Photo by PH3 Todd Frantom
Modified

Cobra Off the Cat

By Lt. Mark Crowe

The carrier and air-wing team neared the end of a two-and-a-half-week at-sea period off the east coast of Virginia. The weather was beautiful, and I was scheduled to lead a division of Hornets on a routine air-to-air mission with a Case I launch and recovery.

Following the brief, I walked through maintenance and read the book. I noticed the jet had produced a few random flight-control Xs on a catapult shot but nothing that affected controllability or would not reset. Also, both flight-control computers had been replaced before my flight, so everything looked kosher.

Preflight, start, and pretakeoff checks were normal, right up until launch. I saluted the catapult officer and sped down the cat stroke. My head went forward a little from the deceleration (as it always does), and my chin immediatelywas pinned to my chest. The jet inexplicably had pitched nose-up, and I instantaneously felt the force of roughly three Gs; the AOA tone quickly followed. With my peripheral vision, I saw the vapor trails coming across the leading-edge extensions. About a second and a half later, I got my hand back on the stick, my eyes on the HUD, and began pushing over to level off at 600 feet.

My first thought was to descend to 500 feet and continue with the Case I departure, then return overhead to troubleshoot. I clearly was working on stem power. The Air Boss, on the other hand, after asking if I had a problem, recommended I climb to 2,000 feet to troubleshoot.

My flight-control display showed I had Xs in two channels of both stabilator servos and a single X in my left leading-edge-flap servo. After talking with the Hornet rep, we decided I should climb above 10,000 feet

to investigate. Once at altitude, I got a good reset of the flight-control system and a good check of the aircraft in the landing configuration. From then on, it was an uneventful flight to Oceana for a short-field arrestment

Playing those few seconds over again, a couple of thoughts went through my mind. My first thought was I inadvertently had pulled back on the stick at the end of the cat stroke. (In the early days of the FA-18, with pilots sometimes grabbed the stick too soon after the cat stroke, often resulting in an ugly, pilot-induced oscillation.) Because I was aware of the issues of stick movement, my forward stick input after that catapult was not an instant one. With the jet in full afterburner, I knew I had plenty of excess power, so I gradually pushed the stick forward to level off. I was a bit disoriented, so my other thought was to maintain the altitude sanctuary of the structured CV environment and not to climb through pattern or break altitudes without having a good feel for where other aircraft were.

The event didn't feel like that big a deal, so I was prepared to recover aboard the ship. Fortunately, enough people had seen the cat shot to know that landing on the ship and trying another shot would not be a good idea, so I got to go home a day early.

What had happened? After pulling the maintenance data from the aircraft, the troubleshooters discovered the flight controls went to MECH ON for about three and a half seconds after the catapult stroke. The PLAT tape showed the aircraft reached a 45-degree-pitch attitude within a second of coming off the catapult. The maintenance data also revealed the aircraft decelerated to 150 knots, and AOA increased to above 27 degrees during that pitch-up. On-speed at my takeoff was about 173 knots and 8.1 degrees AOA. I didn't think my launch looked nearly as dramatic as it felt. It was not until I reviewed the PLAT tape two days later that I realized how close the aircraft had been to departing controlled flight at 100 feet.

After two weeks of scrubbing the aircraft for causes, the problem was traced to a loose wire in the back of the emergency-battery contactor. This problem was something no one could have predicted or seen.

I pulled away a few big lessons from this incident. Use afterburner on the catapult; it had been my habit pattern before this incident, and I will continue to do so. Not only is using afterburner the first step in our settle-off-the-catapult procedure, but, in this case, it also gave me enough airspeed and time to fly away from an extreme aircraft attitude.

Even though it was day VFR, the first place I looked after I could pick up my head was the HUD. This action helped to replace the situational awareness the cat shot had sucked away. Had this situation occurred at night, a look to the HUD would have been even more critical, especially without the benefit of all the peripheral-vision cues present during the day.

I did not consider the eject option. The aircraft was under control within three seconds after the catapult shot, so I never considered pulling the handle. If I had had a nose-down pitch or an uncontrollable yaw or roll, I quickly would have been at the edge of the safe-ejection envelope.

For me, this incident just reinforced the fact that anything can happen, especially during something as dynamic as a catapult shot.

Lt. Crowe flies with VFA-87.