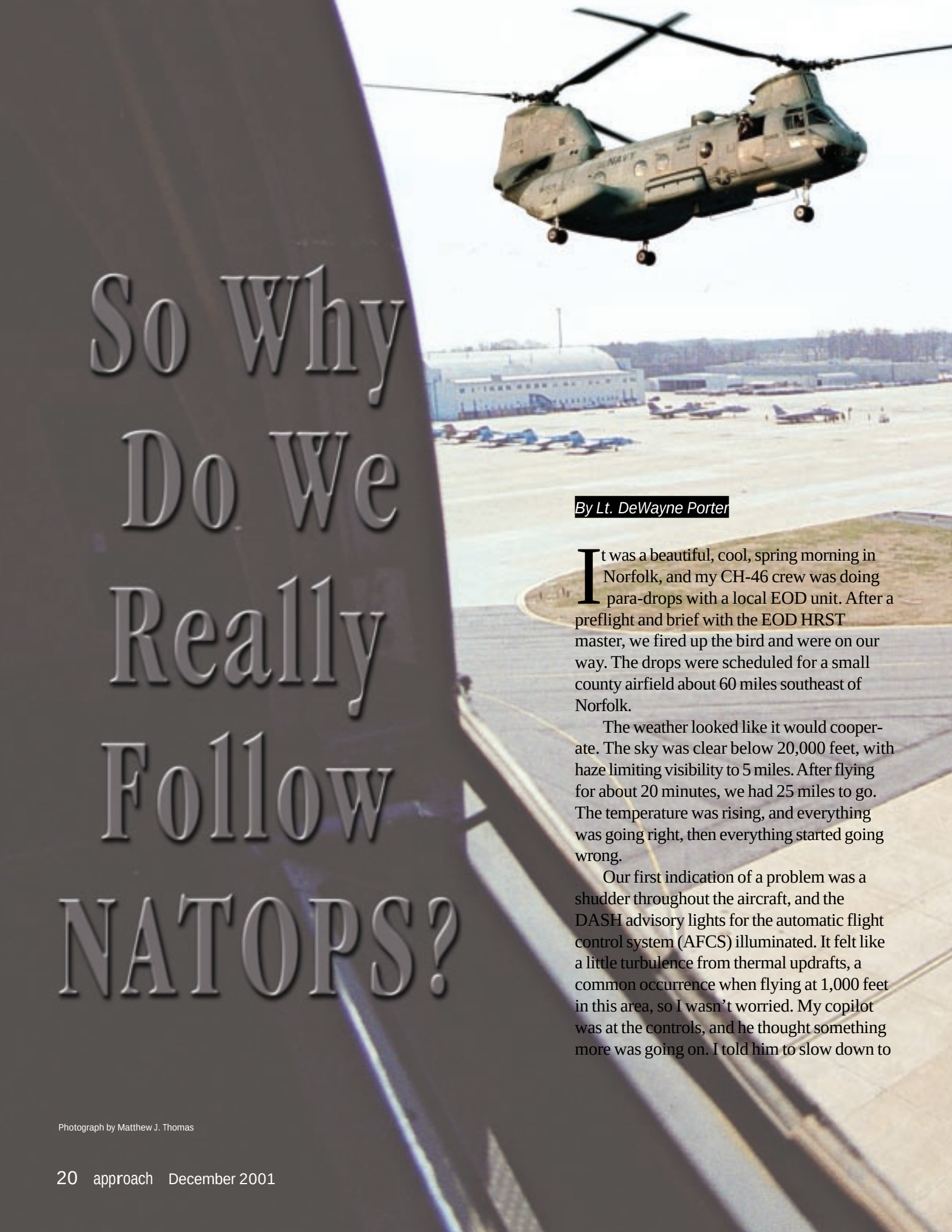
So Why Do We Really Follow NATOPS?



By Lt. DeWayne Porter

It was a beautiful, cool, spring morning in Norfolk, and my CH-46 crew was doing para-drops with a local EOD unit. After a preflight and brief with the EOD HRST master, we fired up the bird and were on our way. The drops were scheduled for a small county airfield about 60 miles southeast of Norfolk.

The weather looked like it would cooperate. The sky was clear below 20,000 feet, with haze limiting visibility to 5 miles. After flying for about 20 minutes, we had 25 miles to go. The temperature was rising, and everything was going right, then everything started going wrong.

Our first indication of a problem was a shudder throughout the aircraft, and the DASH advisory lights for the automatic flight control system (AFCS) illuminated. It felt like a little turbulence from thermal updrafts, a common occurrence when flying at 1,000 feet in this area, so I wasn't worried. My copilot was at the controls, and he thought something more was going on. I told him to slow down to

Photograph by Matthew J. Thomas

be safe but to continue the mission. Less than two minutes later, the same shudder recurred. This time, the No. 1 AFCS-failure light on the caution panel illuminated, along with the master-caution lights. This started to get more of my attention. We followed our NATOPS procedures for a single AFCS failure, and I told my copilot to turn around and head home.

In the turn toward home plate, I noticed the No. 2 engine-oil pressure had dropped to zero. I told the crew we were diverting to Oceana, which was 10 miles away to the north. As we started through our NATOPS procedure for engine-lube-system failure, I reemphasized we were single-engine capable. My copilot steadied out heading north, and I announced over ICS that I planned to secure the No. 2 engine. The crew agreed, and I began shutting it down. I monitored the gauges for a normal shutdown, and things just didn't look right. The engine temperatures (T5) were the reverse of what I had expected. Instead of the No. 2 T5 dropping to zero, it remained around 550 degrees Celsius. The No. 1 T5 was at zero. I knew the gauge readings had to be wrong, because the engine speed and torque gauges indicated the No. 1 engine was operating properly, and the No. 2 engine was shut down. Just as I was about to tell the crew about the problem with the gauges, my copilot said the collective didn't feel right, and it was hard to move. I took the controls and noticed the problem was not only in the collective, but it also was in the cyclic. From my training in the FRS, I recalled this same experience from a training flight when the magnetic brakes froze. This had been simulated in the FRS by pulling the No. 1 AFCS circuit breakers. We checked the circuit breakers and attributed the frozen magnetic brakes to the AFCS failure. I told the crew of the gauge problems and saw numerous other gauges in the cockpit starting to fail, including all the navigation equipment.

This routine mission had turned into a flight with multiple emergencies. I declared an emergency with Oceana Tower and was cleared for a straight-in approach to runway 05. Tensions in the aircraft were high, and it didn't help when the No. 1 control-boost pressure dropped from 1,500 to 1,100 psi. My copilot and second crewman were really getting worried and wanted to land the aircraft where we were. My crewchief and I reassured them we were not falling out of the sky, and that just because things were not going our way did not mean we were in immediate danger. I also reminded them that an airfield with maintenance support was close by, and the most important thing was to remain calm and handle each emergency. The control-boost pressure was still within limits, and we didn't need to land in some farmer's field. If the boost pressure dropped out of limits or if we started experiencing any other control problems, I would get the helicopter on the ground ASAP.

While I focused on flying, the crew returned to figuring out the source of our major electrical problem. With the wet compass as our only working navigation equipment and the visibility hazy, I realized the reason we were required to do magnetic-compass turns in flight school.

In a couple of minutes, which seemed like forever, we spotted NAS Oceana at our 1 o'clock. We soon would be on deck, and the sight of the runway brought welcome comfort. I told the crewmen to strap in for landing—we could continue troubleshooting on deck. All that remained was a single-engine, running landing, followed by shutdown. Dealing with the stuck magnetic brakes and fighting the control pressures, I had a more difficult landing than usual.

During the postflight inspection, we found that oil from the forward transmission had leaked down inside the main distribution panel, shorting out the instrument transformers. Also, the No. 2 engine-oil problem resulted from a broken wire on the pressure transducer, which was unrelated to any of the other problems. The cause of the drop in control-boost pressure was never isolated, but mechs suspected it was related to the No. 1 AFCS failure.

In the debrief, we concluded that diagnosing the problems and following NATOPS procedures kept a bad situation from getting any worse.

Lt. Porter flies with HC-6.