

Fighting 1 v 1 on

By Lt. Nicholas Mungas

as slow or as fast as you'd like at the first merge always has been my favorite. At the "fight's on" call, we aggressively went nose low. More of the same followed until we met near the deck with a nearly neutral pass. I had a positional advantage but was slower, and I expected my opponent to go two-circle across my tail. Looking through the HUD, I saw 240 knots passing 6,000 feet. I decided to extend into the merge and then go aggressively out of plane, nose high.

At the merge, my opponent turned across my tail in two-circle flow. At 5,700 feet and accelerating through 258 knots, I started up. I was on the HUD, following the 10-percent rule for the first 30 to 40 degrees of climb, then looked over my left shoulder to verify my opponent tracking in two-circle flow. That sneaky Hinge had reversed into a one-circle, nose-high,

right-hand turn in the oblique. Based on his lift-vector placement, it appeared

I was going to be the first one down-range—not

good. His reversal had

given me a little turning room to work with, so I got the nose back to the

horizon. I reoriented my lift vector, stopped my down-range travel, and transitioned to a flat scissors. I rolled the aircraft and increased alpha to get the nose to the horizon. A couple of seconds later, I heard the AOA-limit tone.

Did I mention I still was looking at my opponent? We were now in one-circle fight, and the aircraft had continued to track nose high. I wasn't rolling into the oblique, but I was rolling around the near-vertical. Because of this situation, my increased pull did nothing more than bleed the remaining airspeed. When I heard the AOA tone, I thought I was tickling the limiter by pulling too hard and had bunted the nose. I finally looked at the HUD when the tone didn't go away. What I saw was not good.

I was 70 degrees, nose high, and decelerating rapidly through 100 knots. I made one last-ditch effort to salvage an impending departure by rolling the aircraft inverted with rudder and then pulling the nose to the horizon. It responded crisply to my roll inputs, but when I tried to pull, the nose did not track, and I was living in tone.



We were scheduled for a good deal 1 v 1 BFM (basic fighter maneuvers) sortie. The flight would be just good old-fashioned bending the jet around, while trying to maintain sight and consciousness—the type of flight that brings all those 1 v 1 briefing items to reality. I was scheduled as flight lead, flying with our safety officer.

We settled in for the brief after the usual rounds of JOPA vs. Hinge trash-talking in the ready room. The brief was thorough but somewhat shorter than normal, since we only had to cover comm flow and the sequence of BFM sets for the tactical portion of the hop. Training rules were covered in detail, including departures and out-of-control-flight (OCF) procedures. We slow-walked to our jets. Weather was fantastic in the whiskey areas off the Atlantic coast, and it was shaping up to be a great hop.

Butterfly high-aspect BFM is truly an enjoyable way to spend a flight. Neutral merges and the ability to be



Instruments

Somewhere in all this, a “Knock it off, I’m ballistic” call was made, and, as the aircraft stopped responding to control inputs, I initiated OCF procedures. After I released the controls, the nose pushed over—just as the NATOPS flight-characteristics chapter says it should—bringing me closer to vertical. As I reached my apex, I saw 48 knots (the lowest that can be displayed), 7,800 feet, and greater than 90 alpha in the HUD. I retarded the throttles to idle and placed both hands on the towel racks.

The aircraft violently pitched, nose forward; it was strong enough to make me feel like I was coming out of the seat and to give me a great view of the blue water below. FA-18 OCF procedures state, “Passing 6,000 feet, dive recovery not initiated, eject.” I was 100 percent certain I was about to become intimately familiar with that passage. I didn’t think there was any chance to be in control by 6,000 feet.

One thought slowly trickled through my mind as I stared at the HUD and the water below: “Someone’s going to have to call the skipper and tell him I just put a jet in the water.” I was so convinced of my imminent chute ride as the nose broke the horizon, I took my hands off the towel racks and placed them on the ejection handle.

The aircraft went through some post-departure gyrations. The nose initially went to 90 degrees, nose low, pitched back up near the horizon, then back down where it wandered around pure nose low. Approaching 6,000 feet in the HUD, I still had spurious gyrations in yaw, and airspeed was only about 120 knots, but the nose had stabilized nose low. Seeing this, I had a glimmer of hope. I took my right hand off the ejection handle, grabbed the stick, and made a small, coordinated, rudder and aileron input as my wingman called out, “Passing 6,000 feet.” I saw the same in the HUD.

The aircraft rolled. I transmitted, “I’ve got it, it’s flying.” I did not want to snatch on a pull with my airspeed still slowly accelerating, so I waited another second until airspeed accelerated through 180 knots. Then I began the recovery. Post-flight HUD-tape analysis showed I started recovery below

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5,000 feet. I still was concerned about over-rotating and departing again, so I did not max-perform the jet in the recovery and bottomed out at 2,300 feet. As I climbed, my wingman broke a long period of silence on the tactical frequency with the understatement of the day, “That was a little scary.”

Lots of questions came up in post-flight discussions, and not just, “Dude, how much seat cushion did you suck up?” or, “Why did I start a nose-high maneuver at such a low altitude and airspeed?”

“Someone’s going to have to call the skipper and tell him I just put a jet in the water.”

Hornet squadrons place SOP restrictions on their aircraft when maneuvering below the soft deck (hard deck plus 5,000 feet). Our SOP stated when “...maneuvering between the hard and soft decks, the minimum-allowable sustained speed is 150 knots and 25 alpha.” I commenced the over-the-top maneuver with this statement in mind, and, had I flown the jet properly. I never would have violated it. Also, in the 30 days before this flight, I had 25 hours during seven flights in seven days. This included practicing similar maneuvers while preparing for a demo qual. I was as proficient as I could have been within the first few months back from cruise. Had I been less proficient, I doubt I would have maneuvered as aggressively.

Why did I keep my eyes and attention focused on my opponent during a difficult maneuver? FA-18 FRS students are taught the principle of mission-crosscheck time (MCT) during their low-altitude tactics-training part of the strike phase. MCT in the FRS involves the time a pilot can spend without verifying flight-path deconfliction from the ground during low-altitude flight. This subject rarely comes up during the remainder of FRS training. Occasionally it will be discussed in terms of formation flying, particularly on goggles. I seldom

have heard MCT discussed since I completed the FRS, and certainly never regarding BFM.

The principles remain the same no matter what phase of flight you are in. There is a finite amount of time you can spend on other flight-related tasks without verifying flight-path deconfliction between your aircraft and the ground or other aircraft. If you exceed that amount of time, you increase the risk to yourself, your aircraft, and others around you.

The lessons learned are many. First, before you fly, know your SOP. Those restrictions exist for our safety, not to take the fun out of flying. Second, don’t cut short safety-related briefing items like ORM and training rules. We did not, and I was thankful for it, as I found myself reciting “controls release, feet off rudders, speedbrake check in...,” at less than 8,000 feet. Third, CRM was very applicable on this flight. My wingman did a fabulous job during my departure. He verified what I was seeing in the HUD, but had my baro instruments been lagging, he would have provided reliable information, as I needed it. Post-flight discussion also showed he was about to make an “Eject” call as I declared, “I’ve got it.” That call could have saved my life if I had been disoriented.

I should have been on instruments during the vertical maneuver. I needed to look outside and see what my opponent was doing at some point in my maneuver. Then I should have come back to the HUD. I easily could have continued to fight while peeking at him to make sure he was tracking as his flight path predicted.

I took what should have been a safe maneuver and made it unsafe by focusing my attention too long in the wrong place. Whether I decided to continue the nose-high move or to redefine my flight path into the one-circle flow that was developing, doing so on the HUD would have made sure the aircraft continued flying. At very worst, I may have found myself defensive against an opponent but not helpless against a departure.

MCT is essential in all elements of flight. Discuss how it relates to various aspects of your flying. It applies, particularly when there is an increased risk of departure, CFIT, or midair. How many SIRs have you read the last couple years that involved any of the above? I almost became one more. 

Lt. Mungas flies with VFA-105.