Minimum Qualifications**

- Private pilot
- 100 hours total time
- 20 hours formation time
- Current medical
- Ten flights in a 4-ship formation
- Recommendation by Program flight lead or check pilot
- Pass check ride as #2 and #4 in a 4-ship formation

### **Flight Lead Level Minimum Qualifications**

- Private pilot
- 300 hours total time
- 40 hours formation time
- Current medical
- One year as Program wingman
- Twenty flights in a 4-ship formation, five as a flight lead
- Recommended by Program flight lead or check pilot
- Pass flight lead check ride leading a 4-ship formation

### **Check Pilot Level Minimum Qualifications**

- Private pilot
- 1000 hours total time
- 100 hours formation time
- Current medical
- One year as a Program flight lead
- Flight lead for twenty 4-ship formations
- Recommended by two Program flight leads or check pilots
- Commitment to serve the formation community
- Agreement to abide by Program policies and procedures
- Pass check ride briefing and critiquing a 4-ship formation and completing all forms.



## 5. CHECK RIDES

All check rides will be administered in a 4-ship using the appropriate Formation Standards Evaluation Guide and Formation Evaluation Form, only to Non-Warbirds.

If an applicant for a check ride does not meet minimum requirements, the Program Administrator may consider a partial waiver. The waiver must be granted prior to the check ride in question.

In all check rides, the check pilot may ride with the applicant. In the case of single place aircraft, multiple checks in the flight, or if the check pilot preference is to fly his own aircraft or in that of another, the Single Seat Check Ride requirements from the appropriate Evaluation Guide will be used.

The check pilot applicant will pre-brief and critique a 4-ship formation, normally fly the chase position, fill out all forms, demonstrating thorough knowledge of the Program. The Administrator or another check pilot administering the check will normally fly with the applicant or, if flying in his own aircraft, where he believes it most advantageous.



## 6. CURRENCY

Formation flight is an art that deteriorates without practice. Thus, there is a requirement for currency in formation flight to be qualified for annual re-issuance of formation credentials.

### **Wingman Currency**

A wingman must fly as a wingman in a 4-ship formation a minimum of four times a year. A Program flight lead or check pilot must sign and submit an Annual Activity Report on the wingman to the Program Administrator. It is the wingman's responsibility to log, track, document, and present the activity report to his flight lead or check pilot. Failure to provide documentation in a two year period will require a review and competency flight with a Program check pilot.

### **Flight Lead Currency**

A flight lead must brief and fly as flight lead in a 4-ship formation a minimum of four times a year preferably one of which has a Program flight lead or check pilot in the formation for critique. He will submit an Annual Activity Report reviewed by another flight lead. Failure to provide documentation in a two year period will require a review and competency flight with a Program check pilot.

### **Check Pilot Currency**

Check pilots have the same flight currency requirements as a flight lead. Additionally, check pilots will submit a yearly report showing check flight activity.



## 7. PHILOSOPHY AND POLICY

This Program is not a training program. Applicants are expected to attain a high degree of formation proficiency prior to applying for the Program. Flight leads and check pilots recommending pilots for entry or upgrade are expected to use discretion in their recommendations. Remember, it is FFI's reputation that will be on display in front of airshow officials and crowds.

A key concept of precision formation flying is ATTITUDE. The Professionalism to train every flight toward a higher standard of competency and to be open to constructive criticism. The Discipline to abide by the rules, standards, and the briefing. The Trust of each member of the formation that others will perform well. An Acceptance that safety is paramount. ATTITUDE is everything.

It is understood that individuals come into the Program from diverse backgrounds of experience and training. In addition to this manual and the FFI Guidelines, this Program uses documents, manuals, and videos from the FAST organization. They are a mixture from various military service training sources and were available as an existing national standard among warbird organizations. The Program continues that effort toward national standards.

Wingman, to use familiar phrases, should aim high, be the best they can be, and trust in the leader. They should maintain currency and learn the traits of a good leader.

Flight lead is the one in charge and is responsible for the safe conduct of the flight. He insures flight members are current, qualified, and prepared. He insures through a quality briefing that everyone knows what is expected. He leads the flight in a responsible manner that verifies the confidence his wingmen have put in him. He insures learning through a quality and open debrief. He signs annual currency documentation for Program members.

Check pilots are selected by the Program Administrator based on geographical needs and reputation. They should be formation pilots of the highest standards, experience, qualifications, and skill who are committed to FFI and the Program. They receive applications for check rides and, through the check flight process, insure wingman and flight leads are high caliber with requisite formation skills, formation knowledge and Program knowledge. They make themselves available to the formation community to give check and currency rides, to sign currency documentation, and to insure knowledge of Program procedures and policy. Check pilots serve the Program on a voluntary basis and will not be paid. However, check pilot expense reimbursement is appropriate, i.e., travel costs, if the check pilot travels to the applicant's location. They serve at the pleasure of the Administrator and can be removed for cause.

Any mishap occurring during FFI formation flying will be reported to the FFI Administrator immediately. Based on the circumstances, the Administrator will determine a mishap review process and may consider a Review Board of FFI Check Pilots, an investigative process, corrective action, and recommendations as required.

FFI offers reciprocity to FAST carded wingmen to fly in an FFI formation on a case by case basis. The FFI Flight Lead has sole authority as to flight make up when conducting training or events requiring formation cards.

A multi-organizational flight (FFI/FAST/SAC) will be briefed and led only by highly experienced Flight Leads, giving due consideration to aircraft compatibility and pilot experience.

Only FFI Flight Leads may lead an FFI flight when formation cards are required for the event.

Large Formations (more than 8 aircraft) in airspace requiring formation cards will be led by highly experienced FFI Flight Leads.

FFI Check Pilots will evaluate only GA and Experimental (non-Warbird/FAST) aircraft in non-aerobatic formation.



## 8. PAPERWORK

- An applicant for Program wingman or flight lead completes the header information on the Formation Evaluation Form, completes and signs the Hold Harmless statement, and passes it to a Program flight lead or check pilot. The Hold Harmless signature will be witnessed by another individual.
- The flight lead or check pilot, if he believes the applicant is qualified, completes the recommendation section of the form.
- The check pilot reviews the qualifications. If all requirements have not been met but the check pilot feels the applicant is qualified, he contacts the Administrator to request a partial waiver, which must be approved before scheduling the check ride.
- The check pilot performs the check ride using the appropriate Formation Standards Evaluation Guide. If the check is unsuccessful, the check pilot declines to sign and files the form. If it is successful, the check pilot signs the form, makes a copy for his files, and sends the completed original to the Administrator.
- The Administrator will review and send the applicant his Program credentials.
- Currency activity reports will be reviewed by flight leads and check pilots and sent to the Administrator for reissue of annual credentials.



## 9. WINGMAN FORMATION STANDARDS EVALUATION GUIDE

### Forward

In conjunction with the T-34 Formation Flight Manual and the FFI Guidelines, this evaluation guide will be used by wingman applicants to understand the standards by which they will be judged during their check ride and by check pilots as a guide in giving the check ride.

Each task in the several phases of a formation mission is given three levels of accomplishment: **Qualified, Conditionally Qualified, and Unqualified**. Each task accomplishment level is described to give the check pilot guidelines to determine the applicant's level of competency and to grade accordingly. There is suitable latitude in each guideline to leave the check pilot grading discretion. Any Unqualified grade will result in an overall Unqualified for the check, requiring further training before another check ride. A task graded Conditionally Qualified indicates an area requiring training for the applicant but does not necessarily dictate an Unqualified for the mission. Several tasks graded Conditionally Qualified may, in the judgment of the check pilot, dictate an overall Unqualified. Airshow quality is the measure of merit.

### Check Pilot Options

The following options to include or exclude are available to the check pilot in giving the check ride:

- Formation landings. (changed, formation takeoff required)
- Lazy 8s in diamond, close trail, and extended trail (Biplanes).
- Airborne configuration changes.
- Type aircraft specific maneuvers/signals.

### Single Seat Check Rides

To accommodate single seat aircraft of an applicant, if a dual aircraft of the same type is not available, a check pilot may fly in a separate aircraft. In this case, a qualified flight lead will fly as lead, the wingman applicant as 2, 3, or 4, and the check pilot where he thinks most advantageous. All flight members will have operating two-way radios.

### Dissimilar Aircraft

Dissimilar aircraft may be used as long as the performance and visibility are judged by the check pilot to be sufficiently similar for safe formation flight. The differences in flight characteristics will be specifically briefed.

(Acknowledgement and thanks is made to FAST for use of materials contained herein)



## Wingman 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

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. 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 capacity does not meet minimum standards for issuance of formation pilot wingman credentials.

## Standards Grading Form, Oral Phase

### Objective #1

***To demonstrate knowledge and understanding of all hand and aircraft signals.***

Run-up	Climb
Frequency changes	Descent
Number signals	Fuel state
Head nod	Inflight emergency/HEFOE
Wingman cross	Can't hear
Element cross	Can't transmit
Breakup and rejoin	Lead change
Gear and flap cycling	Stack up
Power addition and reduction	Stack down
Level off	Stop squawk
Beacon/Strobe On/Off	Fingertip to route
Fingertip to echelon	Echelon to fingertip
Fingertip to diamond	Diamond to fingertip
Fingertip to trail	Trail to fingertip

**Qualified:** Applicant knows all hand and aircraft signals and when they are used.

**Conditionally Qualified:** Applicant knows most of the signals with some prompting. Description of signals does not exhibit full understanding without discussion.

**Unqualified:** Applicant does not know hand or aircraft signals without prompting or open book reference. Applicant confuses or inverts meaning of two or more signals.

## **Objective #2**

**To explain basic concepts of formation flight and demonstrate a full understanding of the mechanics and safety factors for the following:**

- Standard fingertip, echelon, trail, diamond, and enroute formations
- Cross-unders, rejoins, configurations changes
- Breakup and rejoin, turn cutoff, energy management
- Fingertip, echelon, trail, and enroute turns, and terminal maneuvering
- Lead changes, emergency signals and HEFOE system
- 360 overhead patterns, breaks, intervals, formation landings, go-arounds
- Taxi procedures
- Radio discipline, check-in, frequency changes, traffic calls
- Emergency abort on takeoff
- In-flight emergency procedures

**Qualified:** Applicant understands and is able to discuss the mechanics and dynamics of different formations and is able to describe methods of aircraft control and proper wingman and leader techniques on all formations. Applicant understands flight discipline and each flight member's responsibility to flight integrity.

**Conditionally Qualified:** Applicant understands the mechanics of different maneuvers but needs prompting to understand the safety and dynamics. Applicant does not exhibit full knowledge of methods of aircraft control and techniques to maintain or change position. Applicant understands flight discipline and wingman responsibility to flight integrity.

**Unqualified:** Applicant is unable to describe basic formation flight mechanics and concepts without prompting. Applicant is unable to describe formation flight dynamics and does not exhibit knowledge of basic safety of each formation or change.

## **Standards Grading Form, Flight Phase**

### **Objective #3**

**To conduct ground operations to include start time, start, taxi, and response to signals.**

**Qualified:** Applicant properly conducts preflight and is strapped in and ready at start time. Applicant concentrates on the leader and complies with start, radio check-in, and taxi procedures. Applicant falls into proper position behind leader and maintains position.

**Conditionally Qualified:** Applicant properly conducts preflight and is strapped in and ready at start time. Applicant does not concentrate on leader and delays start or misses signals, but checks in properly. Applicant falls into proper position behind the leader but varies position occasionally through inappropriate use of power or brakes.

**Unqualified:** Applicant is not prepared at start time. Applicant does not concentrate on leader, does not start on time, and misses signals and radio check in. Applicant taxi position is incorrect through inattention or inappropriate use of power or brakes.

#### **Objective #4**

##### ***To properly exercise radio discipline, check in, and frequency changes.***

**Qualified:** Applicant has recorded all briefed frequencies in proper order and anticipates radio calls from lead. Applicant responds crisply with flight position number on all commands. Applicant checks on and off all assigned frequencies and changes are made expeditiously so as to not disrupt sequential check in. If NORDO, applicant effectively signals condition and recognizes numerical signals.

**Conditionally Qualified:** Applicant is aware of all briefed frequencies and responds to radio check ins but is occasionally out of order or uses incorrect terminology. Applicant is slow to change frequency and occasionally misses check in. Applicant needs prompting to use or understand NORDO signals.

**Unqualified:** Applicant is aware of briefed frequencies but uses them out of order. Applicant misses several frequency changes or checks ins and is slow to change frequencies. Applicant does not respond to NORDO signals from leader and misunderstands numeric signals. General radio discipline and awareness is lacking.

#### **Objective #5**

##### ***To conduct run-up, check list and standard procedures.***

**Qualified:** Applicant taxis into run-up area in proper sequence and aligned properly with no wingtip overlap. Applicant complies with lead run-up signal and performs run-up and pre-takeoff checks in timely and accurate manner. Applicant passes thumbs up signal in proper sequence to lead.

**Conditionally Qualified:** Applicant taxis into run-up area in proper sequence but not aligned with the flight. Applicant complies with lead run-up signal and performs run-up and pre-takeoff checks in a rushed but accurate manner. Applicant neglects to pass the thumbs up or neglects to check with other flight members before passing it.

**Unqualified:** Applicant taxis into run-up area misaligned and with wingtip overlap and/or angular mismatch. Applicant does not concentrate and misses lead run-up signal. Applicant performs run-up and pre-takeoff checks inaccurately. Applicant fails to pass thumbs up or fails to check with other flight members before passing it.

## **Objective #6**

### ***To execute formation takeoff and power management.***

**Qualified:** Applicant, using proper spacing, taxis into correct wing position as briefed for formation takeoff. Applicant holds brakes, acknowledges run-up signal, checks instruments, and concentrates on leader. At leader's head nod, applicant releases brakes, smoothly adds power and maintains during takeoff roll. Maintaining position, applicant is smooth on power and pitch adjustments and rotates for liftoff with lead. After liftoff, applicant maintains position throughout acceleration, power reduction and climb initiation, smoothly crossing under to other wing if directed.

**Conditionally Qualified:** Applicant, using proper spacing, taxis into correct wing position as briefed for formation takeoff. Applicant holds brakes, acknowledges run-up signal, checks instruments, and concentrates on leader. At leader's head nod, applicant releases brakes and adds power, but is slightly sucked or slightly overruns lead. Applicant corrects position, but is not consistently smooth, resulting in slightly mismatched liftoff and pitch angle. Corrections are prompt but slightly overcontrolled, including cross under, if directed.

**Unqualified:** Applicant taxis into an incorrect position for formation takeoff. Applicant holds brakes, acknowledges run-up signal, checks instruments, and but fails to concentrate on leader. At head nod, applicant is late releasing brakes and adding power, resulting in excessive sucked position. Applicant does not ask for power and excessive power does not correct position. Liftoff is not matched with lead and overcontrolling is evident, including the cross under, if directed. Element joinup is delayed waiting for applicant to settle in.

## **Objective #7**

### ***To execute climbout, level off, enroute procedures, and radio calls.***

**Qualified:** Applicant exhibits precise aircraft control with little to no relative motion. During climbing turns and level off applicant's flight control and power movements are smooth and anticipated, assuring proper formation position. Response to lead fishtail and wingrock aircraft signals draws a smooth and responsive movement into enroute position and return to fingertip. Applicant remains alert while maintaining concentration and discipline. Applicant responds crisply and sequentially on radio channel changes and check-ins.

**Conditionally Qualified:** Applicant exhibits reasonable aircraft control. During climbing turns and level off applicant's flight control and power movements allow him to maintain position but are not smooth or well anticipated. Response to lead fishtail and wingrock signals draws a delayed and somewhat erratic movement into enroute and fingertip positions. Applicant remains alert while maintaining concentration and discipline. Applicant responds to radio channel changes and check-ins, but does not always maintain the sequential flow.

**Unqualified:** Applicant maintains a poor level of concentration resulting in rough aircraft control. During climbing turns and level off applicant's flight control and power movements are erratic and not well anticipated, resulting in much relative movement in pitch, bank, and fore/aft position. Response to lead fishtail and wingrock signals draws erratic movement to incorrect and inconsistent positions. Applicant does not concentrate and discipline is lacking. Radio channel changes and check-ins are missed and out of sequence.

## **Objective #8**

### ***To execute cross unders, echelon turns, pitchouts and rejoins.***

**Qualified:** Applicant responds to hand and aircraft signals in a timely and accurate manner. Use of flight controls and power results in a smooth and expeditious cross unders with proper drop back, nose/tail clearance, and push up on other side. Echelon turn is conducted with same roll rate as lead and an anticipated power and pitch input to maintain a smooth and level position. During pitchout, applicant acknowledges signal, maintains wings level and then breaks at the proper interval with a crisp and level pitchout, rolling out directly behind lead. Upon receiving rejoin signal, applicant smoothly adds power and banks to establish and maintain proper rejoin line on a level plane with lead. Power is reduced appropriately and closure into fingertip position is smoothly executed.

**Conditionally Qualified:** Applicant responds to hand and aircraft signals in a timely and accurate manner. Use of flight controls and power results in smooth cross unders with proper drop back and fore/aft clearance, but push up power is not anticipated and slow on other side. Echelon turn is conducted with same roll rate as lead and pitch is anticipated to maintain level position, but power is not resulting in a sucked position. During pitchout, applicant acknowledges signal, leans slightly into turn but breaks at the proper interval with a crisp and nearly level pitchout, rolling out directly behind lead. Upon receiving rejoin signal, applicant adds power and banks to establish rejoin line, but wanders between slightly sucked and slightly acute on a nearly level plane with lead. Power is reduced appropriately and closure to fingertip is smoothly executed.

**Unqualified:** Applicant is slow or fails to respond to hand and aircraft signals. Use of flight controls and power results in an erratic and inconsistent cross under with too fast a drop back, too little or too much fore/aft clearance, and too little or too slow push up resulting in a delayed sucked position. Echelon turn is conducted with a slower turn rate than lead and power and pitch is not anticipated, resulting in a sucked and erratic plane position during turn. During pitchout, applicant fails to acknowledge signal, leans into the turn and breaks at improper interval with a crisp pitchout but drops significantly in the pitchout plane. Upon receiving rejoin signal, applicant adds too much/too little power, banks but never establishes a consistent rejoin line, going very acute/sucked, and drops too low in the plane with lead. Power, pitch and bank are erratic in the closure to fingertip resulting in a near or complete overshoot.

## **Objective #9**

### ***To conduct Lazy 8s in fingertip, trail, extended trail, and diamond formations.***

**Qualified:** Applicant maintains precise and smooth position during Lazy 8s in all formations, demonstrating an understanding of the acceleration/deceleration effects of maneuvering. Power is anticipated, smooth, and well within limits. Flight controls are blended smoothly with anticipation to maintain a steady position. Applicant remains attentive for formation change signals or calls. Applicant recognizes the signal or responds to the call and smoothly conducts the movement in the proper sequence.

**Conditionally Qualified:** Applicant maintains a relatively stable position during Lazy 8s in all formations but has a tendency to not anticipate power requirements causing some fore and aft movement. Flight controls are blended smoothly but he has a tendency to overlap on the inside of turns and go wide on outside. Applicant remains attentive for

formation change signals or calls. Applicant recognizes the signal or responds to the call and conducts the movement in sequence but is slightly jumpy on the controls.

**Unqualified:** Applicant is unable to maintain a steady formation position while maneuvering during Lazy 8s. Power is not anticipated causing fall back and surge ahead as airspeed and Gs vary. Flight controls are handled roughly causing oscillations and overlap. Applicant is not attentive and signals or calls need to be repeated. Applicant's position changes are rough and out of sequence.

### **Objective #10**

#### ***To conduct descent, traffic pattern entry, and landing.***

**Qualified:** Applicant's response to lead fishtail and wingrock aircraft signals draws a smooth and responsive movement into enroute position and return to fingertip. While in route formation, applicant maintains proper position while assisting in clearing the flight for traffic. Applicant replies crisply in sequence to frequency changes and check-ins. Response to signal for echelon formation and change of position is correct and smooth with proper power and flight control management. Applicant maintains smooth and precise position on initial approach, acknowledges the pitchout signal, and breaks crisply at proper interval. After a level pitchout, applicant rolls out behind the lead at briefed airspeed, aircraft is configured correctly, and spacing is maintained on downwind and base. Applicant touches down in the zone and maintains correct side of runway, making calls as appropriate.

During formation approach and landing, applicant flies a smooth and precise position and stacks level on final approach, configuring smoothly upon lead's signal. On short final, applicant continues smoothly flying wing position, aligns on his side of runway, flares and touches down with lead. Applicant decelerates so as to gain separation from lead.

**Conditionally Qualified:** Applicant's response to fishtail and wingrock signals draws a delayed and somewhat erratic movement into enroute position and return to fingertip. While in route formation, applicant's position wanders somewhat while assisting to clear the flight. Applicant replies crisply but somewhat out of cadence to frequency changes and check-ins. Response to signal for echelon formation is correct, but change of position is somewhat jerky but with good power management. Applicant maintains position but is somewhat erratic in pitch on initial approach, acknowledges pitchout signal, and leans slightly prior to breaking crisply at proper interval. After a nearly level pitchout, applicant rolls out behind lead at briefed airspeed, aircraft is configured correctly, but spacing is expanded/reduced somewhat on base leg. Applicant touches down in the zone and maintains correct side of runway, making calls as appropriate.

During formation approach and landing, applicant flies a precise position until final approach where he remains stacked low until halfway down final or corrected by lead. Configuration change is smoothly done on lead's signal, but spacing is not maintained. On short final, applicant aligns on his side of runway, but does not maintain precise position, causing flare and touchdown to be not matched with lead. Applicant temporarily moves acute on lead before decelerating to gain separation from lead.

**Unqualified:** Applicant's response to fishtail and wingrock signals draws erratic movement to incorrect and inconsistent positions. With in route formation, applicant's position wanders excessively and no attempt is made to assist in clearing. Applicant misses frequency change calls and check-ins. Response to signal for echelon formation is delayed and the change is erratic with poor power management. Applicant is erratic in pitch, bank and power on initial approach, does not acknowledge pitchout signal, and leans significantly prior to breaking at an improper interval. Applicant varies his altitude considerably during the pitchout and rolls out on downwind wide of lead at higher than briefed airspeed. Applicant configures correctly but does not attain or maintain proper spacing on downwind or base. Applicant lands long and does not maintain correct side of runway.

During formation approach and landing, applicant wanders excessively in pitch, bank, and power on final and during configuration change. Corrected by lead, applicant still does not maintain a level stack. On short final, applicant aligns with his side of runway, and ceases maintaining position, flaring and landing separately from lead. Applicant passes lead on runway and/or brakes excessively to gain separation.

### **Objective #11**

#### ***To execute runway clearing, taxi back, shutdown, and debriefing.***

**Qualified:** Applicant clears the runway at appropriate speed, forms on the leader and configures as the leader. During taxi to parking, applicant maintains briefed spacing on taxiway and ramp. Engine shutdown is on signal or as briefed and applicant properly secures his aircraft. During debriefing, applicant is attentive and accepts constructive criticism with maturity and objectivity, learning how to improve for the next formation flight.

**Conditionally Qualified:** Applicant clears the runway at appropriate speed and forms on the leader, but is late configuring. During taxi to parking, applicant occasionally varies from briefed spacing on taxiway and ramp. Engine shutdown is on signal or as briefed and applicant properly secures his aircraft. During debriefing, applicant is attentive and accepts constructive criticism with maturity and objectivity.

**Unqualified:** Applicant clears the runway with excessive speed, misaligns with lead, and does not configure as the leader. During taxi to parking, applicant does not maintain consistent spacing as briefed on taxiway and ramp. Applicant shutdown on his own without regard to lead's signal and aircraft is not properly secured. During debriefing, applicant does not accept constructive criticism, makes excuses, and exhibits immaturity.



## 10. FLIGHT LEAD FORMATION STANDARDS EVALUATION GUIDE

### Forward

In conjunction with the T-34 Formation Flight Manual and the FFI Guidelines, this evaluation guide will be used by flight lead applicants to understand the standards by which they will be judged during their check ride and by check pilots as a guide in giving the check ride.

Each task in the several phases of a formation mission is given three levels of accomplishment: **Qualified, Conditionally Qualified, and Unqualified**. Each task accomplishment level is described to give the check pilot guidelines to determine the applicant's level of competency and to grade accordingly. There is suitable latitude in each guideline to leave the check pilot grading discretion. Any Unqualified grade will result in an overall Unqualified for the check, requiring further training before another check ride. A task graded Conditionally Qualified indicates an area requiring training for the applicant but does not necessarily dictate an Unqualified for the mission. Several tasks graded Conditionally Qualified may, in the judgment of the check pilot, dictate an overall Unqualified.

### Check Pilot Options

The following options to include or exclude are available to the check pilot in giving the check ride:

- Formation landings. (changed, formation takeoff required)
- Lazy 8s in diamond, close trail, and extended trail (Biplanes).
- Airborne configuration changes.
- Type aircraft specific maneuvers/signals.

### Single Seat Check Rides

To accommodate single seat aircraft of an applicant, if a dual aircraft of the same type is not available, a check pilot may fly in a separate aircraft. In this case, the flight lead applicant will fly as lead, and the check pilot where he thinks it most advantageous, and a qualified flight lead as three. All flight members will have operating two-way radios.

### Dissimilar Aircraft

Dissimilar aircraft may be used as long as the performance and visibility are judged by the check pilot to be sufficiently similar for safe formation flight. The differences in flight characteristics will be specifically briefed.

(Acknowledgement and thanks is made to FAST for use of materials contained herein)



## **Flight Leader Responsibilities**

The flight leader is responsible for the safe conduct of all formation flight under his/her control. He/she is responsible for approving all members in the flight. This implies the flight leader is familiar with the experience level, currencies, and credentials of each member with respect to the mission to be accomplished.

Flight leaders should identify members needing additional training and recommend or give it where necessary, even to the point of recommending recertification under this program. Flight leaders should assess the state of proficiency of wingman and flight leaders and forward recommendations when appropriate for certification to regional Program check pilots.

Leadership ability is the most important quality to be evaluated as a Flight Leader applicant. The applicant must demonstrate not only that he/she has the pilot skills and is in charge, but also that flight members can be confident and comfortable in following maneuvers and instructions. Flight leadership implies above average knowledge of aircraft and performance limitations, airspace and ATC environment, wingmen and their limitations, formation procedures, operational techniques, and signals, as well as excellent situational awareness.

## **Fight Lead 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**

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. 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 capacity does not meet minimum standards for issuance of formation pilot "Flight Lead" credentials.

## **Required Materials**

All flight leaders and applicants should have in their possession the T-34 Formation Manual, the FFI Program Manual, and the FFI Formation Guidelines and Standard Procedures.

## **Standards Grading Form, Oral Phase**

Note: This oral phase shall be accomplished for all flight leader candidates even though it was accomplished as part of their wingman evaluation. This is to ensure absolute standard on all signals, procedures, and maneuvers among all flight leaders. In addition, the applicant shall have complete knowledge and understanding of all flight leader responsibilities

### **Objective #1**

**To demonstrate knowledge and understanding of all hand and aircraft signals.**

Run-up	Climb
Frequency changes	Descent
Number signals	Fuel state
Head nod	Inflight emergency/HEFOE
Wingman cross	Can't hear
Element cross	Can't transmit
Breakup and rejoin	Lead change
Gear and flap cycling	Stack up
Power addition and reduction	Stack down
Level off	Stop squawk
Beacon/Strobe On/Off	Fingertip to route
Fingertip to echelon	Echelon to fingertip
Fingertip to diamond	Diamond to fingertip
Fingertip to trail	Trail to fingertip

**Qualified:** Applicant knows all hand and aircraft signals and when they are used.

**Conditionally Qualified:** Applicant knows most of the signals with some prompting. Description of signals does not exhibit full understanding without discussion.

**Unqualified:** Applicant does not know hand or aircraft signals without prompting or open book reference. Applicant confuses or inverts meaning of two or more signals.

### **Objective #2**

**To explain basic concepts of formation flight and demonstrate a full understanding of the mechanics and safety factors for the following:**

- Standard fingertip, echelon, trail, diamond, and enroute formations
- Cross-unders, rejoins, configurations changes
- Breakup and rejoin, turn cutoff, energy management
- Fingertip, echelon, trail, and enroute turns, and terminal maneuvering
- Lead changes, emergency signals and HEFOE system
- 360 overhead patterns, breaks, intervals, formation landings, go-arounds
- Taxi procedures
- Radio discipline, check-in, frequency changes, traffic calls
- Emergency abort on takeoff
- In-flight emergency procedures

**Qualified:** Applicant understands and is able to discuss the mechanics and dynamics of different formations and is able to describe methods of aircraft control and proper wingman and leader techniques on all formations. Applicant understands flight discipline and each flight member's responsibility to flight integrity.

**Conditionally Qualified:** Applicant understands the mechanics of different maneuvers but needs prompting to understand the safety and dynamics. Applicant does not exhibit full knowledge of methods of aircraft control and techniques to maintain or change position. Applicant understands flight discipline and wingman responsibility to flight integrity.

**Unqualified:** Applicant is unable to describe basic formation flight mechanics and concepts without prompting. Applicant is unable to describe formation flight dynamics and does not exhibit knowledge of basic safety of each formation or change.

## ***Standards Grading Form, Briefing Phase***

### ***Objective #3***

***To organize and brief a four-ship flight including all elements of the T-34 Formation Manual plus formation takeoffs and landings and overhead patterns.***

**Qualified:** Applicant properly plans the flight with an orderly and efficient sequence of maneuvers which take into account local conditions and traffic. Applicant takes into account the qualifications and abilities of wingmen and checks credentials. The briefing is well organized, concise, and clear, and the applicant is clearly the leader and in charge. All formation briefing elements are covered and emergency procedures are briefed. All flight members understand the mission.

**Conditionally Qualified:** Applicant properly plans the flight but the sequence of maneuvers is not the most efficient, resulting in wasted time between maneuvers. Several formation briefing items are omitted. Flight position assignments are not consistent with wingmen abilities. The briefing leaves some unanswered questions and doubt in the minds of wingmen. Obvious leadership but short of inspiring total confidence.

**Unqualified:** Applicant lacks planning an organization in the structure of the sequence of maneuvers. Applicant does not take in consideration local conditions and traffic. Applicant does not take into consideration the qualifications and abilities of wingmen. The briefing is not concise and clear and leaves unanswered questions. The tone and content of the briefing does not suggest strong leadership and applicant is not clearly in charge. Numerous formation briefing items are omitted and emergency procedures are not discussed. Briefing elements, procedures, and signals are not standardized.

## **Standards Grading Form, Flight Phase**

### **Objective #4**

**To conduct ground operations including start time, start, marshal, taxi, run-up, radio communications, and standard signals and procedures.**

**Qualified:** Applicant preflights aircraft, straps in, obtains airport information, and is ready to start engines at time briefed. Radio check in precise and communications established with all flight members. Delays or problems are handled and through radio and hand signals, applicant is in command. Applicant taxies at appropriate speed using appropriate procedures and ATC procedures complied with. Applicant appropriately positions flight in run-up area. Hand signals precisely executed and acknowledged. Sufficient time allowed for flight run-ups.

**Conditionally Qualified:** Applicant rushes preflight, strap in, or receipt of airport info, but ready to start on time. Radio check in not precise and missed check in not caught. Applicant indecisive dealing with problems and not in charge of problems. Taxi speed inconsistent requiring wingman to use excessive power or brakes. Misses radio call. Applicant inappropriately positions flight in run-up area. Hand signals correct but imprecise. Run-up rushed.

**Unqualified:** Applicant performs unsafe preflight and not ready to start on time. Radio check in non-standard and taxies without positive radio contact. Applicant not decisive in dealing with problems and led by events or consensus. Taxi speed varies excessively or inappropriate for conditions. Misses critical radio calls causing problems. Positioning in the run-up area disregards wingmen. Hand signals incorrect or not visible to all and acknowledgements disregarded. Rushes run-up to point wingmen checks are incomplete.

### **Objective #5**

**To conduct formation takeoff, element joinup after takeoff, and enroute procedures.**

**Qualified:** Applicant ensures flight is ready for takeoff and on frequency. Radio communications are clear and concise and all instructions or standard procedures complied with. Correctly aligns flight on the runway and uses correct signals for engine runup and brake release. Flight lead positions himself in takeoff position so as to visually clear the runway, and does not roll until the runway ahead is clear or the previous section (element or flight) has or is about to liftoff with no standing or aborting aircraft on the runway. Smooth and appropriate power, directional control, and rotation result in precise liftoff. Establishes power and attitude for climb smoothly and appropriately. Applicant begins turn for element joinup smoothly, correctly positions wingman, and maintains constant bank and airspeed while element joins to outside of turn. Climbout procedures, power, and frequency changes are correctly executed with appropriate formation changes.

**Conditionally Qualified:** Applicant ensures flight is ready for takeoff and on frequency. Procedures are complied with but an occasional radio call may be unclear or missed. Correctly aligns flight on the runway but signals may not be totally clear or visible and applicant does not monitor acknowledgement. Flight lead positions himself in takeoff position so as to visually clear the runway, and does not roll until the runway ahead is

clear or the previous section (element or flight) has or is about to liftoff with no standing or aborting aircraft on the runway. Runup and brake release is correct but power advance is too fast or slow. Directional control is acceptable but rotation too fast or slow not allowing wingman to easily match the rotation. Climb power and attitude control causes wingman to work harder than necessary. Applicant smoothly begins the turn for joinup and correctly positions the wingman, but attitude, bank or speed during the turn causes element go acute or be too shallow, preventing an expeditious and smooth rejoin. Climbout procedures, power, and formation /frequency changes executed with only minor deviations.

**Unqualified:** Applicant rushes wingmen and all are not on proper frequency. Radio communications are not clear and concise, doubt exists as to intentions, and radio calls are missed. Instructions or standard procedures are not complied with. Runway alignment is non-standard or wingmen are crowded and engine runup and brake release signals incorrect. Flight lead does not position himself so as to visually clear the runway, and he rolls before the runway ahead is clear, the previous section (element or flight) is about to lift off, or with standing or aborting aircraft on the runway. Applicant uses inappropriate power setting, wandering directional control, or abrupt liftoff causing wingman difficulty in formation takeoff. Climb power and attitude inconsistent and abrupt. Turn for joinup is abrupt and wingman not positioned correctly. Airspeed, bank, and climb angle during joinup inconsistent causing element excessive maneuvering. Applicant not situationally aware causing departure deviations or traffic conflicts, and insensitive to wingman requirements during climbout. Formation and frequency changes inappropriate.

#### **Objective #6**

***To conduct general airmanship and flight lead control techniques, including smooth and deliberate flight control manipulation, constant roll rates into and out of turns, as well as climbs, descents, power management, formation changes, and configuration changes.***

**Qualified:** Applicant is obviously in charge. The sequence of maneuvers is as briefed, logical, and consistent with power and airspace limits. Situational awareness is maintained at all times. No unsafe condition is allowed to develop. Applicant constantly scans for traffic, flies with smooth and constant rate control inputs, and considers the wingmen states of proficiency. Applicant keeps power changes to a minimum and smooth, allowing a comfortable power margin. No maneuver causes wingmen to meet or exceed operational limitations. Hand or aircraft signals are standard, clearly given, and acknowledgements noted. Radio procedures are standard, wingmen are always on the right frequency and checked in properly. Formation or frequency changes are properly signaled or called with sufficient time or space allowed for wingmen.

**Conditionally Qualified:** Applicant in charge but may show some indecision. Maneuvers are as briefed, but not in the most logical sequence. Situational awareness is good, but a better choice of altitudes or airspace would have been better for the formation. No unsafe situation is allowed to develop. A good lookout is maintained but some traffic is missed. Wingman proficiency level is occasionally overlooked. Control inputs provide constant rate maneuvers but could be initiated more smoothly. Power changes are smooth but sometimes do not give wingmen an advantage. No maneuver causes wingmen to exceed operational limitations. Hand or aircraft signals are standard, but may be rushed, not always visible to all, or acknowledgement not always checked.

Radio procedures are standard but some may be unclear requiring repeat. Better planning would aid in maneuver execution, pace, or formation change.

**Unqualified:** Applicant not always in charge, allows events to dictate the course of the flight, exhibits indecisiveness, and fosters doubt among wingmen. Sequence of maneuvers not as briefed, not logical, and poorly planned allowing dead space. Altitude and airspace not well utilized. Situational awareness not maintained and airspace or traffic conflicts and unsafe conditions develop. Applicant ignores the proficiency level of wingmen and does not notice them out of position. Control inputs are abrupt and maneuver rates not constant. Power control leaves no margin for wingmen and maneuvers cause wingmen to meet or exceed operational limits. Wingmen have difficulty maintaining position. Hand or aircraft signals are non-standard and not visible, causing confusion among wingmen. Radio procedures are non-standard or unclear causing wingmen to be confused or off frequency. A general lack of planning causes non-standard formation changes and wingmen poorly positioned.

### **Objective #7**

***To conduct smooth lead advanced training maneuvers: Lazy 8s in various formations, in-trail, break-ups and rejoins.***

**Qualified:** The flight is conducted as briefed. Applicant correctly signals flight into all formations, waits until #4 calls in for trail, and conducts maneuvers appropriate for each type formation. Applicant selects and holds a comfortable power setting allowing ample power margin for the flight. Changes in pitch and roll are precise and smooth at constant rates appropriate for the flight's level of experience. No aircraft or engine limits are exceeded. Pitchouts and rejoins are signaled correctly and rejoin is held constant at appropriate angle and airspeed. Situational awareness is maintained at all times and applicant constantly scans for traffic. Sun angles are always considered and minimized. No unsafe condition is allowed to develop.

**Conditionally Qualified:** The flight is generally conducted as briefed with some deviations. Applicant correctly signals flight into all formations, waits until #4 calls in for trail, and conducts maneuvers appropriate for each type formation. Planning, timing, positioning, and execution of maneuvers, though acceptable, could be improved with better use of altitude, airspeed, and airspace. Power settings allow a less than desirable power margin. Pitch and roll inputs are smooth but rates are not constant making it difficult for wingmen to maintain position. Signals are sometimes not visible to all causing some confusion. Pitchout and rejoins are signaled correctly but rejoin bank angle and/or airspeed not constant causing wingmen some problems. Situational awareness is maintained and applicant is alert for traffic. Sun angles pose visibility problems occasionally. No unsafe conditions are allowed to develop.

**Unqualified:** The flight is not conducted as briefed. Maneuvers selected are inappropriate for the formation flown and the wingmen's ability. The planning, timing, positioning, and execution of maneuvers is unsatisfactory and airspace, airspeed and altitude are not used well, causing time wasted. Power settings and control cause wingmen to abuse their engines. Control inputs are abrupt, rapid, and inconsistent and do not consider proficiency level of wingmen, who must make large power and control inputs to stay in position. Signals are incorrect or not visible. Rejoin pitch and bank angles are inconsistent making wingmen unable to execute a smooth, safe, and timely rejoin. Situational awareness is poor and applicant is not alert for other traffic. Sun angles are disregarded. Unsafe conditions may arise. A lack of leadership, discipline, and understanding of flight dynamics is evident.

## **Objective #8**

**To conduct flight entry into an airport traffic pattern, including compliance with instructions and maneuvering the flight for a 360 overhead pattern and a formation landing.**

**Qualified:** Situational awareness is high and planning for the descent and approach is clear. Radio communications and field advisories are accomplished, and any changes to the briefed arrival are passed to the flight. Adequate time and distance are allowed for formation position changes, frequency changes, and descent checks. Maneuvering is held to a minimum and executed to avoid traffic conflicts and conform to local procedures. Signals are correct and timely.

**360 overhead** - Arrival onto initial is well planned with appropriate radio call and the flight is put into echelon with sufficient time to allow members to stabilize prior to the pitch. Pitchout signal is given clearly with appropriate interval indication for the conditions. The pitchout is executed at the right place considering traffic and is aggressive yet smooth, resulting in an appropriate downwind position at an appropriate airspeed. Downwind airspeed is maintained as briefed, base turn is initiated at appropriate place with correct radio call, and airspeed and altitude in base turn and on final is appropriate. Landing is made in the touchdown zone and the correct side of the runway is maintained until clearing or called across. Lead marshals his flight and taxis to parking at an appropriate speed with correct radio calls.

**Formation landing** - Lead effectively splits the flight into two-ships. Lead positions the flight on sufficiently long final approach and stabilizes pitch and airspeed, places the wingman on the upwind side in ample time, and maintains smooth power with an ample margin. Lead ensures wingman is in proper position and correctly signals configuration changes. Lead provides a stable platform with smooth pitch and power, touches down in the zone, maintains power briefly allowing wingman to fall back, and maintains his side of the runway with good directional control and moderate braking. Lead marshals his element for taxi to parking.

**Conditionally Qualified:** Situational awareness is evident and planning for the descent and approach is adequate. Radio communications and field advisories are accomplished and any changes to the briefed arrival are passed to the flight. Approach is somewhat rushed and more time could have been allowed for formation changes, frequency changes, and descent checks. Some excess maneuvering is required that better planning and alertness for traffic might have eliminated. Signals are correct but some may not be visible to all, producing some confusion.

**360 overhead** - Arrival onto initial requires some unnecessary maneuvering, radio call is correct, and initial is too short, requiring the change to echelon and pitchout signal to be rushed. The pitchout is delayed because of the rush, is aggressive and smooth but the airspeed on downwind is other than briefed. Base turn is delayed, causing a large pattern and altitude/airspeed control causes variations. Landing is in touchdown zone and correct side of runway is maintained until clearing or called across. Lead marshals his flight and taxis to parking with correct calls but varying speed.

**Formation landing** - Lead splits the flight into two elements with some excess maneuvering. Lead positions the element on a too short final, which rushes

stabilization and positioning of wingman on upwind side, and causes power and pitch fluctuations. Lead allows wingman to stack low too long before correcting and rushes signal for configuration changes. Lead is stable in pitch but makes too many power adjustments, lands in the zone on his side but with too little power, causing wingman to not fallback easily. Lead maintains good directional control but brakes too aggressively causing wingman overrun. Lead marshals his element for taxi to parking.

**Unqualified:** Situational awareness and planning for descent and approach are lacking. Radio communications and field advisories are not timely or not accomplished and changes to the briefed arrival are not passed to the flight, allowing confusion to be evident. Insufficient time and distance are allowed for formation changes, frequency changes, and descent checks, and the flight is rushed. Excessive maneuvering results from poor planning and traffic deconfliction. Signals are non-standard and not clearly given.

**360 overhead** - Arrival onto initial is poorly planned requiring excessive maneuvering and perhaps a turn into the echelon, lead is not smooth in pitch or power, radio calls are incomplete or absent, and pitchout/interval signal is rushed or not visible. Pitchout is too early or late for the conditions, Altitude is lost or gained in the break, and airspeed on downwind is other than briefed. Base turn is delayed causing a large pattern and airspeed/altitude vary considerably causing difficulty for flight to follow. Landing is not in touchdown zone, lead does not maintain his side of the runway, and braking is too aggressive causing flight to close too fast. Lead does not marshal the flight after clearing the runway.

**Formation landing** - Lead splits the flight into two elements with some confusion after excessive maneuvering and inattention for local traffic. Lead positions the element on too short a final with significant power and pitch variations, does not place wingman on upwind side, and the approach is rushed, as are the configuration changes. Lead does not notice or correct the wingman's too low, too far back position. Leads control and power inputs are excessive. Lead flares abruptly and chops power, causing wingman to overtake, and lands out of the touchdown zone. Lead crowds the centerline and uses excessive braking. Lead does not marshal his element before taxiing to parking.

## **Objective #9**

### ***To properly debrief a four-ship formation flight.***

**Qualified:** The applicant conducts the flight debriefing in a timely and constructive manner in a location that is free from distractions. The flight is debriefed in a concise and logical manner from start to finish. Non-standard events and unsafe actions are emphasized. Mistakes are explained and corrective actions suggested, including remedial training or decertification. The debriefing is a learning experience with all questions answered, opinions heard, and conflicts resolved.



**Conditionally Qualified:** Lead conducts the debriefing in a timely manner but allows distractions to intrude. The flight is debriefed in a concise manner from start to finish, but some non-standard events are missed. All unsafe actions are debriefed. Mistakes are explained but corrective actions or training are not dealt with. The debriefing is a learning experience but some issues are unresolved.

**Unqualified:** The debriefing is not conducted in a timely manner with numerous distractions allowed to intrude. Location is not conducive to a quality debriefing. Some flight members are late or absent and applicant does not have everyone's attention. The flight is not debriefed in an orderly manner. Non-standard events are glossed over and unsafe actions not addressed. Lacking in leadership skills, applicant does not deal with mistakes nor corrective actions. Flight members do not profit from the debriefing, questions remain, and conflicts are left unresolved.



## 11. EVALUATION FORMS

The following pages contain EVALUATION FORMS for:

- Wingman
- Flight Lead
- Check Pilot

**NOTE:** The Formation Evaluation form and the Hold Harmless Statement **MUST** be printed on the **SAME PIECE OF PAPER**. (Hold Harmless on the back side).

## FFI Wingman Evaluation Form

Name \_\_\_\_\_ Date \_\_\_\_\_

Address/City/State/ZIP \_\_\_\_\_

Phone \_\_\_\_\_ Cell \_\_\_\_\_ Email \_\_\_\_\_

Pilot Lic Type and # \_\_\_\_\_ Medical \_\_\_\_\_ Type Plane \_\_\_\_\_

Total Time \_\_\_\_\_ Type Time \_\_\_\_\_ Formation Time \_\_\_\_\_ 4-ships \_\_\_\_\_

Recommendation: I have observed the above pilot in \_\_\_\_\_ formation flights, find him/her qualified, and recommend him/her for an FFI Wingman check flight.

FFI Flight Lead/Check Pilot Name \_\_\_\_\_ FFI # \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

RELEASE/ HOLD HARMLESS ON REVERSE MUST BE SIGNED BEFORE FLIGHT.

Evaluation:	Qual	Cond Qual	Unqual	Overall
Signals	_____	_____	_____	Qual _____
Knowledge	_____	_____	_____	Unqual _____
Ground Operations	_____	_____	_____	
Radio Ops	_____	_____	_____	
Run-up	_____	_____	_____	
Takeoff	_____	_____	_____	
Climbout	_____	_____	_____	
Cross Unders, Pitchouts	_____	_____	_____	
Lazy 8 Maneuvering	_____	_____	_____	
Pattern, Landing	_____	_____	_____	
Taxi, Debriefing	_____	_____	_____	

Comments: (Continue on rear as necessary)

Recommendation for Training:

FFI Check Pilot Printed Name \_\_\_\_\_ FFI # \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

**Release/ Hold Harmless:**

The undersigned Holder/Applicant of/for a Formation Flying, Incorporated (FFI) Wingman Formation Card hereby agrees to be familiar with and abide by the guidelines of FFI. I further acknowledge and understand that the guidelines of FFI have been established to provide the Holder/Applicant of/for the Card with the minimum information necessary to understand the procedures and signals of formation flying. I further acknowledge and understand that it is my sole responsibility to keep fully informed, current, and aware of all information available from whatever source concerning formation flight. The undersigned recognizes and agrees that no representation or warranties have been made to him/her which are inconsistent with any of the procedures, signals, and policies, as set forth within the Formation Flight Manual (all editions) published by the T-34 Association, Inc. Further, I hereby acknowledge and recognize that this Formation Card Evaluation does not waive my obligation to abide by all local, state, and Federal rules and regulations. I further recognize that formation flight training and formation flying is inherently dangerous wherein there is a possibility of injury or death, and in consideration of my acceptance of this Formation Card issued by FFI, I, for myself, my heirs, executor, administrators, and assigns do hereby release and forever discharge FFI, its members, officers, directors, employees, suppliers, agents, or representatives of and from any and all claims, demands, losses, or injuries incurred or sustained by me as a result of instruction, training, attending, participating in, practicing for, and traveling to and from activities involving formation flights. Further, I agree to accept any and all financial obligations incurred as a result of medical assistance, hospitalization, and related expenses which may arise out of participation, attendance, practicing for, traveling to and from, or because of engaging in formation flights organized by any named entity or individual named herein.

Printed Name \_\_\_\_\_ Date \_\_\_\_\_

Signature \_\_\_\_\_

Witness Name \_\_\_\_\_ Date \_\_\_\_\_

Signature \_\_\_\_\_

Additional Comments (continued from front side)

## FFI Flight Lead Evaluation Form

Name \_\_\_\_\_ Date \_\_\_\_\_

Address/City/State/ZIP \_\_\_\_\_

Phone \_\_\_\_\_ Cell \_\_\_\_\_ Email \_\_\_\_\_

Pilot Lic Type and # \_\_\_\_\_ Medical \_\_\_\_\_ Type Plane \_\_\_\_\_

Total Time \_\_\_\_\_ Type Time \_\_\_\_\_ Formation Time \_\_\_\_\_ 4-ships \_\_\_\_\_ FL \_\_\_\_\_

Recommendation: I have observed the above pilot in \_\_\_ formation flights, find him/her qualified, and recommend him/her for an FFI Flight Lead check flight.

FFI Flight Lead/Check Pilot Name \_\_\_\_\_ FFI # \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

RELEASE/ HOLD HARMLESS ON REVERSE MUST BE SIGNED BEFORE FLIGHT.

Evaluation:	Qual	Cond Qual	Unqual	Overall
Signals	_____	_____	_____	Qual _____
Knowledge	_____	_____	_____	Unqual _____
Briefing	_____	_____	_____	
Ground Operations	_____	_____	_____	
Takeoff, Joinup	_____	_____	_____	
General Flight	_____	_____	_____	
Maneuvers	_____	_____	_____	
Pattern, Landing	_____	_____	_____	
Debriefing	_____	_____	_____	

Comments: (Continue on rear as necessary)

Recommendation for Training:

FFI Check Pilot Printed Name \_\_\_\_\_ FFI # \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

**Release/Hold Harmless:**

The undersigned Holder/Applicant of/for a Formation Flying, Incorporated (FFI) Flight Lead/Check Pilot Formation Card hereby agrees to be familiar with and abide by the guidelines of FFI. I further acknowledge and understand that the guidelines of FFI have been established to provide the Holder/Applicant of/for the Card with the minimum information necessary to understand the procedures and signals of formation flying. I further acknowledge and understand that it is my sole responsibility to keep fully informed, current, and aware of all information available from whatever source concerning formation flight. The undersigned recognizes and agrees that no representation or warranties have been made to him/her which are inconsistent with any of the procedures, signals, and policies, as set forth within the Formation Flight Manual (all editions) published by the T-34 Association, Inc. Further, I hereby acknowledge and recognize that this Formation Card Evaluation does not waive my obligation to abide by all local, state, and Federal rules and regulations. I further recognize that formation flight training and formation flying is inherently dangerous wherein there is a possibility of injury or death, and in consideration of my acceptance of this Formation Card issued by FFI, I, for myself, my heirs, executor, administrators, and assigns do hereby release and forever discharge FFI, its members, officers, directors, employees, suppliers, agents, or representatives of and from any and all claims, demands, losses, or injuries incurred or sustained by me as a result of instruction, training, attending, participating in, practicing for, and traveling to and from activities involving formation flights. Further, I agree to accept any and all financial obligations incurred as a result of medical assistance, hospitalization, and related expenses which may arise out of participation, attendance, practicing for, traveling to and from, or because of engaging in formation flights organized by any named entity or individual named herein.

Printed Name \_\_\_\_\_ Date \_\_\_\_\_

Signature \_\_\_\_\_

Witness Name \_\_\_\_\_ Date \_\_\_\_\_

Signature \_\_\_\_\_

Additional Comments (continued from front side)

### FFI Check Pilot Evaluation Form

Name \_\_\_\_\_ Date \_\_\_\_\_  
 Address/City/State/ZIP \_\_\_\_\_  
 Phone \_\_\_\_\_ Cell \_\_\_\_\_ Email \_\_\_\_\_  
 Pilot Lic Type and # \_\_\_\_\_ Medical \_\_\_\_\_ Type Plane \_\_\_\_\_  
 Total Time \_\_\_\_\_ Type Time \_\_\_\_\_ Formation Time \_\_\_\_\_ 4-ships \_\_\_\_\_ FL \_\_\_\_\_

Recommendation: I have observed the above pilot in \_\_\_ formation flights, find him/her qualified, and recommend him/her for an FFI Check Pilot check flight.

FFI Flight Lead/Check Pilot Name \_\_\_\_\_ FFI # \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Recommendation: I have observed the above pilot in \_\_\_ formation flights, find him/her qualified, and recommend him/her for an FFI Check Pilot check flight.

FFI Flight Lead/Check Pilot Name \_\_\_\_\_ FFI # \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

RELEASE/ HOLD HARMLESS ON REVERSE MUST BE SIGNED BEFORE FLIGHT.

Evaluation:	Qual	Cond Qual	Unqual	Overall
Signals	_____	_____	_____	Qual _____
Knowledge	_____	_____	_____	Unqual _____
Briefing	_____	_____	_____	
Ground Operations	_____	_____	_____	
Takeoff, Joinup	_____	_____	_____	
General Flight	_____	_____	_____	
Maneuvers	_____	_____	_____	
Pattern, Landing	_____	_____	_____	
Debriefing	_____	_____	_____	

Comments: (Continue on rear as necessary)

Recommendation for Training:

FFI Check Pilot Printed Name \_\_\_\_\_ FFI # \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Release/Hold Harmless:

The undersigned Holder/Applicant of/for a Formation Flying, Incorporated (FFI) Flight Lead/Check Pilot Formation Card hereby agrees to be familiar with and abide by the guidelines of FFI. I further acknowledge and understand that the guidelines of FFI have been established to provide the Holder/Applicant of/for the Card with the minimum information necessary to understand the procedures and signals of formation flying. I further acknowledge and understand that it is my sole responsibility to keep fully informed, current, and aware of all information available from whatever source concerning formation flight. The undersigned recognizes and agrees that no representation or warranties have been made to him/her which are inconsistent with any of the procedures, signals, and policies, as set forth within the Formation Flight Manual (all editions) published by the T-34 Association, Inc. Further, I hereby acknowledge and recognize that this Formation Card Evaluation does not waive my obligation to abide by all local, state, and Federal rules and regulations. I further recognize that formation flight training and formation flying is inherently dangerous wherein there is a possibility of injury or death, and in consideration of my acceptance of this Formation Card issued by FFI, I, for myself, my heirs, executor, administrators, and assigns do hereby release and forever discharge FFI, its members, officers, directors, employees, suppliers, agents, or representatives of and from any and all claims, demands, losses, or injuries incurred or sustained by me as a result of instruction, training, attending, participating in, practicing for, and traveling to and from activities involving formation flights. Further, I agree to accept any and all financial obligations incurred as a result of medical assistance, hospitalization, and related expenses which may arise out of participation, attendance, practicing for, traveling to and from, or because of engaging in formation flights organized by any named entity or individual named herein.

I agree to abide by Program policies and procedures and commit to serve the formation community.

Printed Name \_\_\_\_\_ Date \_\_\_\_\_

Signature \_\_\_\_\_

Witness Name \_\_\_\_\_ Date \_\_\_\_\_

Signature \_\_\_\_\_

Additional Comments (continued from front side)

**FFI Formation Standards and Proficiency Program**  
**Annual Activity Report**

Name \_\_\_\_\_ Date \_\_\_\_\_  
Address/City/State/ZIP \_\_\_\_\_  
Phone \_\_\_\_\_ Cell \_\_\_\_\_ Email \_\_\_\_\_  
Pilot License Type and # \_\_\_\_\_ Medical \_\_\_\_\_ Type Plane \_\_\_\_\_  
Total Time \_\_\_\_\_ Type Time \_\_\_\_\_ Formation Time \_\_\_\_\_ 4-ships \_\_\_\_\_ FL \_\_\_\_\_

FFI Wingman # \_\_\_\_\_

Formation Flights (Four 4-ship)

Date \_\_\_\_\_ # of ships \_\_\_\_\_  
Date \_\_\_\_\_ # of ships \_\_\_\_\_  
Date \_\_\_\_\_ # of ships \_\_\_\_\_  
Date \_\_\_\_\_ # of ships \_\_\_\_\_

FFI Flight Lead # \_\_\_\_\_

Formation Flights as Lead (Four 4-ship)

FFI Check Pilot # \_\_\_\_\_

Date \_\_\_\_\_  
Date \_\_\_\_\_  
Date \_\_\_\_\_  
Date \_\_\_\_\_

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Flight Log Verification by Flight Lead or Check Pilot

Name \_\_\_\_\_ FFI # \_\_\_\_\_

Signature \_\_\_\_\_

Check Pilots list check flight activity on reverse side





## 12. LIST OF REVISIONS

### REVISION 4 - CHANGES:

page 3 - Mishap reporting

page 6 - Mishap reporting  
FAST reciprocity

page 7 - FFI Flight Leads leading multi-organizational flights, large formations,  
and other events

page 7 - FFI Check Pilot privileges

page 7 - Hold Harmless signature will be witnessed

page 25 - Evaluation forms