

By Cdr. Bill Dooris

"304, Your Signal Divert..."



"304, your signal divert."
"Hornet rep. I can't. I don't even have the fuel to bingo."
"Say state."
"1.7K useable."

(Insert sounds of CATCC exploding in chaos.)

How did I get into this box during a Case III night CQ? With a tank 4 fuel-transfer failure and a bolter. CQ means a relatively steady deck, a divert available (120 miles), and no tanker required (so none readily available).

This was our last sea period before deployment. We were all very proficient, having just completed the airwing Fallon detachment and having received our last nugget two months earlier. JTFEX would be our last wicket before we finally could get on with our job.

But first, we would travel to the waters off Alaska for a joint exercise. Eighteen hours of daylight should outweigh the pitching decks we might experience. The initial plan was just to day CQ, since we would fall out of night currency in Alaska anyway. But, plans change, and we found ourselves behind the ship at night, with the deck moving plus- or minus-14 feet.

My CQ requirement was two traps. When I manned up, I noticed the left drop tank was only half full. Many

cockpit switches also were set incorrectly, and the parking brake was off. I wondered what else I wasn't noticing. Since the purpleshirts on deck seemed to be ignoring the flight-deck chief's calls for fuel, I decided to transfer the drop-tank fuel into the jet. Add in a software-configuration caution that required an engine shutdown and a new digital-map load, and my good-deal day launch, pinky recovery, turned into a dark cat shot.

"304 airborne."

I turned downwind and reported, "Ready to come aboard."

Let's start the list: Radar is inop, the TACAN will not show up on the HIS, and the fuel won't dump. As I stationed overhead at 6,000 feet and troubleshot all the problems, I told my CATCC rep my delay would be due to the failing fuel dumps.

"Copy 304. Just confirm you have normal fuel transfer."

Of course I have normal transfer. Why would he ask that?

"Affirm rep, good transfer."

I actually could dump fuel at very high rpm, greater than 90 percent. Then the FUEL XFER and GLIM 7.5 G cautions illuminated, which drew my attention to the fuel page. It showed tank 4 full and tank 1 only one-third full, with 900 pounds.

This situation is strange for the Hornet. The jet has four internal fuel tanks (tank 1 being the most forward), and the signal-data converter (SDC) controls the tank 1 fuel transfer. To prevent the center of gravity from moving too far aft, the SDC allows tank 1 to transfer only after tank 4 has started to transfer into the feed tanks. If the farthest aft fuel cell (tank 4) fails to transfer anything, the SDC will stop the transfer of the farthest forward cell until the low-fuel light comes on.

What does that all mean? I had 3,600 pounds of unusable fuel. After dumping to my max trap of 5,900 pounds and a long vector, I called the ball with 5,500 pounds—certainly a very comfortable fuel state. It allowed for at least two additional looks at the deck before I reached bingo.

As I was calling the ball, the thought emerged that I actually didn't have 5,500 pounds to use for a divert. My bingo fuel was 2,800 pounds, which we bumped up at night to 3,600 pounds.

"Bolter. Bolter."

"Rep, 304 airborne. Can you look at my CG again?"

“304 rep. Your signal divert.”

(pause) “Hornet rep. I can’t. I don’t even have the fuel to bingo.”

“Say state.”

“1.7k useable.”

All of a sudden, I was in a box, with only one way out: Land next pass or barricade.

I landed with 1,200 pounds usable.

What did I learn? Inform everyone as soon as you

can of your usable fuel. Include this info on the ball call. NATOPS states that, with a tank 4 transfer failure, gravity transfer alone will be insufficient to transfer all the fuel, leaving as much as 2,500 pounds unusable.

The FA-18C charts show that, for a Lot XIV, it is impossible to go aft of the CG limit, regardless of the fuel-tank states.

When I really must get aboard in the future, I won’t use auto-throttles. 

Cdr. Dooris flies with VFA-113.

The Rest of the Story

By ADCS Paul Woodworth

Reset to earlier that same day.

It was just like any other half-day at sea. Like they say, it just doesn’t get any better than a crisp NORPAC day. Aircraft 304 had launched for a second round of CQ. The weather was great Case III—40 degrees and 30 knots over the bow.

The jet was up and had a great first pass, trapped, and went right to the catapult. In tension, the final check was normal. The conditions were windy, and the flight deck was so loud you couldn’t hear yourself think. Aircraft 304 climbed out but got a fuel transfer and boost-low caution. He trapped and was sidelined with troubleshooters coming to the rescue. They found every MSP code available that indicated an SDC failure. The SDC was changed, the aircraft low-power turned. Fuel transfer checked good, and 304 was back on the flight schedule.

Prepare to darken ship. The weather was getting better—10 degrees colder and threatening rain. The XO manned up 304 and headed for the catapult. After a good final check, he headed into the darkness toward marshal. We waited in the cold and rain for the first of his two passes. We got the call but not the one we wanted.

The boss let us know there was a Hornet with fuel problems on a straight-in. We all said, “No, it couldn’t be 304. It was fixed.” But, it was 304, with a more serious fuel problem. The aircraft’s largest tank, tank 4, was not transferring its fuel. We were quite tense on deck because 304 was low state and couldn’t make the divert field. There was talk of a barricade landing, but the talk passed when the XO trapped. Wow, that was close. The

aircraft was down and marked for hold fuel.

Now the hard part: What tank was the problem? Was tank 1 transferring too fast, or was tank 4 too slow? With no pertinent MSP codes present, it was off to the sea of reports. After the ECAMS reports were printed, the ADs went over every page but found nothing, so they dove into the MIMs. After a few hours with no results, they went back to the reports, trying to find something—anything—they had missed. They found it. An MSP code had set for only 1.5 seconds, enough time to get the ADs pointed in the right direction.

The MSP code was for a right-boost low. The jet was de-fueled and certified gas-free.

They went into tank 4 and its sea of tubing, looking for the motive flow-turbine-boost pump. Two hours and a few hundred feet of tubing later, they had removed the pump. Sure enough, the pump impeller was locked tight. While cleaning the residual fuel from the pump, the impeller was moved a bit, and hello, a thin 6-mm-by-1-mm piece of metal fell out of the turbine inlet. This piece was so small that most of us would have said, “That’s not FOD; it’s too small.”

That small piece of metal, worth about as much as the cash value of a commissary coupon, almost brought down a 40-million-dollar aircraft. The pump was changed, and the aircraft returned to service with no other discrepancies.

When you are out there on the job, or better yet, on a FOD walkdown, remember: The little things count. And those little things can hurt in a big way. Good housekeeping and FOD awareness are the keys to greatness.

Keep them FOD-free and flying. 

ADCS Woodworth is with VFA-113.