

Smoke in the Groove

By Lt. Timothy McDonald

It was October in the Arabian Sea. Unlike the two-hour Operation Enduring Freedom (OEF) mission I'd flown previously during the dark, moonless night, this late morning, add-on day flight was a single-cycle hop and the final event for the day. I was a nugget pilot approaching six months of cruise experience. My rightseater was a mission commander and the operations officer.

After the catapult shot, we climbed, assumed station profile, and passed mission fuel to strike aircraft returning from combat missions over Afghanistan. The tanking mission went well, and we decided to pass a couple thousand pounds of fuel to my wingman before returning overhead for a Case I recovery.

During the fuel transfer, my wingman reported seeing sparks coming from the environmental-control system (ECS) exhaust port. My COTAC and I suspected an electrical problem but we had no any cockpit indications to confirm our theory. We continued and planned to report the incident to maintenance after landing. After all, we were only five minutes away from a "99 Charlie" call from the boss.

After hearing "99 Charlie," my wingman and I pushed from the stack and headed into the carrier-break pattern. There still were no adverse cockpit indications relating to the sparks my wingman had observed earlier, so we continued into the normal Case I pattern. As we approached the carrier initial, my COTAC and I experienced an increase in cockpit temperature. I casually looked at him and asked him to adjust the air

conditioning. With the air conditioning set at full cold, the temperature kept rising. I now was starting to feel uncomfortable but was reassured we would be safely on deck within a couple of minutes.

As we approached the 180, the intensity of the heat was nearly unbearable, and my COTAC and I started to smell smoke. As we commenced the approach, a cloud of smoke billowed forward from the avionics tunnel. My COTAC glanced aft before he calmly faced forward and started to recite safety of flight back-up calls (airspeed, lineup, AOA) for the pass.

After the ball call, a burning-wire smell filled the cockpit, which I immediately associated with an electrical fire. By the in-close position, the smoke was so thick it started to obstruct my view of the ball. At this point, all my efforts were devoted to flying the best pass of my naval career.

After catching the 4-wire, smoke completely filled the cockpit. My COTAC told the tower of a possible electrical fire, while visibility in the cockpit was reduced to zero. My eyes started to burn and breathing was difficult. I strapped on my oxygen mask and secured all electrical busses. My COTAC ordered us to safe our ejection seats and we began to release our Koch fittings.

As I headed for the door, I faced the reality that I could not see how to depart the aircraft. Luckily, I'd remembered the dreaded helo-dunker

training I had received in Pensacola as a flight student and grabbed key reference points along the interior of the aircraft. Within seconds, I had located the latch and opened the door.

Coughing and drenched with sweat, my COTAC and I exited the aircraft and stood in the landing area as we watched fire and crash crews enter our aircraft. Because of the amount of smoke we had encountered, I was certain the fire was only seconds away from engulfing the entire aircraft.

When the fire and crash crew exited, they said there was no fire in the aircraft. As I stood in the landing area, dazed for a couple of minutes, I tried to figure out how firemen could report not seeing a fire.

Our ECS turbine had failed. As a result, bleed air bypassed a heat exchanger and was

pumped directly into the cockpit from both engines. This explained the increase in temperature we felt during the final phase of flight. As the temperature rose, soot and dirt in the environmental-control-system plumbing, along with oil from the turbine assembly, began to smolder and was responsible for the smoke.

In just a few short moments, I realized how quickly a routine tanker mission could evolve into a possible Class A mishap. In reality, all we needed to do was turn off the air conditioning, turn on the auxiliary vent, and dump cabin pressurization. Damage to the aircraft was miniscule. But because of the sparks reported earlier by our wingman, we became fixated on an electrical malfunction or fire. A new turbine was installed, and the aircraft flew another OEF mission later that evening. 🏆

Lt. McDonald flies with VS-24.



As we approached the 180, the intensity of the heat was nearly unbearable, and my COTAC and I started to smell smoke