

434 Niagara BULLETIN



Vol. 24 no 3 Jan-Feb, 2022

General Meetings

3rd Saturday of each month at

Branch 4 RC Legion

383 Morningstar Avenue Welland ON

We proudly promote the glorious tradition of the RCAF
434 Wing Board of Directors
2020-2021

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Royal Canadian Air Force Association of Canada

Chairman's Report November 2021

As 2021 winds down, we as a Wing and Organization can reflect on what should have been, AGM's cancelled once again, our own Banquet and Awards Dinner cancelled for the second year, trips that had been planned put on hold, General Meetings (for the most part) non-existent the list could be endless, but if/when things can return to some sort of normality we are going to have a very busy time.

Like so many others life has not been the same for quite some time but it appears as though progress is being made albeit at a slower pace than most of us would hope for, but we look forward optimistically to the future.

With our regular fundraising being curtailed, we had to think of an alternative so I wish to thank our first VP Julie Sheppard and our Membership Chair Jeanette Lee for their part in organizing the "Big Red Meat" fundraiser thanks also to our Secretary/Treasurer George Groff for his part also. It is worth noting that this fundraiser was a great success and I thank all for their participation

Continuing on this subject, shortly we will have our 2022 13 month wall calendars for sale. Each month depicts a different aircraft (past & present) they sell for \$15.00 each I encourage all members to take part as we would like to sell out. You can pre order by emailing me or one of our Board members or by calling me, we have a list already underway.

We have been able to carry on with Board meetings so the business of the Wing continues and as always Secretary George Groff ensures that members are kept up to date with any decisions taken.

I would like to take a moment just to remind members of the following. When notification of a General meeting is sent out to the membership, there is always the stipulation made as follows **"If you are unable to attend please let the Secretary know"** this is just a common courtesy and it allows us to know many will attend and if we are able to conduct Wing business as should be done, i.e. voting on minutes of previous meetings or having the ability to have open discussion on any given topic let us keep our comradeship together as we work collectively for our Wing.

We would like to hear from you as to your feelings on holding a Christmas function. In asking this question I remind you all that there has been nothing planned; it is merely to find out if there is any interest or if there might even be a way to hold such an event is it worthwhile to investigate availability, cost etc.

December Birthday wishes to

Dan Carr

Bill Heron

January Birthday wishes to

Deborah Wilkes-Whitehall,

Brian Heikkila

Michael Mascitelli

February Birthday wishes to

Wesley Pierce

Julie Sheppard

As always I wish you all good health & please stay safe.

Per Ardua Ad Astra

First General Meeting of 2021



The first general meeting for 2021 was held on October 21, 2021

Remembrance Day, Wainfleet 2021



434 Niagara Wing members **Debbie Wilkes –Whitehall** and **Mike Mascitelli** represented the 434 Niagara Wing at the Remembrance Day ceremony held in Wainfleet.

Board of Directors Meeting December 3, 2021



Remembrance Day, Welland 2021



Chairman Bill Heron, Mascott Timber,
Secretary Treasurer Georg Groff

Chairman Bill Heron, Mascot Timber and Secretary Treasurer George Groff represented 434 Niagara Wing at the Remembrance Day ceremony held in Welland this year.



Secretary Treasurer George Groff with
Mascot Timber

Remembrance Day, Turn Toward Busan Ceremony 2021

Vincent Raymond Courtenay, M.S.M.



Vincent Courtenay, 85, is pictured at his home in Windsor, Ont., Wednesday, Nov. 6, 2019. PHOTO BY DAX MELMER

Vincent Courtenay, a resident of Windsor, served with the Princess Patricia's Light Infantry (PPCLI) in Korea from 1950 to 1953 and participated in the second Battle of the Hook and the important Battle of Kapyong. He became a powerful advocate for Korean War Veterans. Concerned that the Veterans not be forgotten, he made a proposal for a ceremony to be held on Remembrance Day at the UN memorial Cemetery in Busan. His proposed plan was not for a local ceremony but for one that permitted Veterans from all nations that had sent troops to Korea to participate. While the ceremony is held, veterans in countries all over the world also turn toward Busan to pay silent tribute to their fallen comrades. He named the ceremony "Turn Toward Busan." Korea's Ministry of Patriots and Veterans Affairs adopted the ceremony and gave it national ceremony status. In addition, without financial compensation for a period of nearly three years, working from Korea, Vincent Courtenay immersed himself in the conception, development and planning of a permanent memorial to honour the sacrifice of the Canadian soldiers who gave their lives during the Korean conflict. He also spearheaded the fundraising of \$150,000. Thanks to his hard work and personal devotion, the **Monument to the Canadian Fallen**, which he personally designed and was created by Korean artist Yoo Yung Mun, was officially unveiled within the United Nations Memorial Cemetery in Busan, Korea, on November 11, 2001.

Remembrance Day, Turn Toward Busan Ceremony 2021

Vincent Raymond Courtenay and the Turn Toward Busan Ceremony



Flyover during 2021 Ceremony

The Turn Toward Busan ceremony has been held every year at the UN Memorial Cemetery in Busan since 2007.



Flyover during 2021 Ceremony

For 2021 South Korea once again hosted the annual ceremony to commemorate the sacrifices of fallen troops who fought under the UN flag during the 1950-53 Korean War.

The "Turn Toward Busan" ceremony took place at the UN Memorial Cemetery in Busan on Thursday, with the attendance of some 300 people, including the bereaved families, war veterans and diplomatic delegates including Vincent Courtenay who said that "he was grateful to the Korean government for having reached out to overseas veterans, like himself, even though disruptions caused by the coronavirus pandemic have made exchanges harder than ever. "

Prime Minister Kim Boo-kyum, Colombia Vice President Marta Lucia Ramirez and United Nations Command (UNC) Commander Gen. Paul LaCamera attended the memorial event first held in 2007.



Turn Toward Busan 2021

A minute of silence was observed at 11 a.m. on the day, with attendees turning toward the cemetery in remembrance of soldiers' sacrifices. A 21-gun salute was fired in honour of them.



Wreaths Placed at the Ceremony

In 2014, the annual ceremony was upgraded to an international event with envoys participating from the 22 UN countries that sent troops or medical personnel to aid South Korea in the war.

The 16 countries that supported South Korea with combat forces during the war are the United States, Britain, Australia, Thailand, Canada, Turkey, the Philippines, New Zealand, Ethiopia, Greece, France, Colombia, Belgium, South Africa, the Netherlands and Luxembourg. Other countries like Denmark, India, Italy, Norway, Sweden and Germany provided humanitarian and medical assistance to the South.

Remembrance Day, Turn Toward Busan Ceremony 2021

The United Nations Memorial Cemetery, Busan, South Korea

The Only UN Cemetery in the World



Canadian Section at UN Memorial Cemetery where 376 Canadians are buried.

Also shown is back of Memorial designed by Vincent Courtenay



Memorial Designed by
Vincent Courtenay

There are 2,300 servicemen buried in the United Nations Memorial Cemetery. Of these, 1,588 were Commonwealth soldiers, including 376 Canadians.

The statue is an unarmed Canadian soldier holding a young Korean girl and guiding a Korean boy. At the feet of the soldier are the crests of the Royal Canadian Air Force (left), Canadian Army (center), and Royal Canadian Navy (right). The children represent the generations of Koreans who live in freedom thanks to those who served and those who made the supreme sacrifice. The girl is holding a bouquet of 21 maple leaves, representing the 16 Canadians with no known grave and the five Canadian sailors lost at sea. The boy is holding a bouquet in which maple leaves are mixed with roses of Sharon, the national flower of Korea, as a symbol of the friendship between the two countries.

The monument took almost three years to complete. It was set in place in September, 2001, dedicated on November 11, 2001, with Denis Comeau, Ambassador of Canada officiating, and rededicated and consecrated in April, 2002.

Turn To Busan Ceremony 2021 in Ottawa



The Embassy of the Republic of Korea, Veterans Affairs Canada, and the Korean Veterans Associations hosted the Turn to Busan Ceremony on Wednesday, November 10th, at the cairn outside the Ottawa City Hall. This ceremony honours service men and women from all nations who served and made the ultimate sacrifice during the Korean War.

On this occasion, about 50 people including Ambassador Chang Keung Ryong, The Honourable Lawrence MacAulay, Mr. Paul Ledwell and M Gen Mialkowski have attended to honour and commemorate those who sacrificed during the Korean War. (Note: 9 pm Ottawa, Nov 10 = 11 am South Korea, Nov 11)

Military Drones

As of March 2020, 35 countries have Class III heavy or armed drones. The militaries of 102 countries use drones for intelligence, surveillance, and reconnaissance (ISR).

Canadian Drones

In 2017, Canada's *Strong, Secure, Engaged* defence policy, in initiatives 50 and 91, outlined a path for drone acquisition by the Royal Canadian Air Force. The government has indicated that it was looking at L3 Technologies MAS Inc. and General Atomics Aeronautical Systems, Inc. along with the United States government, as possible suppliers. L3 proposed the Heron drone from Israeli Aircraft Industries, while General Atomics and the U.S. government proposed the MQ-9B SkyGuardian. The Heron seems particularly well suited for this job.



Heron Drone employed by Canada in Afghanistan

It can stay in the air for 52 hours for ISR missions. The SkyGuardian is capable of 48 consecutive hours when flown for ISR, can fly in conditions as cold as -41 degrees Celsius, and has a de-icing system.

In addition to surveillance and reconnaissance, Canada's military also wants strike-capable drones. Both the Heron and SkyGuardian Drones can be equipped with various weapons, and Canada has indicated interest in armed drones equipped with Hellfire missiles and laser-guided bombs.

Canadian Procurement Process

The request for proposals was planned to be released in 2021, the value of the contract is expected to have an estimated program price tag of between \$1 billion and \$5 billion over 25 years.



MQ-9B SkyGuardian

In Canada, the Remotely Piloted Aircraft System (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.

Military Drones

“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.

The contract is expected to be awarded in 2022-23, with the first system delivery anticipated in 2024-25. If Team Artemis is successful with its bid, the drones would likely be manufactured in Quebec, though all of the training and testing would take place in Alberta through Canadian Unmanned Aerial Vehicles (UAVs), while the vehicle control and ground system software would be provided by the Calgary office of Lockheed Martin. ATCO would provide the full spectrum of logistics support for the program, either in the Canadian North or anywhere in the world.

Whatever Canada decides, it has a long way to go to catch up with use of military drones. During a recent meeting with defense chiefs in Sochi, Putin disclosed that Russia has at least 2,000 drones for use in reconnaissance missions and, increasingly, to play combat roles. In July 2021, Russian state-backed developers unveiled a deadly new Orion-E drone, equipped with rockets and bombs, that could destroy both tanks and armored infantry carriers while flying at high altitude.



Russian Orion-E Combat Drone

The first phase of drone warfare was dominated by three countries: the US, the UK and Israel. Drones rapidly proliferated in a second wave over the past few years, with Pakistan and Turkey developing their own programmes . China, meanwhile, has begun supplying a range of countries with its Wing Loong

and CH series drones, including to the UAE where they have been used in a string of deadly strikes in Libya – as well as Egypt Nigeria, Saudi Arabia and Iraq, although not every country has been able to deploy what it has bought.

Projected Acquisition of Drones by 2028

(Figures from The Guardian)

Combat Drones

US **1,000**
China **68**
Russia **48**
India **34**
Australia **33**
Egypt **32**
Turkey **30**
Malaysia **26**
Indonesia **24**
Israel **20**

Lightweight Surveillance Drones

United States **43,001**
China **8,543**
Russian Federation **6,754**
India **4,982**
France **2,291**
Israel **2,268**
Australia **1,554**
Norway **1,203**
Philippines **863**

Military Drones



New Russian S-70 Hunter Stealth Combat Drone with reduced radar signature, was unveiled on December 14, 2021

Will Drones Replace Pilots in Combat Aircraft

Some of the Pros of Using Drones

1. Drones can be made smaller and less protective without a human occupant; they can also be made for higher performance, turning tighter and faster without the pilot blacking out or being incapacitated.
2. If need be, the mission can sacrifice the drone without worrying about a human life.
3. The pilot can almost practically have remote real time control, or, the drones can be automated with AI and given commands like sweep all enemy planes from the sky in this region.

Some of the Cons of Using Drones

1. Aerial warfare may present new tactics with each encounter. It is faster to advise a pilot on how to handle a new situation in the air rather than trying to reprogram AI software and test it.
2. Relying solely on software to operate a drone runs a high risk of the software being hacked and anything could happen from there with control having been lost for the operator..
3. There will be situations where it is necessary to immediately override software programming, e.g. if the AI has been programmed to sweep all enemy planes from a region and a friendly plane which should not be there, is spotted in the region. Software will not make these distinctions, it will only do what it has been programmed to do.



Chinese Wing Loong II combat drone flown by China, United Arab Emirates and Nigeria

Compromised solutions may be:

1. As combat jet aircraft become more automated to create, in effect a drone, but with provision for a pilot to sit in it and guide it in sensitive situations.
2. As is currently being carried out by several countries, employ a combat jet with a pilot who can operate simultaneously swarming attack drones.

Canadian Space Agency (CSA) and Canadarm

Canadarm

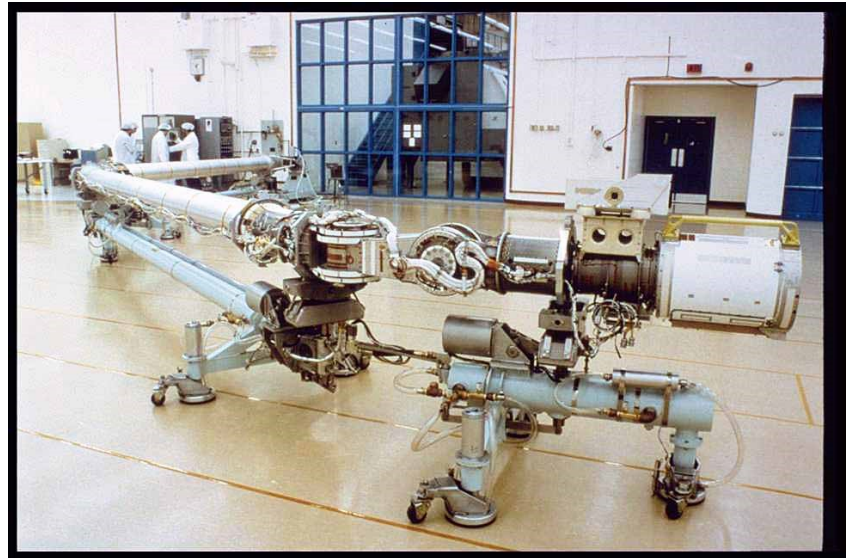
The first Canadian robotic arm to go to space



Credit: Canadian Space Agency/NASA

Canadarm was deployed in space for the first time on November 13, 1981. **Canadarm was installed on each Space Shuttle and returned to Earth.** During its 30-year career with NASA's Space Shuttle Program (retired July 2001), the robotic arm deployed, captured and repaired satellites, positioned astronauts, maintained equipment, and moved cargo. The original Canadarm was capable of deploying payloads weighing up to 65,000 pounds (29,000 kg) in space. In the mid-1990s, the arm control system was redesigned to increase the payload capability to 586,000 pounds (266,000 kg) in order to support space station assembly operations. While able to manoeuvre payloads with the mass of a loaded bus in space, the arm motors cannot lift the arm's own weight when on the ground. NASA therefore developed a model of the arm for use at its training facility within the Johnson Space Center located in Houston, Texas. The Canadarm can also retrieve, repair and deploy satellites, provide a mobile extension ladder for extravehicular activity crew members

for work stations or foot restraints, and be used as an inspection aid to allow the flight crew members to view the orbiter's or payload's surfaces through a television camera on the Canadarm. The basic Canadarm configuration consists of a manipulator arm, a Canadarm display and control panel, including rotational and translational hand controllers at the orbiter aft flight deck flight crew station, and a manipulator controller interface unit that interfaces with the orbiter computer. One crew member operates the Canadarm from the aft flight deck control station, and a second crew member usually assists with television camera operations.



Canadarm, without its white thermal protective sleeve, lies on the floor at the Spar Aerospace facility in Weston, Ontario. (Credit: Canadian Space Agency)

This allows the Canadarm operator to view Canadarm operations through the aft flight deck payload and overhead windows and through the closed-circuit television monitors at the aft flight deck station.

The Canadarm is 15.2 metres (50 ft.) long and 38 centimetres (15 in) diameter with six degrees of freedom. It weighs 410 kilograms (900 lb) by itself and 450 kilograms (990 lb) as part of the total system. The Canadarm has six joints that correspond roughly to the joints of the human arm, with shoulder yaw and pitch joints, an elbow pitch joint, and wrist pitch, yaw, and roll joints. The end effector is the unit at the end of the wrist that grapples the payload's grapple fixture.

This original Canadarm is now on permanent display at the Canada Aviation and Space Museum in Ottawa.

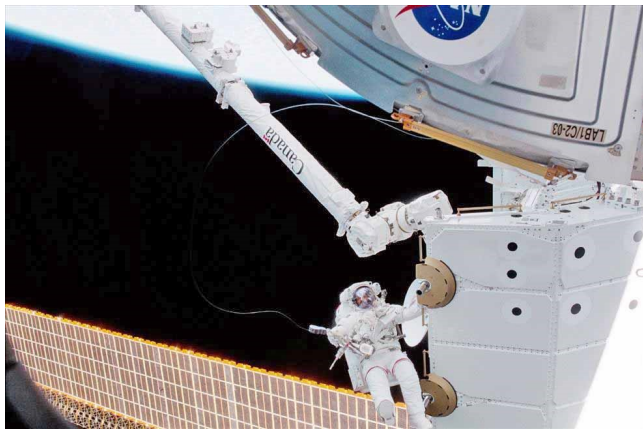
Canadarm2 Servicing the International Space Station (ISS) since 2001



Canadarm2 being assembled and tested at the MacDonald, Dettwiler and Associates Ltd. (MDA) facility in Brampton, Ontario. (Credit: MD Robotics Ltd.)

Canadarm2 remains permanently in space attached to the ISS, unlike the original Canadarm which was installed on each Space Shuttle and returned to earth with the Shuttle. Canadarm2 was designed, built and tested from 1986 to 2001 by MDA in Brampton, Ontario. It was installed on the ISS in April 2001 by CSA astronaut Chris Hadfield and American astronaut Scott Parazynski. Compared to the original Canadarm, Canadarm2 features increased size and durability; has the ability to handle much larger payloads; has end over end mobility so it can travel wherever it needs to go around the ISS. The arm is currently used to maintain and repair the ISS, relocate Dextre, science experiments, spare parts, support astronauts during risky spacewalks and catch and berth unpiloted supply spacecrafts.

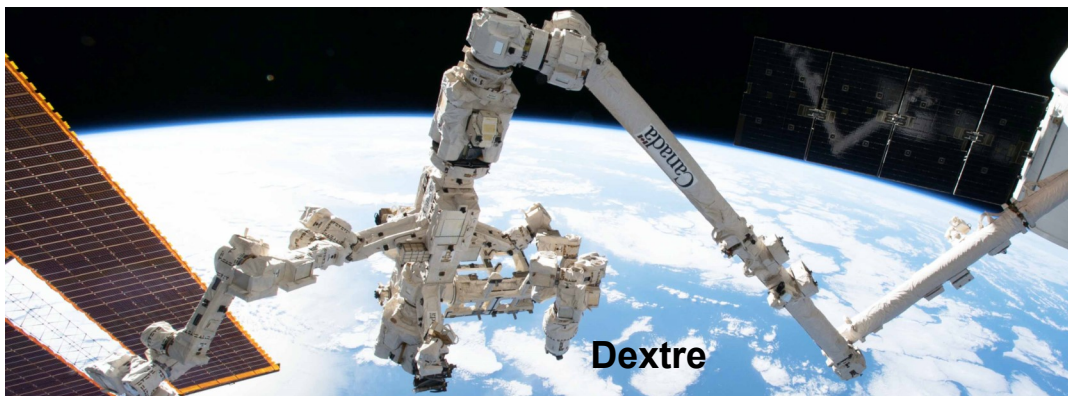
Canadarm2 can be controlled by astronauts on board the ISS. It can also be operated by the ground team at the CSA headquarters or NASA.



CSA astronaut Chris Hadfield performs his historic spacewalk to install Canadarm2. (Credit: NASA)

Dextre—the Sophisticated Space Robot

Dextre was built by MDA and installed on the ISS in 2008. Dextre can ride on the end of Canadarm2 to move from worksite to worksite, or be ferried on the Mobile Base System. Dextre can work almost anywhere on the ISS. Dextre is controlled entirely by Earth-based scientists at NASA's Johnson Space Centre in Houston and at the Canadian Space Agency's mission operations centre in Saint-Hubert, Que. Its sense of touch also allows Dextre to do tasks that would normally be performed by an astronaut, thus side-stepping the risks associated with unnecessary space walks. Equipped with 15 degrees-of-freedom and a delicate sense of touch, Dextre is the most sophisticated space robotic system in operation today. It has the strength to move heavy objects and the dexterity to perform movements



even more complex than human hands.

Canadarm3 (Proposed Plan)

An artificial intelligence-based robotic system designed for the Lunar Gateway



An artist's concept of Canadarm3's large arm on the Lunar Gateway. (Credits: CSA, NASA)

Lunar Gateway

The Lunar Gateway, a component of NASA's Artemis program, will serve as a multi-purpose outpost orbiting the Moon that provides essential support for long-term human return to the lunar surface and serves as a staging point for deep space exploration.

Canadarm3

Canada's contribution to the Lunar Gateway will be **Canadarm3**, a **smart robotic system** which includes a next-generation robotic arm as well as equipment and specialized tools. MDA with headquarters in Brampton, Ontario, is working on Canadarm3. The target date for delivery to the Lunar Gateway is 2026. Using cutting-edge software and advances in artificial intelligence, this highly-autonomous system will be able to:

- maintain, repair and inspect the Gateway
- capture visiting vehicles
- relocate Gateway modules
- help astronauts during spacewalks
- enable science both in lunar orbit and on the surface of the Moon

The ability to perform these tasks without human intervention will be vital as the Gateway will not be crewed continuously, and communications delays caused by its lunar orbit will prevent direct real-time control of the robotic system from Earth.

Canadarm3 will remain permanently in space on board the Lunar Gateway.

Force-moment sensors provide a sense of "touch".

It will have Automatic collision avoidance and

A 3D Vision Sensor Tool that maps objects around it.

Canadarm3 will be primarily controlled autonomously. It can also be controlled from the ground by robotics flight controllers in Canada or by the space crew on the Lunar Gateway.

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