

# Really Hot Brakes

by Lt. Robert Loughran

Watching the crash crew extinguish brake fires on both of my main landing gear, I realized how close I'd come to a major mishap. I'd let a minor problem develop into a situation I could have and should have handled better. As it turned out, basic lessons I thought I'd learned in flight school would have prevented the whole thing.

I had been on a check flight with a senior JO from the squadron as my wingman and instructor. I'd spent the previous day and most of the morning preparing for the hop. We took off with a 10-second interval and made our rendezvous as briefed. We climbed out on the

hazy but otherwise cloudless day, and proceeded to airspace off the coast of North Carolina. I noticed a BIT advisory and checked my displays to determine the cause. I had an FCS degrade, and the FCS page showed a maintenance code of 73. Not knowing what that code meant, I asked my wingman about the degrade. He wasn't sure but recommended I head back to the field for a precautionary, visual straight-in. He proceeded with the mission, and I contacted approach for vectors back to the field. I also called base to let them know the situation and find out what that maintenance code was.

I was level at FL 190 before deciding to turn back, so approach told me to descend to 5,000 feet because I was only 25 miles south





of the field. I started dumping gas but decided I would not have enough time to reach my maximum normal landing weight of 33,000 pounds. Instead, I adjusted to below the maximum, flared-landing weight of 39,000 pounds. I stopped dumping when the aircraft gross weight was 35,000 pounds. I continued my descent to 1,500 feet and set up for a left base to the runway. I started my turn to final at 4.5 miles and lowered the gear.

Base called back with the cause for the maintenance code. The nosewheel proximity switch had failed. I immediately checked my landing gear for a three-down-and-locked indication. I was sure the gear worked, but with a failed proximity switch, you often don't have accurate indications. The indicators were all green, so I reported three down to tower and got clearance to land on the runway, which was 8,000 feet. As I started to flare for landing, I realized I was extremely fast but figured it was because I was heavier than normal and not on-speed. I floated down the runway farther than expected and noticed I was at 168 knots—much faster than I should have been. On touchdown, I immediately applied the brakes and fed in a little back stick to raise the stabilators and increase the drag. My squadron's SOP requires 100 knots maximum by the 4-board, with normal braking. I tried to be smooth on the brakes, because I didn't want to overheat them. I slowed to 100 knots with 4,000 feet remaining, but just barely and certainly not with normal braking. I was able to slow to safe taxi speed, clear the runway, and complete my post-landing checks. When I tried to raise my flaps, the switch was already in the up position! I had just landed with the flaps up. That, combined with the heavier landing weight, explained the high approach and landing speed.

During the taxi back to the line, the jet handled normally until I turned off one taxiway onto another and noticed the brakes getting extremely soft and unresponsive. I smelled burning rubber and realized I had hot brakes and possibly a blown tire. I pulled off the taxiway onto the transient ramp and stopped. I secured the engines and climbed out as the

smell of burnt rubber got stronger. The extremely hot brakes had caused both main landing-gear tires to deflate, and as the crash crew rolled up, the port brake was smoking. It caught fire, and as the crash crew extinguished it, the starboard brake caught fire, too. The result: two destroyed brake assemblies, two destroyed tires, one destroyed hydraulic line, and one pilot with some explaining to do.

How many times during flight training were the basics of piloting drilled into our heads? Aviate-navigate-communicate was the mantra preached by every instructor I ever had, especially when training for simulated emergencies. Nevertheless, I'd allowed an unnecessary radio call to break my habit pattern of putting the gear handle down and immediately placing the flap switch to full down. That would not have been such a big deal if I had only followed some of the other training I had received repeatedly, like completing the landing checklist and making an on-speed crosscheck. Even though I was not intending to fly an on-speed approach, the 190 knots of airspeed as I started to flare should have been a big clue. On-speed for my gross weight of 34,500 pounds is 144 knots. When I touched down at 168 knots and finally recognized that something wasn't right, I should have taken it around.

The most dangerous part of this landing was that if I had decided to take it around at any point after I had started braking, it would have been extremely difficult to get airborne. With the flaps up, my takeoff speed would have been significantly higher than normal and the available runway much reduced. I had considered dropping the hook as I struggled to make my board speed, but decided against it as the jet began responding to braking, and the board speed seemed attainable. The key wording in the SOP about board speeds was that you should make them using normal braking. I violated SOP and ended up significantly damaging the jet. Even after making multiple mistakes, I simply could have dropped the hook and trapped at the long-field gear, a much less costly solution. 

Lt. Loughran flies with VFA-83.