

UNMANNED SYSTEMS

# Team **ARTEMIS**

A SOLID CONTENDER FOR CANADA'S  
RPAS REQUIREMENT

BY JAMES CARELESS



Armed Unmanned Aerial Vehicles (UAVs; aka drones) are destined to play a big role in Canada's military future. The Canadian Government has long embraced this fact, which is why it launched the Remotely Piloted Aircraft System (RPAS) drone procurement process back in 2000. At the time, the procurement was known as the Joint Unmanned Surveillance and Target Acquisition System (JUSTAS) program.

After some delays along the way, the revitalized RPAS procurement process has resulted in two teams being qualified to bid on the project. One of these teams is 'Team Artemis', a partnership between MAS, a subsidiary of L3Harris Technologies, and Israel Aerospace Industries (IAI). Team Artemis is proposing the Artemis UAV for RPAS, which is a Canadianized version of IAI's Heron TP drone. The other bidder is Team SkyGuardian, which is comprised of General Atomics Aeronautical Systems, Inc. (GA-ASI), CAE, and MDA. They are pitching the MQ-9B SkyGuardian for the job, which is derived from General Atomics' Predator B drones.

Team SkyGuardian was profiled in Volume 25/Issue 5 of Canadian Defence Review. Now it is Team Artemis' turn to make their case for the Artemis UAV and to explain why the Artemis is a solid option to meet Canada's RPAS requirement.

As for the name? In Greek mythology, the goddess Artemis watches over humanity with her bow and arrows. The Team thought the

Artemis moniker nicely captured what their Canadianized Heron TP UAV would provide to Canada if selected.

### PROVEN IN AFGHANISTAN

The Canadian Armed Forces (CAF) learned how useful drones could be for aerial surveillance and target designation during the Afghanistan war.

It wasn't an easy start: The CAF began by purchasing a number of SAGEM Sperwer CU-161 drones, many of which crashed during failed parachute landings.

Circumstances improved when the CAF subsequently leased three Heron CU-170 UAVs from Israel Aerospace Industries. The Heron's ability to takeoff and land like a conventional aircraft resulted in far fewer issues during CAF campaigns such as Operation ATHENA in Kandahar. (Australia was so impressed by the CAF's experience that they subsequently selected the Heron for their own military forces.)

"Canada's use of the Heron in theatre provided valuable experience and lessons learned – particularly with respect to the demand on infrastructure to operate and

sustain RPAS in the field," said MGen (Ret'd) Charles "Duff" Sullivan, former Deputy Chief of International Security Assistance Force joint operations in Afghanistan (from his chapter in the book, 'Airpower in Afghanistan 2005-2010, An Air Commander's Perspective').

"In the Afghanistan desert environment, the ATOL (Automatic Take-off and Landing) capability was god sent," said MGen (Ret'd) Christian Drouin, Commander of the Canadian Air Wing, who was responsible for Canada's fleet of Heron UAVs during operations in Afghanistan. "It practically removed human error in the loop and it could have led to zero/zero operations if the category system would have allowed."

"Heron proved to be an easy asset to learn how to employ," he added. "This was key to the early success of our operations as we had no existing UAV experience or capability. [The] Bottom line is the Heron was a key asset in my arsenal."

This positive assessment of the Heron is echoed by Canadian military sources cited in 'Project Laminar Strike - Canada's Air Force: Post Op Athena', a book published by the Canadian Forces Aerospace Warfare Centre.

According to one source in the book, "The Heron was on task when elements came under contact from several locations.







The L3Harris WESCAM MX™-20 EO/IR video camera will be part of the drone's sensor suite



Artemis would be assembled at MAS facilities in Mirabel, Quebec

The Heron provided immense support and the information was of great help to direct other UAV assets to provide protection and warn off ground forces."

## MEETING CANADIAN REQUIREMENTS

In crafting the Artemis UAS for the RPAS procurement, Team Artemis is offering a UAV tailored to meet Canada's RPAS needs. To say the least, these needs are varied and demanding.

First, the Artemis is built to meet all RPAS mission requirements including long flights in the cold and vast Canadian Arctic. This is

because the Artemis can fly more than 36 hours, reaching altitudes as high as 45,000 feet and speeds up to 220 KTAS. It achieves this performance using the Canadian-made 1200 shaft horsepower Pratt & Whitney Turbo-Prop PT6 engine.

Second, whichever drone Canada selects must comply with the Five Eyes (Canada/US/Australia/New Zealand/United Kingdom) intelligence-sharing agreements, that require their signatories to adhere to strict security protocols during shared intelligence-gathering operations to ensure the integrity of the information gathered and the protection of intelligence sources.

Team Artemis meets this requirement by segregating the Artemis UAV's flight control systems from the payloads and data links installed on them to ensure cyber mission assurance and interoperability. This segregation is similar to that conducted by IAI with another international prime to isolate flight systems from intelligence and weapons systems for the U.S. Army's Hunter UAS program.

Third, the Artemis' mission payloads are designed to be compatible with the CAF's current equipment inventory. This includes the UAV's sensors for imagery, targeting, and communications/electronic signals intelligence gathering (COMINT/ELINT), among others. The L3Harris WESCAM MX™-20 EO/IR video camera will be part of this drone's sensor suite, along with options such as an Automatic Identification System for ship tracking, state-of-the-art Multi-Mode Radar and a Radar Warning Receiver.

The Artemis UAV has enough hauling power to carry all these sensors, with the ability to lift 2,700 kg of payload weight internally, externally, and on 12 hardpoints distributed across the centre fuselage, wings and booms. Each hardpoint can be outfitted with a standard NATO BRU rack capable of holding multiple payloads, special items such as a Survival Kit, Air Droppable (SKAD) pod and a variety of ordnance to enable strike capability.

According to Team Artemis, compatibility with CAF systems will be achieved for any new state-of-the-art sensors designed for the Artemis UAV. At the same time, this platform will be capable of supporting future innovations such as 'Sense and Avoid' systems with Due Regard Radar. (IAI is currently working on this technology with Honeywell.)

The Artemis will also conform with any RPAS type certifications required by the Canadian government and meet the Reference Statement of Operational Intent (SOI) scenarios devised to validate the Artemis UAV's ability to fly over-land, maritime, and arctic missions. The Artemis already conforms to NATO Standardized Agreement 4671, which defines the requirements for a UAV to operate safely in the non-segregated airspace of a NATO member.

Finally, the Artemis' Heron TP platform is mission-proven. The Israeli Air Force (IAF) has flown the Heron TP UAV for tens of thousands of hours since 2010 and it has been operated extensively under combat conditions. Its flexibility is built upon an advanced ground control station where the UAV's operators can perform all



Team Artemis offers a modular and expandable ground control station

necessary mission functions in real-time, including controlling all sensors, downlinking sensor data and programming the UAV's flight path.

"Team Artemis offers Canada a mature, low-risk RPAS that contains state of the art technology; built upon the heritage and operational experience of all Heron TP customers, including the IAF," said Moshe Levi, CEO of IAI's Military Aircraft Division. Moreover, "Team Artemis will enable Canadian industry to develop new autonomous capabilities in Canada, that will involve several supply chain partners, skill transfer and the development of a truly Canadian system," he told CDR. "This will provide Canada with a sovereign maintenance capability in line with our ITB commitments – to ensure Canadian suppliers participate and benefit from the sustainment of the RPAS in Canada."

## WHY THE ARTEMIS MAKES SENSE FOR CANADA

The RPAS procurement will provide many benefits to the Canadian military, civilian public, and the world at large.

In Canada, these drones will enhance the CAF's ability to patrol and monitor Canada's coastline and Arctic regions as well as support search and rescue operations nationwide. They will also help Canada's military assist other government departments in dealing with forest fires, floods, and other natural disasters; provide enhanced security at international summits and other special security events, and aid law enforcement operations as required.

Internationally, Canada's RPAS will assist the CAF in detecting, identifying, and tracking targets of interest; either by themselves or in concert with sophisticated intelligence processing systems. And if an armed response is called for, the Artemis UAV will be able to execute the mission with precision and accuracy.

The Artemis UAV's advantages for Canada go beyond its impressive operational capabilities. Unlike the American-built SkyGuardian, the built-in-Canada Artemis is not bound by U.S. International Traffic in Arms Regulations (ITAR). This means the CAF has greater latitude to fly the Artemis on whatever missions the Canadian government authorizes and in whatever configuration Canada chooses, without the constraints imposed by ITAR compliancy.

"Team Artemis is the only bidder that offers a solution that gives Canada the ability to operate the RPAS capability where, when and how it chooses to fully meet its sovereign defence mandate free from foreign government intervention," said Ugo Paniconi, General Manager, MAS. This is a solution built on 20 years of UAV experience; going all the way back to the Heron's solid performance in Afghanistan. It's a solution whose capabilities were proven to Canadian troops in-theatre, where performance matters most. Other past and present NATO Heron users include Germany, Greece, and Turkey. Germany recently decided to lease seven Heron TPs to meet its international expeditionary mission obligations instead of MQ-9A Reapers.

Being a non-U.S. UAV with a Canadian prime contractor (L3Harris MAS) will allow the CAF to use either ITAR or non-ITAR sensors and fly civilian and military missions as required. "Being 'Built in Canada' means that the Canadian government will have the freedom to sustain the RPAS capability in-country and locally modify payloads to meet its evolving defence and national requirements without the risk of being held captive by the upgrade and repair priorities of other governments," said Ugo Paniconi.

Again, the ITB requirements associated with the RPAS procurement will provide substantial benefits for Canada's defence industry if Team Artemis wins the bid. Said Levi, "Through IP and know-how transfer IAI intends to help Canadian partners and suppliers gain knowledge and skills to support the RPAS capability throughout its life cycle."

Add the fact that these skills are linked to a non-ITAR product that can be supported internationally, and it's evident the Artemis UAV could be good for Canadian business. This is precisely why Team Artemis has already conducted cross-country "Industry Days" in a bid to attract Canadian small and medium defence suppliers to the project. If Team Artemis wins the bid, the Artemis UAVs will be assembled by MAS in their Mirabel facility.

One should also note that the Team Artemis RPAS proposal isn't just an aircraft but a complete UAV solution – which is specifically what the RPAS request for proposal (RFP) is calling for.

"There is a tendency to focus on the platform itself rather than understanding that RPAS is a 'system of systems,'" said Ugo Paniconi. "Team Artemis offers a full end-to-end solution that starts with optimizing operational and intelligence requirements through aircraft and payload design to providing higher level command, analysis, and fusion tools via Ground Control Stations tailored to Canadian needs."

With all these points in its favour, Team Artemis and its Artemis UAV is a strong contender in the RPAS bid.

According to the federal government, we should know if this battle-proven Heron TP derivative has seized the prize in 2022/23. The RPAS contract will be awarded soon after, with the successful RPAS drones scheduled to begin delivery in 2024/25, initial operational capability in 2025/26, and full operational capability by the end of the decade. ■

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