

STANT

70 TFS

DOW



WEAPONS INFORMATION
SHEET NO. 1 **BFM MANEUVERS**
ON COMMAND

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BFM MANEUVERS ON COMMAND
70 TFS STANDARD BFM CALLS

1. During air combat, crew coordination can be a very critical item. For that reason, the following definitions of directive calls are listed to help enhance crew coordination within the 70TH. Mission success will be determined by the quickness and accuracy of execution and general aircraft control/situation awareness in response to these calls.

a. "HARD LEFT/RIGHT": Normally used to direct a defensive turn designed to prevent an attacker from entering the defender's vulnerable cone. Generally combines energy conservation with turn rate of sufficient intensity to create increasing aspect for an attacker while he is still at range. Exact intensity of the turn is a function of defender's energy state and bandit position. Start with 5-6 Gs (above corner) or 18-20 units (below corner): Max power. Expect this call to be followed immediately by "harder" or "ease off."

b. "HARDER LEFT/RIGHT": The turn intensity you responded with initially was insufficient for the situation. Either increase G or AOA or slow down to turn tighter.

c. "EASE OFF": The turn intensity you are sustaining is excessive for the situation. Decrease G and AOA. Maintain max power.

d. "BREAK LEFT/RIGHT/UP": Normally used to direct a last ditch maneuver because a missile launch has occurred or is imminent. Energy conservation is not a factor. Minimum turn radius and maximum turn rate is required immediately if not sooner. These conditions are best achieved at corner velocity. If called above corner, apply your limit G, drag power, and use speed brakes as required to slow to corner. Approaching corner reapply maximum power and get the boards up. If called below corner, apply maximum power and maximum obtainable AOA consistent with G limitations. In both cases, this is a single plane maneuver into the attack and it had better work.

e. "ROLL LEFT/RIGHT": Normally used when a bandit overshoot has occurred and the defender chooses not to commit immediately to staying and fighting. Immediately relax angle of attack to roll quickly with aileron at least far enough to check the bandit position and reaction. Expect a follow up call such as "extend" or "set your wings".

f. "REVERSE LEFT/RIGHT": Normally used when a bandit overshoot has occurred and the defender chooses to attempt to stay and fight. Since the defender needs to decrease the attacker's nose/tail separation, loaded (G not AOA) roll performance under these conditions can be optimum. Maintain the G load consistent with moderate buffet (18-20 AOA) and reverse nose high with aileron and rudder. The intent here is to increase the intensity of the overshoot by minimizing nose/tail separation. "Set your wings" is a likely next call. "Extend" is a poor follow up, and usually leads to "Break".

g. "SET YOUR WINGS": Many word choices have been used in this situations but this call normally follows a "roll" or "reverse" and is the second move in a defender's attempt to become the attacker by taking away the bandit's nose/tail separation. To do this, horizontal motion must be minimized or stopped. Continue or reverse the roll direction to set the wings level with the horizon. Practically, you are committed to the third step. Expect a "pull" call.

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h. "PULL": With the wings set, a healthy pull toward the pure vertical will slow or stop horizontal movement and can generate nose/tail separation with nose position advantage. Pull at G or AOA limit until desired nose position is established. Now you'll find out why you practiced slow flight and nose control for the ensuing scissors.

i. "GUNS BREAK": This call is used to direct a last ditch defense against a gun attack. Pitch and power control are identical to that used in a break. However, a successful guns defense must occur out of the plane of the attack, so a rolling break must be performed. Roll performance is poor at very high AOA, therefore, the rolling moment must be introduced before reaching excessive AOA. Therefore, if above corner velocity, apply aileron and rudder, then back stick. If above corner velocity, simultaneously apply aileron, rudder, and back stick to the G limit while reducing power as required. Maintain the break for a minimum of 180° of roll, but do not make a smooth and predictable continuous rate roll. Know where the bandit should appear if an overshoot was generated.

j. "JINKOUT": This call is used to direct a guns defense while gaining energy and possible separation. Jinkouts are random applications of rolls, turns and acceleration which move the aircraft (not just the controls) and prevent the attacker from achieving a guns solution. One of the most important ingredients of a successful jinkout (maintaining a tally) cannot be practiced on AHC. Realize that you are marching out into Atoll range. Randomly apply pitch and roll control and each time hold them just long enough to establish a new flight path. This is a multiplane maneuver--not a porpoise. Maintain maximum power. Use extreme caution for G overshoots as you accelerate past corner velocity.

k. "EXTEND": Normally used to gain energy and/or separation when not immediately threatened. Ideally a straight line unloaded acceleration maneuver. Rolls can be made at zero G to maintain tally and/or set the lift vector for future maneuvering. Go to maximum power and zero G at the call.

l. "KICK OUT LEFT OR RIGHT": Used to maintain tally on the bandit during an extension. Use hard turn parameters. Expect a "harder" or "extend" call to follow. Maintain maximum power. Expect a series of kickouts and extensions if the bandit pursues.

m. "KICK ACROSS THE TAIL": (Kick him across). Used to maintain tally during an extension if we want to position attacker on the opposite side. Either we want to change the direction of separation or the bandit has come off across our tail. Performed the same as the kickout.

n. "PITCHBACK LEFT OR RIGHT": Normally used to direct a nose high course reversal from high calibrated air speed. The intent is usually to exchange excess airspeed for altitude, thereby turning more efficiently and gaining altitude for position of future maneuvering. At maximum power, pull nose high at approximately 6-1/2 G to simultaneously change heading, reduce airspeed, and gain altitude. Maneuver may resemble a chandelle, Immelman, or half Cuban "8". Rollout airspeed will vary based on maneuver desired or vice versa. (400 KCAS generally is a good "tactical minimum").

o. "SLICEBACK LEFT OR RIGHT": Normally used to direct a nose low course reversal from low or medium airspeed. The intent is usually to exchange altitude for instantaneous and sustained maneuvering capability thereby

exchanging energy for turn performance. Roll lift vector below the horizon and pull to simultaneously change heading, while increasing or maintaining airspeed. May be done at any power or AOA, but generally maximum power and AOA to maintain 400 knots or greater. Depending on situation, may be followed by "harder", "ease off", or "rollout".

p. "PITCH LEFT/RIGHT TO SLICE": Normally used to direct an efficient course reversal from high calibrated airspeed. The intent is usually to sacrifice some energy for a quicker turn. Simultaneously pitch up at approximately 6-1/2 G and retard the power. Play the transition to slice so that the nose passes down through the horizon nearing corner velocity. AOA may vary up to 25 units AOA as speed reaches corner. If minimum time is the objective, hold 25 units AOA and play nose to hold corner with AB.

2. In addition to calls made between cockpits, the successful end to an air-to-air engagement may depend on the proper response to calls made between aircraft. Some of the inter-cockpit calls may also be used to direct an action by your wingman. In addition to the previously listed calls, add these inter flight calls to your air-to-air vocabulary.

a. Visual - A call made by one fighter to another, indicating that the first fighter sees the second, no enemy in sight.

b. Tally - A call made by a fighter to indicate that he has sight of an enemy fighter. Wingman not in sight.

c. Tally/Visual - A call made by a fighter indicating he has sight of the enemy aircraft and his wingman.

d. Press - (A call made by the free fighter to the engaged fighter) - Means continue your attack. The free fighter will be able to support the engaged fighter during an overshoot or come off. (But, don't bet your ass on it! Never trust your wingman to "Bail you out".

e. Lag - The opposite of a Press call. (Made by free fighter to engaged fighter. Means that free fighter will not be in a position to support the engaged fighter during an overshoot or comeoff.

f. Come-off - When call made by leader tells wingman to come off the attack the leader is in position to deliver ordinance on the enemy. When made by the wingman - tells the leader that if he doesn't come off the attack right now, he is committed to continue engaging the bandit until the wingman can reposition.

g. No tally, no visual, I'm engaged - Hack your clock; in ten to thirty seconds you'll be dead.