



Photo by Matthew J. Thomas.  
Modified.

By Lt. Matt Knowles

**T**his is really uncomfortable; I'm going to descend back under the clouds," was the last sentence I spoke before entering into vortex ring state. How could this be happening just one week into the cruise?

It was the fifth day of our 2002 WestPac on board USS *Camden* (AOE 2), and I was scheduled for a day DLQ flight. My copilot and I had not flown much before leaving on cruise. I only had flown a few functional-check flights (FCF) the last two weeks, as we scrambled to get our H-46 fully mission-capable. We would practice DLQs and requalify vertreps all day.

The schedule had gone well. The weather was broken overcast at 1,000 feet. We had completed two hours of DLQs and vertreps and had stopped to refuel. With the refueling completed, I decided to practice basic instrument-flight skills. I would fly above the cloud layer, where we could practice our instrument maneuvers with sufficient altitude. Getting above the layer was a poor decision for several reasons. First, the ship was operating EMCON, with the TACAN secured. My copilot and crew chief were concerned we might lose sight of the ship. Second, the ship would not provide positive radar con-

tact for us. Third, what looked like a broken layer from below was a solid-overcast layer from above, with very few “holes.”

I always have considered myself a good listener. I’ve learned lessons through CRM and ORM—lessons that seemed to resurface as our scenario developed. I heeded the warnings and declared, “This is really uncomfortable. I am descending back under the clouds.”

My copilot had turned on the bar-alt while on top of the layer, so I held the collective-magnetic-brake trigger and reduced collective to descend. We were at 1,300 feet and 90 knots at the beginning of our descent. The cloud layer enveloped us at 1,200 feet, and I announced, “I am on instruments.”

My copilot “rogered” and said she saw blue water from her right seat.

She said once we had entered IMC conditions, she dropped her instrument scan to look outside, down and to the right. When she brought her scan inside, we were at zero knots indicated airspeed and had a 900-fpm rate of descent. She called for airspeed.

I recall entering IMC. Just as we entered the clouds, the aircraft shuddered, cyclic controllability was minimal, fore-and-aft-cyclic input was not effective, and I struggled to maintain a level attitude. The controls were sluggish and would not respond to input.

I held in the magnetic-brake trigger and allowed the collective to increase slightly, which aggravated the aircraft vibrations. Instinctively, I returned the collective to a lower setting. I didn’t recognize we had a power-settling problem—just that a lower power setting produced less vibration. While descending at 1,000 fpm, I regained a visual contact of the ship as a reference. The crew chief and copilot called for airspeed, and the flight-control inputs responded only marginally. I had at least three-quarter movement of the cyclic travel forward—a slow response.

I had flown a functional-check flight on this aircraft the previous day, for a new collective-ASE actuator and a new AFCS No.1 computer. I had thought we had a flight-control malfunction; we still weren’t recognizing the effects of vortex ring state. The ship was to my left and below, and I continued to scan its position, rela-

tive to the aircraft. I could reference our forward movement off this sight picture. The aircraft slowly responded to forward-cyclic inputs and gave one final shudder as we flew out of the vortex ring state and regained a normal flight profile. “Secure the bar-alt hold,” I said, while increasing collective. The aircraft leveled at 600 feet AGL, and cyclic inputs responded normally. We had lost almost 700 feet in about 30 seconds.

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After we leveled off, my copilot and I discussed what had happened. She suggested a case of vortex ring state. I still was questioning the controllability of the aircraft, but, after a couple of confidence checks, I agreed with her assessment.

Back at the ship, we discussed our flight with the other det pilots. I concluded there wasn’t enough time to properly exercise my instrument scan before going IMC. When we entered IMC, I probably had induced a rate of descent greater than 800 fpm and inadvertently had slowed the aircraft at or below 40 knots, causing the power settling.

Finally, the timing of entering IMC and the onset of the vortex ring state made the situation stressful. The aircraft shuddering and its reduced controllability severely compounded the difficulty of the instrument flight.

The indications taught throughout flight school and described in NATOPS are entirely accurate. However, I only expected to encounter this condition on a precision approach or on a confined-area landing where the aircraft is on final to the landing zone. I didn’t expect the condition at high altitude and in IMC conditions. 

Lt. Knowles flies with HC-11.

*For information on vortex ring state, see the article, “Vortex Ring State Fallacy,” by Col. R.E. Joslin in the June 2003 issue of Approach. Col. Joslin’s article is available on-line at: [safetycenter.navy.mil/media/approach/issues/jun03/vortex.htm](http://safetycenter.navy.mil/media/approach/issues/jun03/vortex.htm)—Ed.*