



A New Definition of Chair Flying: My Tour with TF Erebus



By Captain Brent Peardon, GSC, CD

*Composite by CFAWC
Photos: Sgt Frank Hudec & Cpl Kevin Sauvé*

From January to August 2009, I completed an eight month tour with the Canadian Heron UAV Detachment (now TF Erebus) based at Kandahar Airfield, Afghanistan. The experience was both challenging and rewarding. I was able to glean much experience from the tour which will serve to aid me in the future, particularly in the tactical areas of intelligence, surveillance and reconnaissance (ISR) and overland operations. On an aviation note, I also gained experience in managing automation and maintaining situational awareness (SA) while operating in a complex, rapidly changing airspace environment.

In March 2008, while serving as a CP140 Aurora first officer at 405 Long Range Patrol Squadron, I was informed that several qualified pilot volunteers were being sought for an unmanned aerial vehicle tour in Kandahar. I had been serving with 405 Squadron for just under a year and a half, and was in the process of upgrading to aircraft commander. I had already been introduced to the CP140's new overland ISR role, having completed exercises in Wainwright, Alberta, and El Paso, Texas,

and found the missions quite rewarding. Thus, when the opportunity arose to serve with a newly-formed UAV detachment in Kandahar, I eagerly volunteered for a variety of reasons.

On a career note, I felt that the opportunity to gain an extensive amount of overland ISR experience in an operational theatre was quite desirable, as it would significantly aid my ability to contribute to 405 Squadron and to the long range patrol community after the tour. As well, we would be serving as the first operational Canadian CU170 Heron crews, thereby drafting new tactics, techniques and procedures that would fittingly employ the new airframe — something that struck me as a daunting yet very beneficial experience for future career endeavours.

In addition, even the technology interested me; as a flight simulator enthusiast, I was quite curious about what the Heron system would be like to operate. On a more personal note, several of my friends and colleagues serving in different Canadian Forces (CF) elements



Photo: Cpl Andrew Saunders

had already completed at least one tour in Afghanistan, and I was eager to do the same in my own capacity. I felt a personal obligation to aid in the mission. Thus, when the opportunity arose to support Canadian troops by carrying out airborne surveillance, increasing situational awareness of the battlefield, and providing a heightened sense of security to our ground forces while they were conducting operations, I was more than happy to volunteer.

From a pilot's perspective, I quickly discovered various similarities between flying a manned aircraft and carrying out my duties as an air vehicle operator (AVO). There were several AVO tasks that were facilitated by my previous experience as a pilot. For example, both professions rely heavily on thorough situational awareness of one's operating airspace at any given time. The airspace in Afghanistan is busy and very complex, and updates are passed via secure and unsecure radios very frequently. As an AVO, one must maintain airspace awareness at all times, and always use clear, concise radio transmissions, precisely the same as one would be expected to do while flying a manned aircraft.

In addition to airspace awareness and radio procedures, tactical awareness of the battlefield is another area in which the AVO and pilot professions are mutually inclusive. Our control stations were able to help us greatly in depicting visual representations of events taking place on the battlefield, just as a moving map display and proper cockpit resource management will enable the pilot of a manned aircraft to retain complete battlefield awareness while flying on a tasking.

While flying operationally, an AVO may be expected to extend to maximum crew duty day, fly at irregular hours, and deal with fatigue and circadian rhythm interruptions, much as any other operational aircrew. I had already experienced fatigue management while conducting aircrew duties as an Aurora pilot; hence, I was already aware of my own fatigue limitations, and warning signs thereof, before taking on duties as an AVO.

An additional area in which the two professions correlate is the proper use of automation. As aircraft systems become more advanced, a pilot must learn how to use automation as a workload reduction tool while still understanding when to "shed layers" of automation and step in manually. Operating a UAV platform is similar, with the exception that on many unmanned systems, an AVO can only shed so many layers before safety of flight becomes an issue. For example, on the Heron, I discovered that flying manually in "sticks" mode was an emergency procedure only to be conducted when one or more of the autopilot control loops was beginning to fail.

Further to the issue of automation is that of the old programmer's adage of "garbage in, garbage out." Just as a fatigued pilot can unknowingly program in the wrong approach and place the aircraft in an unsafe regime of flight if the error is not trapped, the same holds true for an AVO. Although the AVO will be unharmed, the UAV and surrounding environment may be placed in severe danger if routes and waypoints are improperly entered. I discovered that this automation issue begins to differ from manned flight in the area of "return home" routes. Unmanned aerial vehicles are generally prepared to fly a pre-programmed route, entered by the AVO, in the case of an unrecoverable loss of link with the controlling station. On a manned aircraft the pilot may take action manually to prevent an incorrect programming action to continue; however, I learned during AVO training that a UAV that has lost link will follow its "return home" instructions to the very last digit until link is re-established. It quickly became very apparent to me that one omitted zero on a waypoint altitude assignment could cause a lost-link UAV to simply fly into a hilltop at cruising speed and destroy itself. Our solution for this risk was similar to the crew of a manned aircraft — check, re-check, and ask fellow crewmembers to check as well. In this way, any errors were trapped before an incident could occur.

While I was able to draw upon my experience as a pilot to assist me in becoming a



Photo: MCpl Robert Bottrill

proficient AVO, I discovered that some areas of the job were completely different from anything else I have ever done as an aviator. For instance, the endurance of the Heron is such that several mission commanders may be in command of the UAV at various times during a sortie. I quickly discovered that airborne “handovers,” while similar to airborne “seat swaps” on the Aurora, held a unique significance in that complete command of the aircraft AND the mission was handed over to the next AVO. Clear communication and thorough handover procedures were crucial, as the previous AVO may have been at the end of a shift and only available for clarification for the next thirty minutes or so after the handover. I discovered that keeping an accurate mission log of what had occurred during the shift helped greatly. On a manned aircraft, it is common to have another crewmember maintain the mission log. On the Heron, the basic flight tasks were so well automated that I and the other AVOs were able to keep our own mission logs while closely monitoring the aircraft systems without any negative effects.

In addition, the Heron ground control station itself was unlike any other cockpit I had operated to date. Over time, I admitted to myself that operating an aircraft from a desk console had a few definite advantages. The physical act of operating the control surfaces, the “hands-and-feet” of flying, were highly automated and simplified, enabling the AVO to divide concentration effectively to other areas. Also, the AVO and other crew were not exposed to the noise, vibration, turbulence, manoeuvres, and temperature changes of manned tactical flight. In my experience, this resulted in decreased crew fatigue and an enhanced ability to perform other tasks such as taking mission notes and monitoring communications equipment. However, the “one-G, zero-knots” desk console came at a price in the form of decreased SA in several senses. Visually, I found that the system was an excellent tool for positional awareness and battlespace management; however, the AVO could not use any additional senses to monitor the UAV. For the first time, I could not make decisions by way of listening for any change in the engine note, feeling



Photo: MCpl Robert Bottrill

any turbulence that could necessitate an area change, or smelling any smoke that could warn of an impending system failure. Any changes in the state of the UAV or the atmospheric conditions needed to be acquired visually by way of the instruments and telemetry, the warning systems, and a thorough scan procedure using various cameras mounted on the platform. Fortunately, a regular instrument cross-check procedure is instilled in every winged pilot, and I found that this cross-check helped greatly.

In closing, I found that serving with the Canadian Heron UAV Detachment was a demanding yet rewarding experience that was unlike any other aviation job I had previously encountered. I was grateful to be able to provide an invaluable service to our troops and do my part for the mission in Afghanistan. On a personal note, I am pleased that I gained a much greater familiarity with overland ISR and the use of automation as a whole, which will significantly benefit my future aviation duties with the long range patrol community. ■

Captain (Capt) Brent Peardon was born in Charlottetown, Prince Edward Island. Capt Peardon enrolled in the Canadian Forces in June 1997, completed a Bachelor of Arts (Honours English) degree from the Royal Military College of Canada in 2001, and was awarded his pilot wings in November 2004. Capt Peardon is currently serving with 405 Long Range Patrol Squadron in Greenwood, Nova Scotia.

List of Abbreviations

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| AVO | air vehicle operator |
| capt | captain |
| ISR | intelligence, surveillance and reconnaissance |
| SA | situational awareness |
| UAV | unmanned aerial vehicle |