Crew Resource Management

Situational Awareness
Assertiveness
Decision Making
Communication
Leadership
Adaptability/Flexibility
Mission Analysis

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It's Getting Hot in Here

By Lt. Matt Renner

I was over halfway through my nugget cruise and starting to feel comfortable around the boat. I was pleased I hadn't been tasked with writing an *Approach* article, but, after this night, I would know the safety officer wasn't going to let me get away without writing one.

It was our first fly day after a three-day port visit in Bahrain. We had transited to the Gulf after six weeks supporting Operation Enduring Freedom. I was scheduled to lead a bomb-smoke hop on an inky-black, extremely hazy, moonless night. After successfully bombing our smokes, and not one of the countless ships or oil rigs in the water, my wingman and I headed to the marshal stack for our first night trap in seven days.

About two minutes before my push time, I felt a little cold and decided to turn up the cockpit temperature. In the process, I noticed the environmental-control system (ECS) switch was in manual, instead of auto, as it should have been. Angry with myself for missing such a simple item on preflight, I reached down and switched to auto. Almost immediately, I sensed decreased flow to my oxygen mask, so I quickly returned the ECS switch to manual. Unfortunately, that did not help. The oxygen flow still was weak, and now the ECS was blowing hot air,

accompanied by an OBOGS DEGD and an AV AIR HOT caution on the DDI.

I was a minute from my push time when I radioed my wingman to ask his opinion and his help troubleshooting. We went through the steps we could remember for the OBOGS DEGD and AV AIR HOT cautions, which included selecting emergency oxygen and turning off the OBOGS. We also cycled the bleed-air knob and switched to emergency on the AV COOL. I felt light-headed from the reduced flow, so we selected emergency oxygen and secured the OBOGS. I pulled the green ring and felt better. I told my wingman about my improved condition, and he decided to commence on time.

I told the CATCC rep about our situation before starting down. I called marshal and told them I couldn't make my push time, requested vectors, and asked to talk to a rep. I didn't realize my wingman had told me to turn off my bleeds and select RAM-DUMP on the pressurization if I still had problems. Unfortunately, I just had switched to my rep, so I never heard my wingman.

I updated my rep and told him I had OBOGS DEGD and AV AIR HOT cautions. I also told him the emergency oxygen was pulled, and the OBOGS was secured, but the AV AIR HOT light still was on. Unfortunately, I failed to tell him of the cockpit-temperature problem,

Foreground photo by Matthew J. Thomas. Composite.

instead focusing only on the two cautions. Accordingly, he had nothing to add. He only wanted to make sure I felt all right. I told him I was OK, switched to my TAC freq, and told marshal I was ready to come aboard.

The cockpit started to get a bit warm, but the approach went fine. At a mile and a half, the emergency oxygen ran out, and my situation got worse. I reached up to release my mask, so I could breathe again. I could have discontinued the approach, but I wanted to get aboard. I still felt confident. At three quarters of a mile, I held the mask to my face to make the ball call. As I did, I drifted to the right and settled, but I quickly got my hands back on the controls and tried to salvage the pass. I found myself low-in-the-middle to in-close, with a couple of power calls from paddles; I inevitably boltered.

The situation wasn't getting better. Off the bolter, I started to feel uncomfortable. The cockpit now was extremely hot. I called my wingman, who was on deck, and told him I felt lightheaded. He immediately declared an emergency for me on my approach frequency and urgently requested someone to join up on me.

About this time, approach gave me a harried, "301 check your altitude!"

That call got my wingman's attention. He yelled on aux radio for me to climb. He also asked me about the situation, as I continued to 2,000 feet. I told him the emergency oxygen had run out, and hot, pungent air was coming out of the ECS. He recommended I put the cockpit-pressurization switch to RAM DUMP, clear out the air in the cockpit, and turn off the bleeds—which I did.

Then, a Super Hornet, which I had tanked from earlier, joined on my right wing. Fuel was not my major concern; I had about 4,200 pounds remaining—enough for at least one more pass before needing to tank. I had to work hard to maintain airspeed and altitude, and I wasn't doing a very good job. Fortunately, we weren't flying formation, but at least I had someone on my wing to check on me.

Photo by PH3 William K. Fletcher. Modified.

I gave my fuel state and a situation update to my new wingman and asked him to call the ball for me. I felt better after dumping the air in the cockpit; it was hot and getting hotter, but, mentally, I felt more with it.

At 10 miles, I came left to the final bearing and put down the gear. My scan was slow at first, but it picked up as I flew the approach. I tried to put my physical discomfort out of my mind. At three quarters of a mile, my wingman called the ball for me, and I flew a nice pass—with a great talk down from the LSOs—to an OK 3-wire. I taxied clear of the landing area, drenched in sweat and rather drained, but happy to be on deck. When I shut down and went to get out of the jet, every surface in the cockpit was hot to the touch. My original wingman waited for me at the bottom of the ladder, relieved to see me safe and sound.

Most of the lessons learned involved communication and decision-making. Initially, I had focused my attention—and that of my wingman and CATCC rep—on the obvious problems, the ones that had produced cautions: OBOGS DEGD and AV AIR HOT. I had not communicated my other problem: the hot, pungent air coming out of the ECS. When I switched to the CATCC rep, I missed my wingman reading an important action item in the AV AIR HOT procedure.

While we had gone through the steps for the two cautions, we had not reviewed the steps for two other procedures: cockpit smoke, fumes, or fire, and cockpit temperature high. Either or both might have helped fix the problem.

My wingman and I allowed the recovery time to drive our decision-making. Had the two of us simply asked for vectors and a delayed recovery, we could have troubleshot the problems. My wingman tried to help me troubleshoot; he read PCL steps while shooting a CV-1 approach. This error was the biggest one we took away from the flight.

Other decisions, however, went very well. My wingman's quick decision-making and assertiveness in declaring an emergency for me was critical. The decision to have someone join on me and allow me to keep the lead was a good decision, as well.

Some people in CATCC wanted the Super Hornet to fly the approach and drop me off on the ball. Although my wingman and I wanted someone to join up and monitor my altitude and make sure I didn't fly into the water, the assumption of many in CATCC was I would fly on the Super Hornet's wing. I did not want to fly formation, and I wouldn't have done a very good job. Scanning instruments and trying to fly a good approach helped refocus my mind. The decision to have someone else call the ball for me was important. Fumbling with my mask and taking my hands off the controls had screwed up my first pass, and I didn't want to repeat that mistake.

Single-seat crew coordination on the radio initially was insufficient. But, between my lead on deck and the Super Hornet pilot on my wing, crew coordination worked well, once we realized the seriousness of the situation.

As anyone who has experienced oxygen problems in the air can tell you, hypoxia never is a minor problem. The effects are insidious, and you're not sure if you're feeling strange or not. What helped me assess the situation was the hypoxia training we all have received—the feeling was very much the same. However, my problem likely was a combination of hypoxia and heat stress. The hypoxia initially was brought on by the bad OBOGS air and, later, by the bad cockpit air. The heat stress resulted from the high cockpit temperature.

If you ever have something wrong in the aircraft, be sure to tell paddles about it, so you can get the upgrade. If anyone deserves an upgrade, it's the guy with hypoxia, right?

Lt. Renner flies with VFA-113.

Squadron maintenance note: *The aircraft was found to have a broken OBOGS supply line. Since that time, a bad avionics ram-air check valve and a bad secondary ejector valve were found.*