

# COMM- OUT turns

## Doing It With Your Mouth Shut

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The ability to freely maneuver a two-ship formation without use of the radio will be an obvious requirement to effectively counter the jamming threat.

The starting point to develop this capability is the daily practice of comm-out turns. These turns are simple and can be established as a standard of two-ship maneuvering after proficiency in tactical formation, delayed, and in-place turns has been demonstrated.

After progression to the tactical environment, proficiency in basic comm-out turns will be used as the standard to develop capability for repeated attacks in a jamming environment and limited comm air-to-air employment.

The mechanics of comm-out turns are similar to normal delayed turns. Each maneuver is initiated by a signal from the leader with either a hard check turn or a weave turn. These will be illustrated as the discussion progresses.

There are three basic contracts between the leader and his wingman:

- 1 The wingman will always strive for a line-abreast position.
- 2 The man in front is responsible to get the formation back to line-abreast.
- 3 The wingman will not exceed 90° of his leader's heading.

Now to the turns themselves.

1 Delayed 90° turns away from the wingman (Figure 22): #1 initiates the maneuver with a check turn away from #2 of approximately 30°. The check turn is an abrupt maneuver performed in three distinct steps: roll-in, turn, and roll-out. Beyond being a basic signal, the check turn serves two purposes. The first is to deconflict flight paths, which becomes important in the low altitude environment if #2 is forward of line-abreast, and second to back up the signal, so that if #2 misses the signal, he can detect the 30° heading differential.

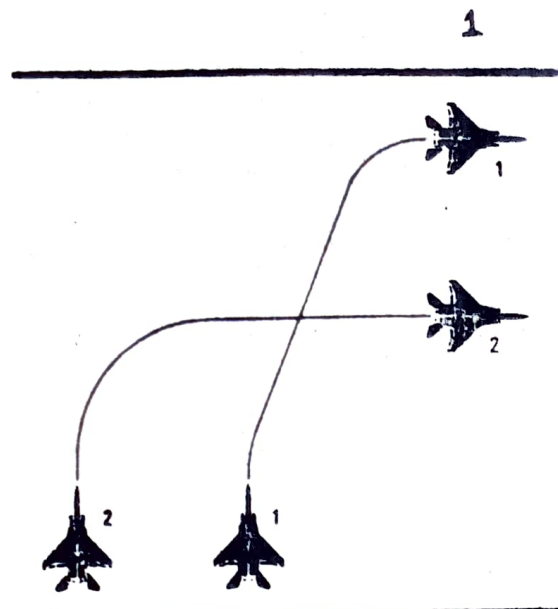


FIGURE 22

When #2 sees the signal, he simply turns 90° into the leader. Lead completes the turn by allowing #2 to drift slightly further toward three o'clock than the normal delayed 90° turn to compensate for the initial check turn. In the low altitude environment, #1 WSO supports #2 during his turn and cues #1 AC to complete the turn.

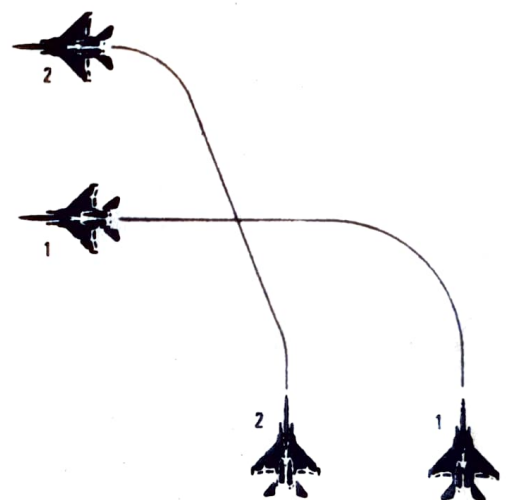


FIGURE 23

2 Delayed 90° turn into wingman (Figure 23): Lead simply turns 90° into the wingman. In the low altitude environment #2 should build the habit of performing a 30° check turn away from #1. This will show lead that #2 has seen the signal and serves to deconflict flight paths when lead is forward of line-abreast. At medium altitude, and with vertical turning room available, this is not necessary. The #2 AC and WSO use cues previously described to complete the turn. As proficiency builds, the normal 90° turn signals can be used for turns of 60° and 120°.

3 Delayed 45° turn away from wingman (Figure 24): This turn is initiated with the standard 30° check turn away from #2. When the leader sees that #2 has turned approximately 45°, he initiates a weave turn in front of #2. The weave turn signals #2 to stop his turn and continue on present heading. The weave turn is distinguishable from the check turn by severity. Instead of the abrupt roll, turn, roll sequence, #1 maintains his turn until required to reverse to gain line-abreast on the new heading.

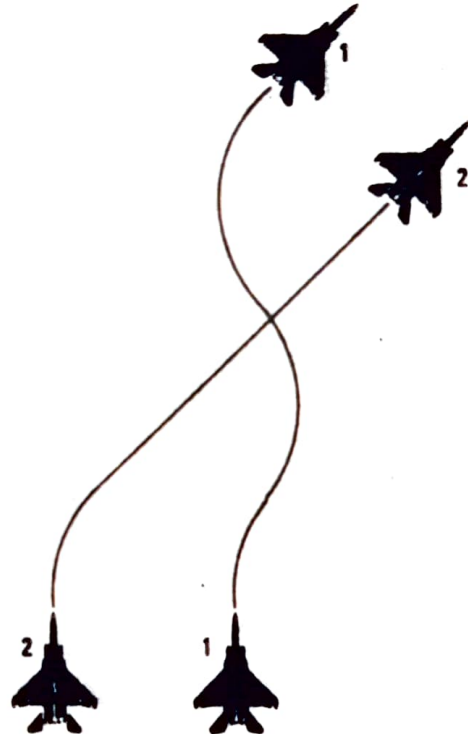


FIGURE 24

4 45° turn into wingman (Figure 25): Lead simply turns 45° into the wingman, who then maneuvers as required to line-abreast. The wingman will obviously interpret lead's initial move as a 90° turn and react accordingly. Once lead rolls out after 45°, #2 will be in front of lead's wingline and, referring back to his basic charter, will maneuver back to line-abreast. This is done most quickly by crossing #1's flight path; however, #2 can also maneuver on the same side as indicated.



FIGURE 25

From the previous discussions we can now establish several rules-of-thumb. They are:

- 1 A 30° turn is used by lead to get the wingman moving in his direction, either for a 90° or 45° turn.
- 2 A weave turn is used to signal the wingman to roll out and continue straight ahead.
- 3 The wingman always maneuvers to comply with his basic charters, since there are no signals from wingman to leader.
- 4 In-place 180° turn away from wingman (Figure 26): #1 simply turns 180° away. His intent is obvious since there is no check turn, but a continuous turn of 180°.
- 5 180° turn into the wingman (Figure 27): It is preferable to make 180° turns away from the wingman whenever possible, both in terms of time and complexity. When a 180° turn into the wingman is required, two delayed 90° turns are used. Lead initiates the maneuver with a normal 90° turn into #2. As soon as #1 crosses #2's flight path, and #2 has started to maneuver back to line-abreast, #1 initiates the second delayed 90°, using the 30° check turn.



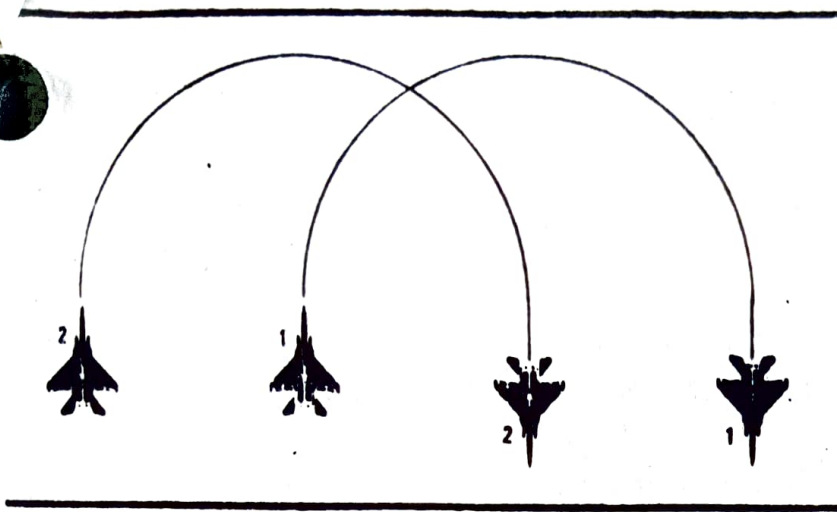


FIGURE 26

There are, of course, situations where the line-abreast position will be lost due to missed signals or hard maneuvering. This is especially true in the low altitude environment where there is no vertical maneuvering room to gain energy for corrections. In these situations, we must fall back on our basic charter and rules-of-thumb to re-establish the formation.

The example in Figure 28 shows #2 trailing after missing a 180° turn signal. Lead, being the man in front, is responsible for line-abreast. He initiates a weave turn in front of #2, signaling #2 to hold his heading, and reverses his turn to complete the maneuver.

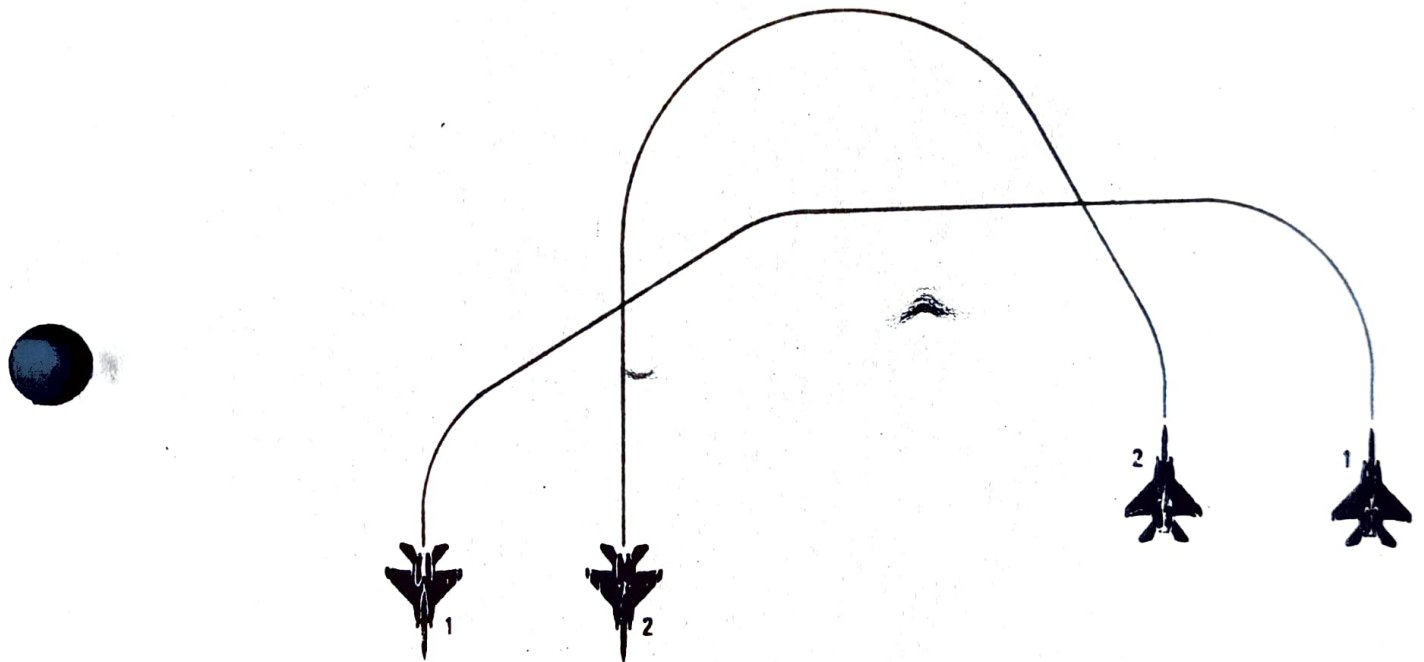


FIGURE 27

If, for some reason, #2 was in front, he would maneuver as required to regain line-abreast per rules-of-thumb.

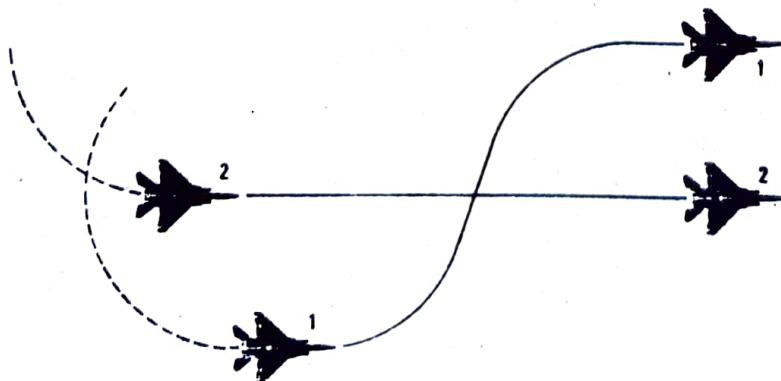
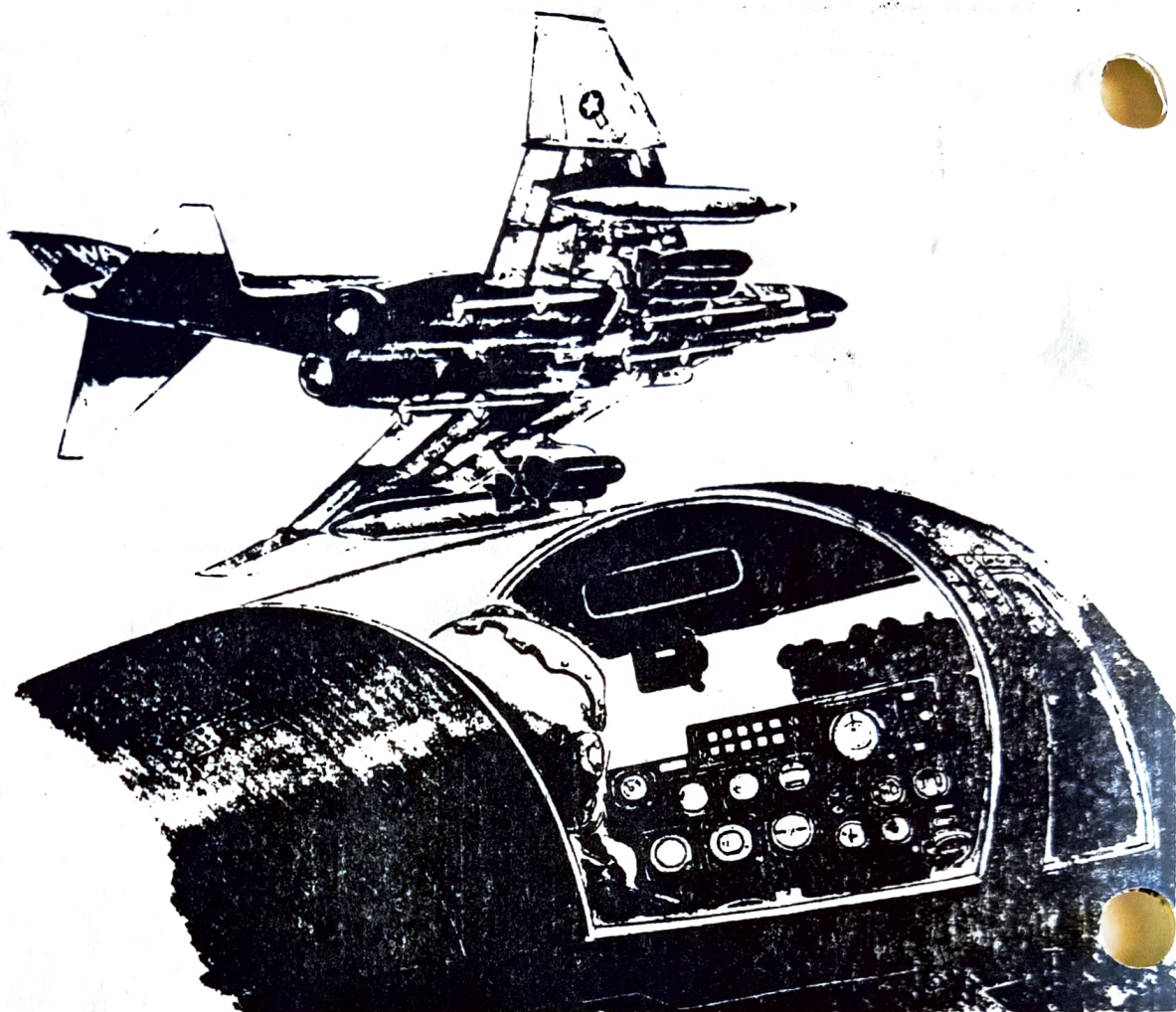


FIGURE 28



With a little imagination and a chalkboard we can easily see how the check turn and weave turn can be combined to signal a turn to any desired direction. The energetic chalk man will also be able to find exceptions to the rules-of-thumb. For instance, why couldn't we use a check turn to signal a 90° turn in either direction for the trailing wingman in Figure 28? In fact, we could; but, the immediate goal should be to master basic turns.

In teaching comm-out turns, the leader should discipline himself to carry each turn to its logical conclusion. When #2 misses a signal, go ahead and complete the turn and see if he can fall back on his basic charter to make the correction. Missed signals are to be expected, but so is the ability to correct.

Perhaps the greatest benefit from these maneuvers is their effect on building individual awareness and anticipation. These qualities replace the radio command crutch and the results are tangible. WSOs are responsible for accurately reading flight path relationships to call turns and share responsibility in detecting signals. We all become involved in responsibilities outside the cockpit while developing a needed tactical skill. In addition, no special training is required. These turns can be practiced any time we need to turn the formation. And, combat capability is another step closer.

**NOTE:** Specific attack tactics using principles of limited comm-maneuvering are presented in TAB 76-4.