

# **FORMATION FLYING SEAREYS FOR RECREATION**

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# 1 Introduction

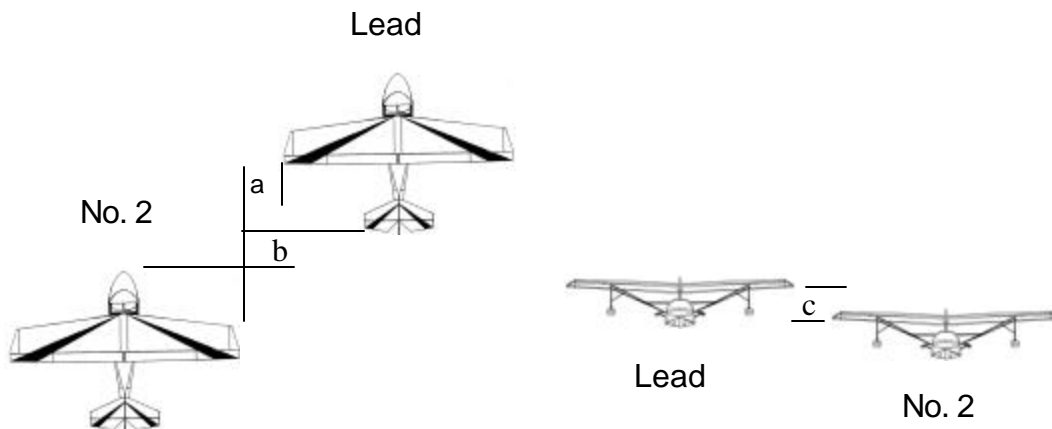
This manual has been prepared to assist SeaRey amphibian pilots to safely perform and enjoy recreational formation flying using many of the standards that have been adopted by other formation flying pilot organizations. As of November 2001, 12 organizations had signed on to the F.A.S.T , Formation And Safety Team program. The material in this document describes some of the terms and methods but is not a F.A.S.T document and, for simplicity, does not contain all the standards nor does it describe the necessary qualifications a pilot needs to fly in any other group of formation pilots. Pilots wishing further instruction should consider the materials listed in the references at the end of this document.

Formation flying developed out of military needs to organize numbers of aircraft for improved mission effectiveness, defense, safety and efficiency. However, if not done correctly, the results can be disappointing, frustrating or tragic. The same applies for recreational formation flying. Education and discipline must be employed by all pilots to ensure safety, success and enjoyment.

## 2 Formations

### 2.1 Basic Two-Ship Formation

A group of any number of aircraft flying together under the command of a single leader is called a “flight”. Flights are composed of “elements”. An element is composed of a Lead and a Wing. This is the basic two-ship element formation. The No. 2 aircraft can be on either the right or left wing of Lead.



### 2.2 Spacing Considerations

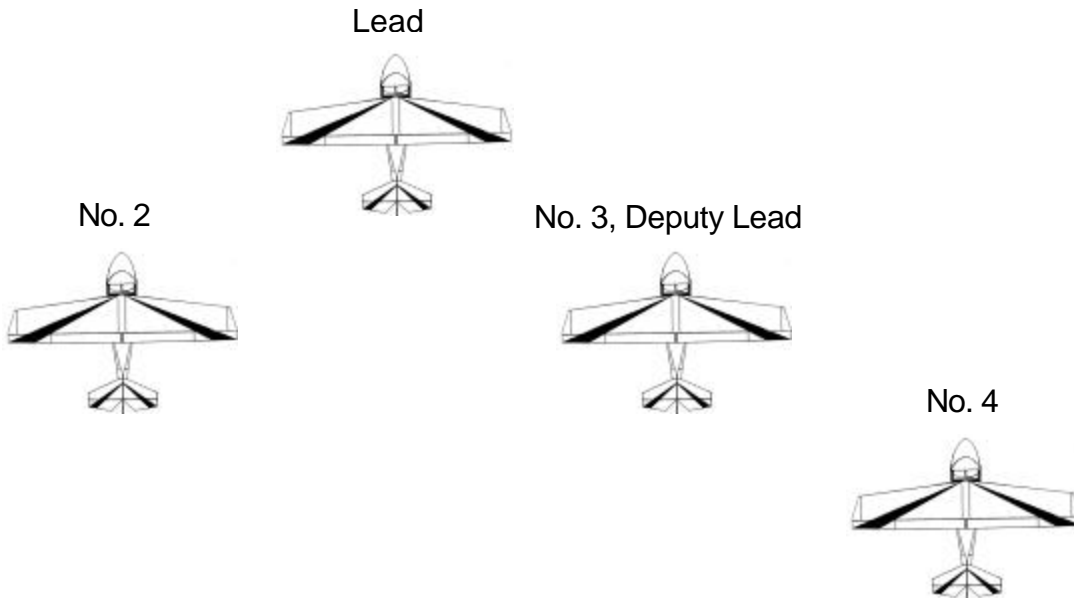
The choice of aircraft spacing should primarily depend on safety and needs to include considerations of the least skilled pilot, turbulence and the amount of concentration and workload anticipated. Professionals use overlapping nose/tail and wingtip positions to impress onlookers. This is NOT recommended for SeaRey formations. Positive spacing in all dimensions (a, b and c) should be established and maintained. No. 2 determines the minimum spacing but Lead can call for a loosening of the formation. Tight or “parade” formations can be

used for practicing and to impress onlookers. A loose “route” formation is used for enroute flight or if other tasks need to be performed that detract from available concentration needed to hold formation.

The angle of formation or bearing line is typically in the 30 to 45 degree range. Being more than 45 degrees back is not recommended because Lead can’t see Wing. Falling back from the established angle is called “sucked”. Being less than the established angle is “acute”. For SeaReys a convenient reference for Wing is to keep the rear of Lead’s float visually aligned with Lead’s fuselage nose.

### **2.3 Basic Four-Ship Formations**

A four-ship formation is made up of two elements. The basic configuration is the “fingertip” formation. It can be either a strong left or strong right (shown below) orientation.

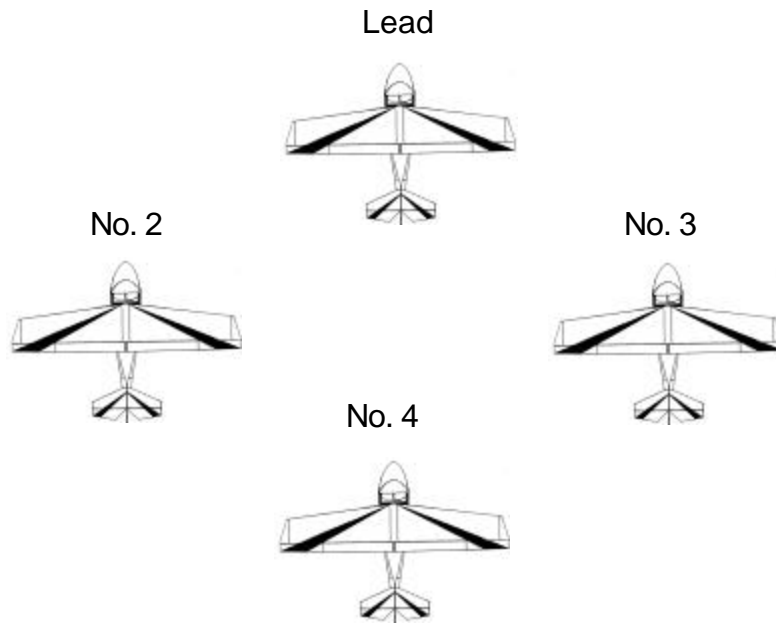


The rules for executing this formation are:

- The most experienced pilot is Lead followed by No. 3, No. 2 then No. 4.
- No. 3 is the second element Lead and Deputy Lead in the Four-ship formation.
- No. 2 joins the formation first and sets the spacing.
- A three-ship formation uses this configuration with a phantom No. 4.

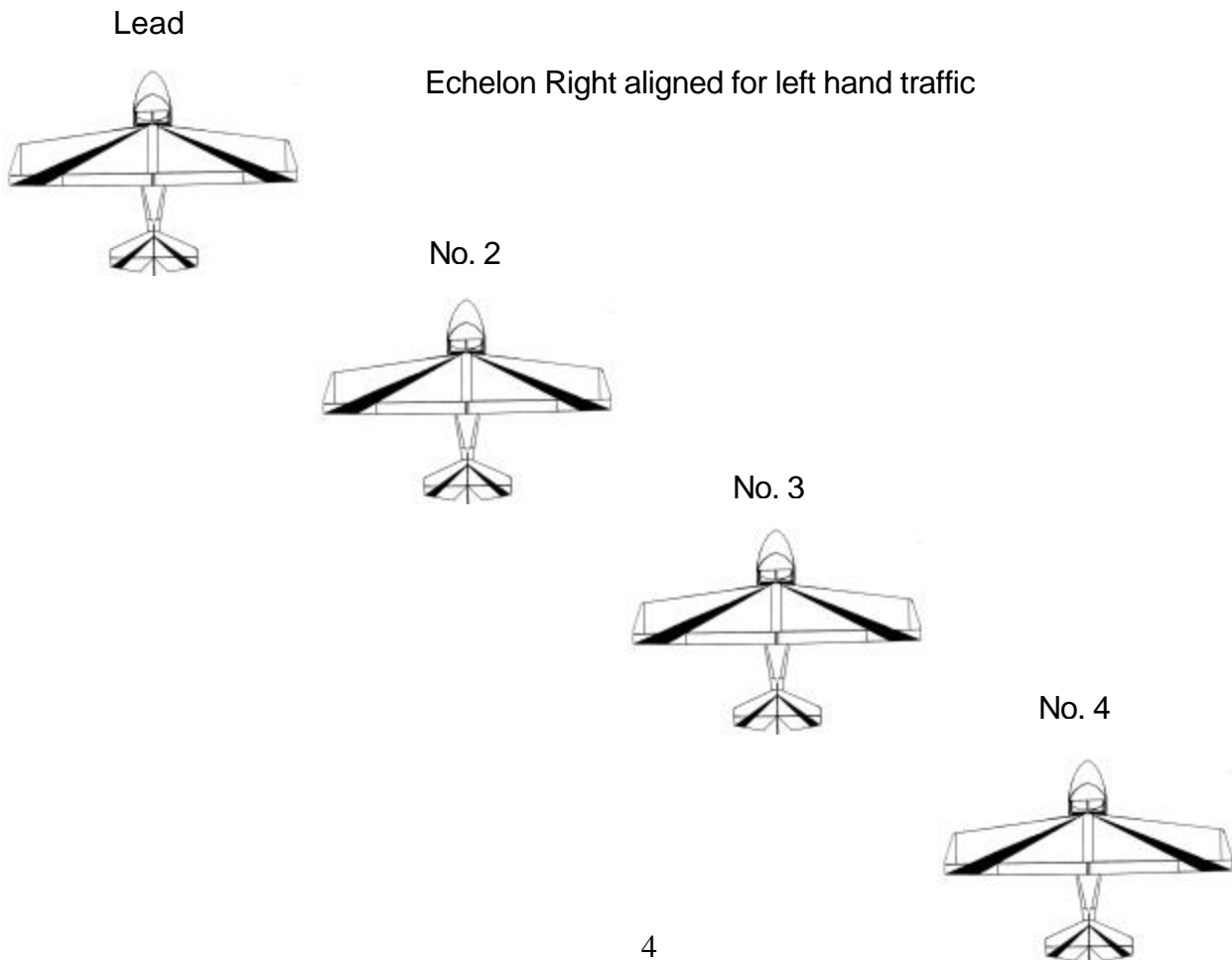
### **2.4 Diamond Formation**

The diamond formation is formed from the fingertip formation by No. 4 moving into the “slot” position. Flying in the slot requires No. 4 to fly just below the Lead’s prop wash and maintaining a distance back such that a symmetrical box is formed with No. 2 and No. 3. From the side, this formation would look like a three-ship trail formation described below.



## 2.5 Echelon Formation

The echelon formation is where all aircraft in a flight are lined up either to the right (echelon right) or left (echelon left) of the Lead. The aircraft are positioned in a similar way to the fingertip formation maintaining the same bearing line. The echelon formation is used to prepare a flight for a pitchout for landing with all aircraft turning away from the remaining formation.



## 2.6 Trail Formation

The trail formation is flown with all aircraft in the flight in order and in line directly behind Lead but with descending offset to avoid prop wash. The trail formation allows for greater maneuverability of the flight. It can be flown close or extended where spacing for landing is required.



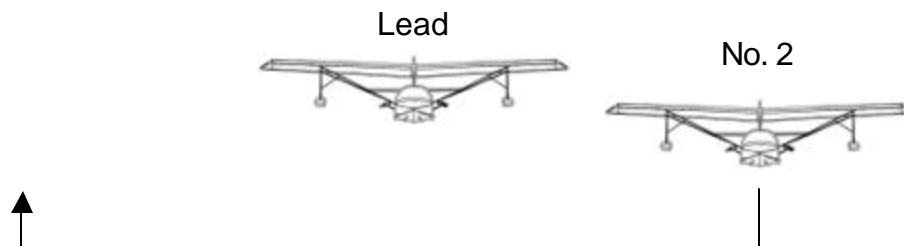
## 2.7 Large Formations

Larger formations of 5 or 6 can be built without much additional complication by placing the 5<sup>th</sup> wingman out to complete a V-formation and a 6<sup>th</sup> wingman can go in the slot. Larger single flight formations increase the difficulty factor because of increasing the links to the Lead. The greater the number of links to Lead, the greater the tendency for the outside wingmen to be making large corrections to keep in formation. A better solution is to divide up the aircraft into several flights, each with its own Lead. A formation of 7 aircraft could be constructed using, e.g., a Lead Red Flight of 3 and a trailing Blue Flight of 4 in diamond formation.

## 2.8 Changing Formations

### 2.8.1 Wingman Cross-under

Cross-unders are used to move a wingman from one side of Lead to the other. This may be used to establish an echelon formation from a fingertip or to move a four-ship fingertip to diamond or to reconfigure for a subsequent re-join of another plane. The maneuver is accomplished at the direction of Lead and involves the wingman reducing the power setting momentarily until adequate vertical space is achieved to allow a safe lateral move to the other side. A slight heading change is made by the wingman and power is restored to maintain altitude and allow the wingman to drift to the other side. Once on the other side, an opposite heading change is made by the wingman to a parallel course and more power is applied to bring the wingman back into the proper position relative to Lead. At no time should the wingman close in on Lead. He should maintain a safe vertical and forward clearance to Lead.



## **2.8.2 Multi-ship movements**

When formation repositioning of more than one wingman is called for, the movements must be done in an orderly sequence, again, to avoid collisions. For example, if from a strong fingertip right formation the Lead calls for echelon right, the No. 3 and No. 4 ships must drop back first before the No. 2 ship can slide over off Wing's right wing. Following the rule that forward positions get established before rearward positions, after No. 2 has gotten into his position and sets the formation spacing, No. 3 and then No. 4 move into place. Maintain adequate visual contact and or voice communications to ensure safe aircraft separation.

## **3 Join-ups**

Join-ups are procedures used to form up a formation from aircraft converging on Lead as is needed immediately after takeoff.

### **3.1 Briefed Plan**

The Lead will determine the join-up procedure and cover it during the pre-flight briefing. It will depend on runway heading, intended course, traffic or any other aspects of the flight or environment the Lead considers noteworthy.

### **3.2 Join-up techniques**

In a post-takeoff situation, Lead must maneuver in such a way as to allow later departing aircraft to catch up and form in on him. Lead should take off at normal takeoff power and climb straight ahead to an altitude between 500' and 1000'. Once at his chosen altitude, Lead will power back and start a slow turn. No.2 will then join up on the inside of the turn and establish the formation spacing. No. 3 approaches from inside the turn and slides under and behind No. 2 to his position on the outside, pulling up even with No. 2. No. 4, similar to No. 3, approaches from inside the turn and slides under and behind No. 2 to his position off the wing of No. 3. This whole sequence should be accomplished within a 180 degree turn of Lead. Once all aircraft are in position, Lead will power up to a cruise or formation climb setting.

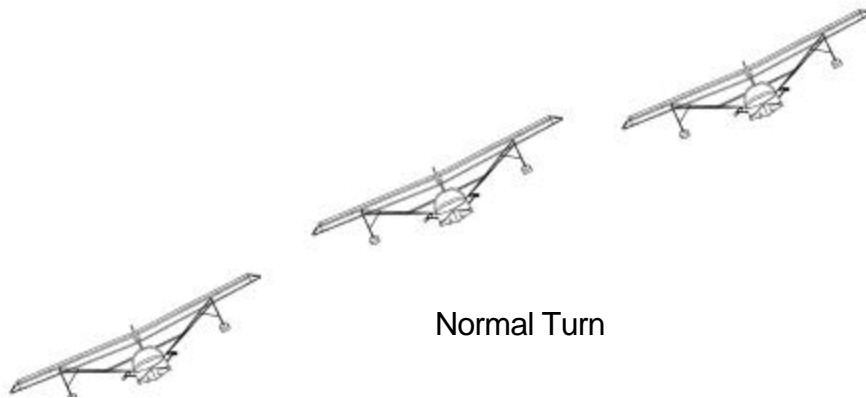
If once a formation is established and another aircraft is to join, Lead must make a determination as to what positions the combined aircraft are to maintain. He must then direct certain aircraft to move out or back if necessary to allow the joining aircraft to move into position. Once forward aircraft are established in formation, rearward aircraft then close in on their positions.

## **4 Formation Turns**

Formation turns need to be planned by Lead to not put an inordinate maneuvering burden on the wingmen. If Lead holds his power setting during a turn, the inside wingman must decrease power and tighten the turn to stay in position. Conversely, the outside wingman must have enough reserve power to speed up in a larger radius turn to stay on Lead's wing.

### **4.1 Normal and Echelon Turns**

Normal turns in any formation except echelon call for the aircraft to bank while staying in the same relative positions to one another. This requires the inside wingmen to descend while decreasing speed and the outside wingmen to climb while increasing speed. This further exacerbates the power changes the wingmen have to make in a normal turn.



Normal Turn

Echelon turns are executed with all aircraft maintaining the same altitude.



Echelon Turn

## 4.2 *Inside & Outside Wingman Challenges*

In level formation turns the Lead will maintain his power setting. Wingmen must react quickly with power changes and control inputs to maintain the formation. Lead must choose a speed which enables the wingmen to keep up. Typically the inside wingmen will find themselves acute to Lead and outside wingmen will fall back into a sucked position. Now greater power and control changes are necessary to reposition. After these changes are made, wingmen must anticipate when to return to stable settings. Power must be pulled back before a closing aircraft gets into position because of the extra speed that needs to be bled off. Likewise, the opposite applies for wingmen correcting an acute position as power needs to be applied in anticipation of reaching proper position with restored airspeed.

## 5 Communications

### 5.1 *Intra-formation Communications*

If a good preflight briefing is done, there needs to be only minimal communications among the pilots during the entire flight for the purpose of managing the formation. Such minimal necessary communications include:

- Lead: SeaRey Flight (radio) check in. Wingmen: 2 3 4
- Lead: SeaRey Flight report ready for departure. Wingmen: 2 ready. etc.
- SeaRey 2 reports to Lead: 2 in (formation). Etc for other wingmen.
- Lead: SeaRey Flight go to route frequency. (Name numerical frequency.)
- Lead: SeaRey Flight go to destination unicom frequency. . (Name numerical frequency.)

- Lead: SeaRey Flight go to echelon right.
- Lead: SeaRey Flight complete landing checklist.

If there are multiple formations with their individual Leads, unique call signs need to be used such as Red 2 vs. Blue 2.

Other communications are likely to be engaged in like how beautiful a day it is. However, all pilots need to maintain an awareness of their flight and critical communications responsibilities as a priority. Other communications that should take place among the pilots include:

- Sighting of traffic
- Need for speed change
- Commands for changing formation
- Advising of problems

## **5.2 ATC Communications**

As the formation acts as a flying unit, Lead takes the responsibility for communicating with ATC, FSS and other traffic as well as squawking 1200 while all other transponders are on standby. When communicating with ATC, only Lead will do the talking. Lead will identify the flight by saying, for example: “Orlando Approach. November 93 Juliet Foxtrot, just departed X61 enroute to Merritt Island, flight of four.” Lead’s N-number is used for identification. All aircraft in the formation should be within one mile laterally and 100 feet altitude of each other to conform to the ATC definition of a formation. If flight following is being provided, advisories on traffic separation will depend on that geometry. Also the squawk code assigned should be entered into Lead’s transponder while wingmen’s transponders stay on standby.

# **6 Pilot Responsibilities**

## **6.1 Selection of Pilot Positions in Formation**

Pilot positions in a formation should be assigned according to the following parameters:

- Formation flying experience
- Knowledge of the route and destination
- Speed of the aircraft

## **6.2 All Pilots**

The primary responsibility of all pilots is safety. All pilots should report to Lead or the formation any potential hazards such as traffic, obstacles, difficulties holding position because of turbulence, fuel status and aircraft integrity.

## **6.3 Leader Responsibilities & Challenges**

A formation leader has the following responsibilities and challenges:

- Is responsible for the safety and conduct of the Flight.
- Shall determine the qualifications and limitations of the pilots and their aircraft
- Shall plan the entire flight from engine startup to shutdown.
- Shall assign formation positions and fully brief all wingmen.
- Shall execute the flight according to plan.



- Shall change the plan when conditions warrant it and shall communicate all changes to all wingmen.
- Shall maintain a smooth and stable flight course.
- Shall avoid requiring wingmen to change frequencies or other aircraft management tasks while the flight is maneuvering.
- Shall handle all communications outside of the formation.
- Shall use preflight briefing, departure and arrival checklists.
- Shall assure all aircraft and crews are ready, able and have enough fuel for the trip including adequate reserve.
- Shall maintain knowledge at all times as to where all aircraft are.
- Shall manage his own aircraft and navigation.

All of the above is why the Lead should be the most competent formation pilot.

## **6.4 Wingman Responsibilities & Challenges**

All wingmen have the following responsibilities and challenges:

- Communicate all pertinent information about his crew and aircraft to the Lead.
- Acquire and understand all briefing information from Lead.
- Maintain constant eye contact with Lead or Deputy Lead with the exception of checking flight instruments or other necessary items to manage his aircraft.
- Follow standard communication procedures.
- Follow standard or briefed maneuvering procedures.
- Maintain proper position within the formation.
- Be alert for safety hazards and advise Lead or Flight.

All of the above is why every wingman should know his plane well, be disciplined and maintain concentration.

## **7 Formation Techniques**

### **7.1 Fingertip Bearing Line**

The choice of a bearing line and the spacing along it will be determined in flight by No. 2 although these parameters may be discussed as part of the briefing to accommodate skill levels and other conditions. Two visual keys are required to establish a point in space. These could be (1) near float TE to fuselage nose and (2) far wingtip to fin. Some experimenting can be done with different keys to determine what is most effective for the SeaRey, gear up and gear down.

### **7.2 Use of Power and Controls**

The use of power and flight controls for Lead will be different than for the wingmen.

Lead needs to:

- Establish a power setting for climbs or level flight that the wingmen can follow throughout maneuvering.
- Hold power settings as steady as possible.
- Maintain steady altitudes or rate of climb.
- Make gentle turns and watch carefully for convergence on inside wingmen.
- Plan ahead for maneuvering to minimize tight turns.

- Advise the flight of unexpected maneuvering intentions.

Wingmen need to:

- Use all the power and flight control inputs to acquire and maintain position in the formation.
- Be aware as to how his movement and position affects other wingmen.
- Be aware of the effects of power changes, control inputs and trim on altitude, attitude and speed.
- Anticipate what control inputs will be necessary to make a change or correction while minimizing hunting into the desired position.
- Advise Lead if unable to keep up. Say, for example: “Lead, give No. 2 five (knots). This means slow down 5 knots. If established in formation and the speed was kept slow but can now be increased, No. 2 might say: “Lead, No. 2 can pick up 5.”

### **7.3 Leaving & Re-entering the Formation**

Any aircraft may leave a formation but it must be coordinated. If a wingman requests to leave, a direction of departure should be understood by all Flight pilots, e.g., descend with a turn to the right. It must be understood that all aircraft in a formation are coordinated and under the supervision of Lead. Once an aircraft leaves the formation, its proximity with the formation is a possible traffic conflict. Likewise, if an aircraft requests to join the formation while in flight, Lead must direct its approach and use standard join-up procedures with the other wingmen.

If communications are lost with an aircraft, that aircraft should depart the formation. Hand signals as described below should be used to communicate the problem and the anticipated departure. The departing pilot should attempt to make sure that Lead and any wingman positioning off him knows of his intent and do not follow.

### **7.4 Changing Formations**

To maximize the orderliness of transitions from one formation type to another, all formations are executed out of a fingertip formation except the break for landing described below. For example, it is not appropriate to go from an echelon right directly to an echelon left with three or more aircraft.

## **8 Safety Considerations**

Above all, formation flying conduct is to ensure that aircraft flying in close proximity to each other do not occupy the same space at the same time. It must be always understood which aircraft are in formation (coordinated) and which are not (independent and maintaining distance from all other aircraft) and fly accordingly.

### **8.1 Pilot Proficiency, Readiness & Attitude**

Formation flying requires more skill and concentration than normal flying. No formation flying exercise should be more demanding than what the least capable pilot is trained and ready for in his assigned position. Furthermore, even a usually proficient pilot needs to maintain a proper attitude while flying, keeping in mind concepts of defensive flying.

## **8.2 Aircraft Condition & Performance**

If for whatever reason an aircraft may not perform as is to be expected or needed in a formation, that aircraft should not fly in formation. Such factors may include:

- Heavy loading.
- Engine or equipment reliability
- Radio problems and quality of communications

## **9 Radio Etiquette**

Standards for radio communications have been adopted among pilots to maximize the quality of information exchange while minimizing the quantity of chatter.

### **9.1 Standard Words & Phrases**

Roger – Acknowledgement that message was heard and understood.

Wilco – Message heard, understood and will comply with request.

Bingo Fuel – At minimum fuel level. Must divert for fuel or return to base.

Initial – Point of initial straight-in leg for landing approach.

Number X In – Wingman X reporting in formation position.

Break – Turning out of formation for, e.g., landing approach.

Bogey at X O'clock high/level/low – Traffic at a position indicated by clock reference.

No Joy – Reported traffic or obstacle not seen.

### **9.2 Request/Acknowledge Discipline**

ATC requires that certain critical communications be read back in full to ensure avoidance of traffic conflicts such as IFR clearances and taxi instructions. Likewise, when in formation situations, certain instructions should be repeated to ensure that all wingmen understand what is about to take place or a critical advisory. These would certainly include any communications involving the repositioning of aircraft in the formation. Any other messages that a pilot thinks would be useful to read back should be repeated. If any pilot does not understand a message that could be critical, he should announce: "Say again".

## **10 Visual Signals**

A comprehensive list of hand signals is included in all formation flying curricula which enables formations to execute their flight plan and make changes almost entirely without radio communications. This requires good visual contact between the pilots in the formation. This is not practical in SeaRey formations with the canopy configuration we have and the separation distances we will probably be using. This is why good radio communications is a necessity. However, if radio communications are lost, some minimal hand/head communications may be used to try to reestablish radio contact or, if that fails, break out of the formation. Here is a list of those useful for SeaRey visual communications:

- Waving hand across ear - Cannot hear.
- Waving hand across mouth - Cannot transmit.
- Nodding head vigorously - Understand signal.
- Moving hand vigorously up and down while pointing down - Leaving formation.

- Numbers are signaled by holding up vertically one to five fingers for the digits 1 to 5. For the digits 6 through 9, one to four fingers are displayed horizontally. A closed fist is zero.

## **11 Takeoff Procedures**

### **11.1 Preflight Checklist**

Each pilot shall complete a full preflight check using his checklist and then report to Lead when ready for departure.

### **11.2 Communications Plan**

Lead will communicate to local traffic via tower or unicom frequency when the flight is ready to depart.

### **11.3 Positioning**

All aircraft shall line up on the runway as if in a formation takeoff position, the arrangement depending on the width of the runway. Where possible, leading aircraft should be on tracks downwind from subsequent departures to minimize the effects of aircraft induced turbulence. Sequential or trailing takeoffs are most conservative.

### **11.4 Timing**

The roll and takeoff shall be in numerical sequence. Formation takeoffs should be avoided on land and executed on water only if there is enough space to maintain safe separation. Spacing should be at spread out distances allowing plenty of room for each aircraft to deal with emergencies without affecting other aircraft.

## **12 Landing Procedures**

### **12.1 Communications Plan**

Again, Lead will advise the flight when to change from an enroute frequency to Approach Control, tower or a unicom frequency. A check-in response should be requested by Lead. All intra-formation communications must be kept at a minimum when on Approach or tower frequencies. Lead should announce the arrival of the formation using his N-number and number of planes in formation, as well as his intent.

### **12.2 Landing Checklist**

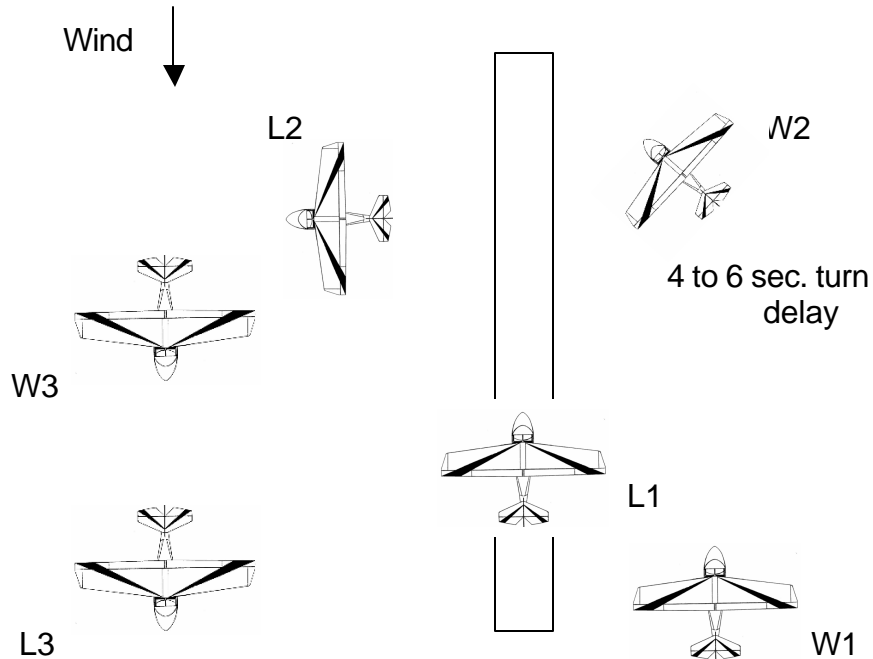
On a stable inbound flight path just prior to the initial approach point, Lead should request all pilots to execute their landing checklist, specifically instructing a gear up or down position.

### **12.3 Approaching the Airport or Landing Zone**

All aircraft, and in particular Lead, should be watching out for any departing or arriving aircraft around an airport. Lead must decide how to conduct the formation to coordinate with other aircraft. Doing 360 degree breaks over the arrival end of the runway is OK but if there are other aircraft executing a standard approach pattern, that procedure has priority. The formation may

be brought upwind and enter a normal pattern by sequentially breaking into the crosswind leg. No other aircraft should get inside the formation.

For a water landing, Lead must deal with other concerns. Other aircraft traffic is less likely to be a factor but watercraft and obstacles in the landing zone must be assessed. Also the direction of landing must be chosen into the wind and clear of all the obstacles in the approach path, landing zone and missed approach path. Making a low, upwind pass over the landing zone is recommended to survey for such obstacles and water depth.



360 Degree Landing Pattern for an Element at Upwind, Crosswind and Downwind Positions

## 12.4 Transition to Echelon or Trailing Formation

The echelon formation of three or more aircraft is primarily used to prepare a flight for turns into a landing configuration. Turns are always made away from following wingmen. If maneuvering is anticipated as in surveying a water landing zone with obstacles nearby, a trailing formation should be used from the initial approach point. This configuration provides the greatest flexibility and safety for pilots

## 12.5 Landing Spacing, Spots & Turnoffs

Spacing for landing begins with the break out of the upwind approach. No. 2 sets the spacing with his chosen break delay. Other aircraft should count the seconds No. 2 uses and use the same delay. The spacing needs to be large enough to allow all aircraft to land without interference with each other. On a runway, the first aircraft would land long leaving ample

landing space for following aircraft. Also, aircraft should taxi off the runway as soon as possible. On water there may be enough space to spread out the landings laterally. Whatever landing procedure is to be used should be explained by Lead to his wingmen during the initial approach.

## **13 Briefing & Debriefing**

A safe and satisfying formation flying experience begins with the preflight briefing. Lead must share all pertinent knowledge about the flight with the wingmen. He must also explain the takeoff, enroute and landing procedures to be used and what is to be expected of them. If there are unknowns, such as the condition or wind at the landing site, the procedure for resolving these should be anticipated. Dealing with controlled and restricted airspace needs to be determined and explained. Information on pilot and aircraft capabilities should be discussed. Any information the wingmen may have that would be useful for planning the flight should be shared.

As soon as practical, a debriefing session should take place to discuss how the flight was executed, what problems were encountered and how to avoid them in the future. Every formation flight is a learning experience.

A formation briefing guide is given at the end of this document.

## **14 Emergencies**

### **14.1 On Takeoff**

Adequate space needs to be given on takeoff to every plane to enable the pilot to maneuver in unexpected ways to deal with power loss, turbulence or whatever. The pilot should give his full attention to dealing with the problem and when able advise Lead of his condition and intentions.

### **14.2 In Flight**

An emergency in flight usually means having to land as soon as possible. The pilot with the problem should alert the flight and how he intends to deal with it. If a departure from the formation is necessary, he should move out in the safest possible way, descending or climbing out of the formation and making a clearing turn away from the formation. This pilot's element wingman (or another aircraft) may wish to accompany the troubled aircraft to provide any necessary help or communications.

### **14.3 On Landing**

If an emergency on landing affects the usability of the runway, all aircraft remaining aloft should hold in the pattern in a spaced out trailing formation until safe landing conditions can be assured or divert to another landing site opportunity. If on water, Lead, if not affected, should decide what aircraft should approach the stricken aircraft to help. Spacing of all aircraft on the water needs to be maintained to not add to the problem.

## **15 Some Common Errors**

- ***Rushing to get airborne and...***

- **Not completing takeoff checklist**
- **Assuming there is enough fuel onboard**
- **Not getting properly briefed**
- ***Assuming all pilots are proficient formation pilots***
- ***Not Maintaining Concentration***
- ***Not Making Early, Small & Timely Corrections***
- ***Losing Site of Adjacent Aircraft***
- ***Not Checking Instruments Occasionally***
- ***Not Maintaining Situational Awareness***
- ***Failure to Recognize Excessive Overtake.***
- ***Not Remembering that Safety Precedes Having Fun***

## **16 References**

- Formation Video Tapes (set of two, \$69.95)  
Darton International  
264 Trade St., San Marcos, CA 92069, 800-713-2786 or  
2380 Camino Vida Roble, Bldg. J & K, Carlsbad, CA 92009 760-603-9895  
Contact: Rae Henry
- T-34 Association Formation Flight Manual (\$10.00)  
Practical Test Guides (Wing & Lead, \$7.95 ea.)  
Formation Video Tapes (\$69.95, includes T-34 Association Formation Flight Manual)  
North American Trainer Association  
25801 NE Hinness Rd., Brush Prairie, WA 98606, 360-256-0066  
Contact: Stoney Stonich
- “FAST Foundation and Principles”, Formation Manual and other formation related material.  
YAK Pilots Association, [www.yakpilots.org](http://www.yakpilots.org)
- Formation Flying, Inc., Contact: Stu McCurdy, [sturdy@att.net](mailto:sturdy@att.net)

# Formation Briefing Guide

Flight Call Sign: \_\_\_\_\_ Time Hack: \_\_\_\_\_

Weather: \_\_\_\_\_ Wind: \_\_\_\_\_ Alt: \_\_\_\_\_

Positions: Lead \_\_\_\_\_ #2 \_\_\_\_\_ #3 \_\_\_\_\_ #4 \_\_\_\_\_

Freq.: ATIS \_\_\_\_\_ Gnd \_\_\_\_\_ Twr/Unicom \_\_\_\_\_ Enroute \_\_\_\_\_

Start Time \_\_\_\_\_ Taxi \_\_\_\_\_ Takeoff Spacing \_\_\_\_\_

Rendezvous (Alt/A.S./Direction Turns) \_\_\_\_\_

Enroute: Squawk \_\_\_\_\_ Lights \_\_\_\_\_ Base Alt \_\_\_\_\_

Maneuvers: Break/rejoin (airspeed) \_\_\_\_\_, crossunders, turns, trail,  
diamond, climbs, dives, echelon \_\_\_\_\_

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Bingo Fuel \_\_\_\_\_ Emergencies \_\_\_\_\_

Landing: Initial speed \_\_\_\_\_ Altitude \_\_\_\_\_ Break Interval \_\_\_\_\_

Pattern airspeed/ Final airspeed \_\_\_\_\_

Landing position on runway \_\_\_\_\_

## Debrief

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