

Leadplane Training Lesson Plan

Join Up

09-02-N9065-HO

Objective:

To familiarize the student with the join up procedure (Phase 1).

To develop the student's proficiency in flying the join up maneuver (Phase 2).

Content:

The join up maneuver is used to position the tanker or inbound aircraft behind the leadplane.

The leadplane will fly towards the inbound tanker in an attempt to acquire the tanker visually. The leadplane will be 500 feet below the inbound tanker altitude for vertical separation. Notify the tanker of the leadplanes altitude.

Once the leadplane has the tanker visually, the leadplane describes their position relative to the tanker. If the tanker has the leadplane visually, the tanker describes their position relative to the leadplane.

Once the tanker verbally communicates that they have the leadplane in sight, the responsibility for separation transfers to the tanker and the leadplane initiates a turn back towards the operations area. The goal is to finish the turn back towards the operations area and be positioned at the tankers 11 to 12 o'clock position. The distance between the two aircraft should be $\frac{1}{2}$ mile to 1 mile.

There is a visual illusion affecting the perceived distance from an inbound tanker due to the large difference in size between tankers. Initiating the turn back towards the fire when the tanker is at the 2-mile ring on the TCAS will help to estimate the proper distance to start the turn. The 2-mile rule of thumb is based on both aircraft being at proper FTA airspeeds.

The leadplane will then return to the operations area so a show me run or a live run can be made. Responsibility for separation is critical during the join up maneuver. See the responsibility for separation lesson plan.

Developing a visual sight picture, for determining when to turn back towards the fire, will be important with varying closure rates and angles.

The head on join up is most difficult due to fast closure rates. Joining up with the tanker from the side will have slower closure rates and does not require as large a turn back towards the operations area.

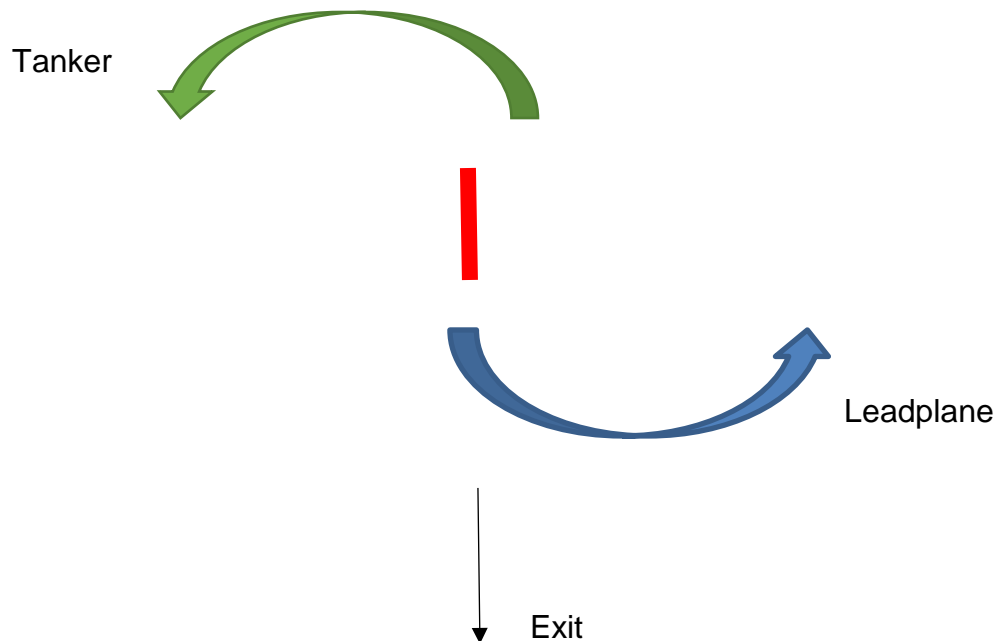
When able, fly out and join up with the inbound tanker and don't make the tanker come and find the leadplane. If the leadplane is over a fire and working with tankers when another tanker calls, it is not feasible to go out and join up with the inbound tanker.

After a show me profile, the leadplane climbs and turns toward the downwind, the tanker or other aircraft will maneuver in behind the leadplane.

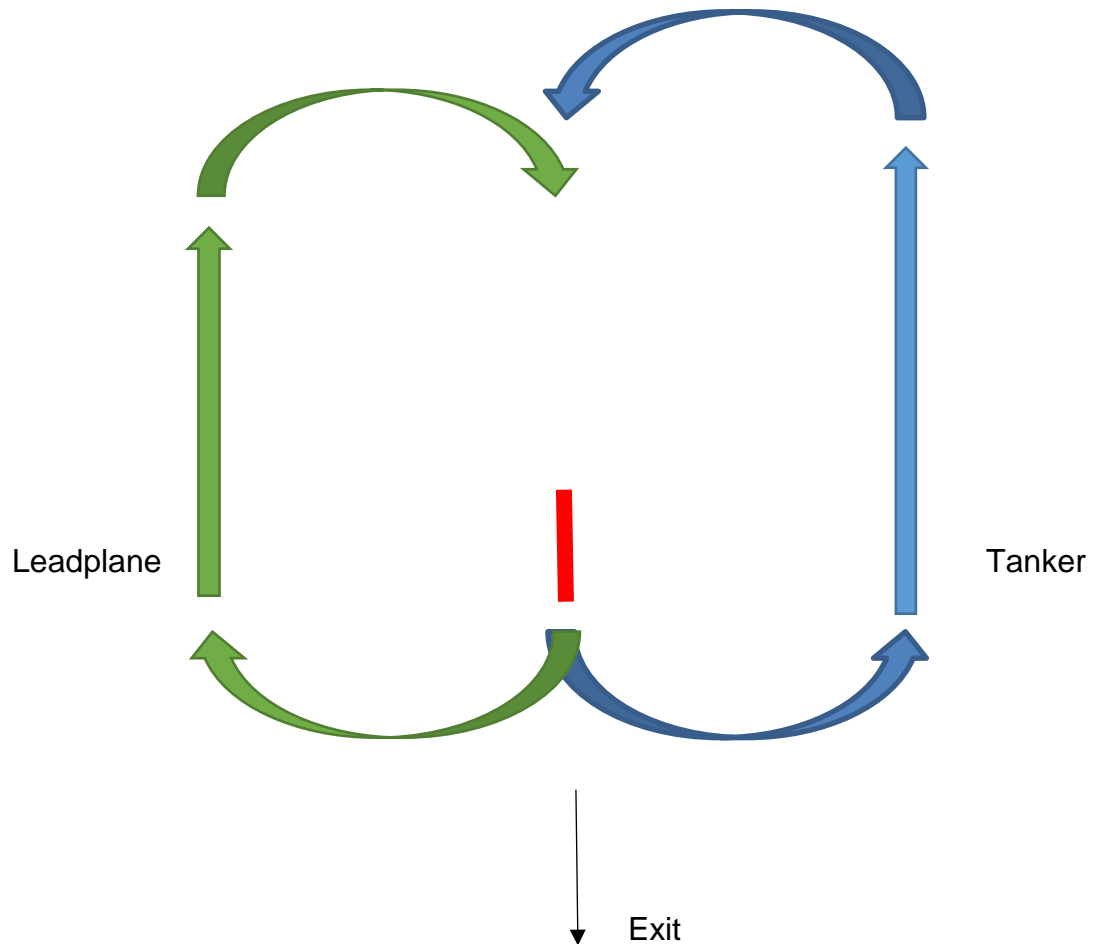
Atypical join ups:

At times the tanker may be out of position to maneuver behind the leadplane after a show me which will require another join up.

If the tanker is on the opposite side of the orbit from the leadplane, it is difficult to join up with both aircraft maneuvering to rejoin. In this situation it is helpful for one aircraft, usually the tanker, to go wings level while the leadplane maneuvers to rejoin. Consider terrain and smoke before requesting the tanker fly straight and level.



Join ups can be difficult when the tanker is in a left-hand pattern watching a right-hand pattern show me profile. This can lead to a situation where the leadplane is in a right-hand downwind and the tanker is in a left-hand downwind. In this situation the join up can take place near the base to final turn. Prior to the turn to final, the tanker must see the leadplane and accept the responsibility for separation. The leadplane can then continue a turn to final for the lead profile.



Lead, Lag and Pure

When trying to join with another aircraft it is not always prudent to use power and airspeed to reduce the distance between the aircraft. By altering the path of the leadplane with reference to the tanker, closure rates can be adjusted. When the leadplane's longitudinal axis is pointed in front of the tankers nose, the distance between the two aircraft will be reduced (lead). When the leadplane's longitudinal axis is pointed behind the tankers tail, the distance between the two aircraft will be increased (lag). When the leadplane's longitudinal axis is pointed at the tanker, the distance between the two aircraft will remain the same (pure). This technique is very helpful in join ups especially when used in conjunction with power and airspeed if needed.

The amount of lead or lag will depend on the size of the pattern and how quickly the leadplane needs to join up with the tanker. With larger patterns it is helpful to try and predict where the tanker will be in a certain amount of time and try to lead the tanker to that point in time and space. With smaller patterns the lead will be less when maneuvering in front of the tanker.

Completion Standards:

The lesson is complete when the student can demonstrate the join up maneuver in a training environment for Phase 1 and in a fire environment for Phase 2. When the student performs the join up maneuver, safety will never be in question and the join up will be accomplished without the reliance on the evaluator.