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CANADIAN AERONAUTICS AND SPACE INSTITUTE ANNOUNCES 2015 SENIOR AWARD HONOUREES

Dr. Iain Christie, President of the Canadian Aeronautics and Space Institute for 2014-16, has announced the recipients of the 2015 CASI Senior Awards.

The Awards and the recipients are:
1. Trans-Canada (McKee) Trophy
   Col. Chris Hadfield Canadian Space Agency (ret)
2. McCurdy Award
   Professor Jerzy Maciej Floryan, University of Western Ontario
3. C.D. Howe Award
   Honourable David Emerson
4. Alouette Award
   Sapphire Project Team
5. Roméo Vachon Award
   Mr. Stephan Werlen, Pratt & Whitney Canada

The criteria for each of the Senior Awards and summaries of the credentials of the recipients are found on the following pages. Presentation of the five Senior Awards will take place during the Senior Awards Reception and Gala Dinner on the evening of Wednesday May 20, 2015 during AERO’15 – the CASI 62nd Aeronautics Conference – being held in collaboration with Green Aviation Research and Development Network (GARDN) at the Fairmont Queen Elizabeth Hotel in Montréal, Québec.

For more information, please contact the headquarters of the Canadian Aeronautics and Space Institute at (613) 591-8787.

... details on the following pages ...
The Trans-Canada (McKee) Trophy

The Trans-Canada Trophy, generally known as the McKee Trophy, is the oldest aviation award in Canada. It was established in 1927 by Captain J. Dalzell McKee. In 1926 McKee, of Pittsburgh, Penn. accompanied by Squadron Leader Earl Godfrey of the RCAF, flew from Montreal to Vancouver in a Douglas MO-2B seaplane. McKee was so impressed by the services provided by the RCAF and the Ontario Provincial Air Service that he established an endowment by means of which the greatly coveted McKee Trophy is awarded to the Canadian whose achievements were most outstanding in promoting aviation in Canada.

The Trophy was deeded to the Crown in the person of the Minister of National Defence - in the days when the Department of National Defence controlled all flying, military and civil. It was retired in 1964 and reinstated in 1966, and in 1971 administration of the Trophy was transferred to the Canadian Aeronautics and Space Institute. From 1964 until its move to Canada’s Aviation Hall of Fame in 1983, the Trophy was on display at the National Museum of Science and Technology in Ottawa.

The Trophy is awarded for outstanding achievement in the field of air operations. The achievement for which the Trophy is awarded may be a single brilliant exploit within the past year, or a sustained high-level performance in recent years; pioneering of new areas of air operations and advancement of the use of aviation shall receive consideration over achievements serving no useful end. Qualifications as aircrew shall be a prior claim to consideration. The recipient shall have been a Canadian citizen at the time of the achievement.

Colonel (retired) Chris Hadfield

Canadian astronaut Chris Hadfield embodies the true spirit of exploration and discovery. During his most recent mission to the International Space Station (ISS), he reminded Canadians, as well as millions of people worldwide, about the wonder of space exploration. He was inspired by the first moonwalk when he was a nine-year-old boy living on a farm in southern Ontario, and at that point his space dreams began to take shape and he became interested in flying. He joined the Canadian Armed Forces in May 1978. In 1983, he took honours as the overall top graduate from Basic Jet Training in Moose Jaw, Saskatchewan and in 1984-1985, he trained as a fighter pilot in Cold Lake, Alberta on CF-5s and CF-18s. For the next three years Hadfield flew CF-18s for the North American Aerospace Defence Command (NORAD) with 425 Squadron, during which time he flew the first CF-18 intercept of a Soviet "Bear" aircraft.

In June 1992 Chris Hadfield was selected to become one of four new Canadian astronauts from a field of 5330 applicants. In November 1995 Hadfield served as Mission Specialist on Space Shuttle flight STS-74, NASA’s second space shuttle mission to rendezvous and dock with the Russian
Space Station MIR. Hadfield was the first Canadian to operate the Canadarm in orbit, and the only Canadian to ever board MIR.

In April 2001 Hadfield served as Mission Specialist on Space Shuttle flight STS-100 to the ISS. The crew of Space Shuttle Endeavour delivered and installed Canadarm2, the new Canadian-built robotic arm, on the ISS; Hadfield performed two spacewalks to perform this installation, making him the first Canadian to ever leave a spacecraft and float freely in space.

In September 2010, Hadfield was assigned to his latest mission to the ISS as a crewmember on Expedition 34/35. On December 19, 2012, Hadfield launched to the ISS from the Baikonour Cosmodrome on a Soyuz spacecraft with crewmates Tom Marshburn and Roman Romanenko. On March 13, 2013, Hadfield assumed command of the ISS for the remainder of his five-month stay in space, thus becoming the first Canadian to ever command a spacecraft. Commander Hadfield landed in Kazakhstan on May 13th, 2013, after travelling almost 100 million kilometres while completing 2,336 orbits of Earth.

Hadfield’s assignment as ISS Commander was a true testimony to his leadership, experience and strength of character; it demonstrated the spirit of international cooperation among the ISS partnership which includes the USA, Russia, Europe, Japan and Canada. As commander, Hadfield was in charge of the health and safety of the crew as well as the proper operation of the space station; this assignment was a source of pride for Canadians nationwide.

Throughout his mission, Hadfield truly became a citizen of Earth, conferring with people from every continent to answer their questions, offer explanations and augment their understanding of weightlessness phenomena thus sparking their imagination about the wonders of life in space. He took seemingly mundane everyday tasks of life in space, such as wringing a wet cloth – a science experiment submitted by Canadian students – and turned them into short videos that have become topics of discussion in schools and around dinner tables. These actions have fed the curiosities of many minds, young and old, and contributed significantly of the public’s understanding of, and support for, our space endeavours.

Flying in space for Chris Hadfield was the result of a lifetime of setting goals for himself and following through on them in spite of the obvious odds against that actually happening to a young Canadian. Commanding a spaceship, on the other hand, was the culmination of long and star-studded career, first as a pilot and then as an astronaut. On learning the news that he would be commander, Chris said “this is a pinnacle in my life, something I have tried to become ready for throughout my career. I am committed to bringing all I have to bear to make it successful, enjoyable and inspirational for all involved”.

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Canadian Aeronautics and Space Institute
Institut aéronautique et spatial du Canada

Patron
H.R.H. Prince Philip
Duke of Edinburgh
The McCurdy Award was introduced in 1954 by the Institute of Aircraft Technicians, one of the aeronautical groups that amalgamated to form the Canadian Aeronautics and Space Institute. The award commemorates the many engineering and other contributions made by John A.D. McCurdy during the first stages of the development of an aviation industry in North America.

The award is presented for outstanding achievement in the science and creative aspects of engineering relating to aeronautics and space research. The achievement must constitute the most significant contribution made in recent years toward the advancement of science and technology in aeronautics and space exploration, and must be worthy of special recognition. The contribution may be administrative in nature, but it must be directly related to science and technology, and have been sustained over a number of years at an imaginative and creative level above that which would normally be considered a competent and successful performance. The recipient shall have been a Canadian citizen at the time the contribution was made.

Dr. Jerzy Maciej Floryan

Dr. J.M. Floryan is a distinguished researcher who has excelled in the areas of hydrodynamic stability, flow control and interfacial fluid mechanics. His work has been very well-cited in the literature and spans many fields that make him highly deserving of this award.

Prof. Floryan has done innovative research in the area of drag reduction and control that many have found illuminating and useful. His work in laminar-turbulent transition has resulted in important contributions to the literature.

His early studies included investigation of Görtler instabilities that are important to boundary layers over curved surfaces and various other flow configurations including converging-diverging walls. More recently he has turned his attention to the mechanisms of drag reduction by studying roughness and the effect of grooves.

His service to the community has been wide and long. This has included a role on the Canadian Society of Mechanical Engineers editorial board and as the member of the editorial board of Archives of Mechanics, The Archive of Mechanical Engineering and the Journal of Flow Control, Measurement and Visualization. He is a Fellow of CSME, ASME, CASI, Japan Society for the Promotion of Science and Associate Fellow of AIAA. He is the President of the 24th Congress of the International Union for Theoretical and Applied Mechanics (IUTAM) and the President of the organizing committee for the Canadian Congress of Applied Mechanics 2015 event.
For his work, he has been recognized with the CSME Robert W. Angus Medal, CP Railway Engineering Medal, Outstanding Reviewer of the ASME Journal of Heat Transfer and the Humboldt research prize. He is truly a globally-recognized researcher.

As Chair of the Department of Mechanical and Materials Engineering, Faculty of Engineering at the University of Western Ontario, Prof. Floryan's leadership has resulted in a significant elevation of the national and international ranking of the Department.

Prof. Floryan is deserving of the McCurdy Award for the depth and excellence of the research, teaching and administrative work that he has done that has improved both University of Western Ontario's and Canada’s international profile in engineering.

C.D. Howe Award

In 1966 CASI introduced the C.D. Howe Award in honour of The Right Honourable C.D. Howe. The Award is presented for achievements in the fields of planning and policy making, and overall leadership in Canadian aeronautics and space activities.

The achievement for which the award is given shall be of permanent significance, and its benefits to aeronautics and space activities in Canada shall have been unquestionably established. To this end, the recipient shall have sustained an outstanding personal performance in these fields for at least ten years and it shall be reasonably certain that the merits of his achievements will be unassailable in the light of history. The recipient shall have been a Canadian citizen and resident during the time the contribution was made.

Honourable David Emerson

The most significant achievement of the last few years in the field of aerospace planning and policy making has been the Aerospace Review launched by the federal government and headed by the Honourable David Emerson. For a year, leading a commission that included Mrs. Sandra Pupatello, Mr. Jim Quick and Pr. Jacques Roy, Mr. Emerson consulted all the key players in the aerospace industry seeking to advise the federal government on the best course of action to maintain and enhance the competitiveness of Canada’s aerospace industry.

The result was the two-volume Aerospace Review that was delivered to (then) Industry Minister Paradis on November 29, 2012. On March 21, 2014 the federal government brought down an economic action plan with many measures for the aerospace industry that stemmed from the Emerson report. On September 4, 2013 the government announced the creation of the Canadian Technology Demonstrator Program, a key recommendation of the Aerospace Review, together with many additional actions recommended by the Review in support of space activities.
The achievement of the Aerospace Review headed by David Emerson is of permanent significance and its benefits to aeronautics and space activities in Canada have been well established, given the overwhelmingly positive reactions to its recommendations.

David Emerson sought out and listened carefully to the many and varied constituencies that make up the Canadian aerospace community and has articulated their needs in a manner that has proven to be eminently actionable by the federal government, in a period of difficult budget constraints. Through his efforts a path has been charted for our industry that promises to successfully maintain Canada as a global player in aerospace.

**Alouette Award**

The Alouette is an award introduced to recognize an outstanding contribution to advancement in Canadian space technology, application, science or engineering. It may be awarded to an individual, to a group, an organization or group of organizations, as appropriate to the nature of the contribution. The terms are:

a) The trophy shall be awarded annually for an outstanding achievement in the field of astronautics as defined by the CASI By-Laws.

b) The achievement may be either a single outstanding contribution or, in the case of an individual nominee, a sustained high level of performance resulting in several advances in space.

c) The contribution on which the award is based must be recognized as a Canadian-led space endeavour or as a significant Canadian contribution to an international program.

d) Preference shall be given to contributions that lead to new benefits for mankind.

The recipient shall have been a Canadian citizen at the time the contribution was made.

**Sapphire Project Team**

In 2013, the Sapphire Project Team, comprised of the Department of National Defence’s Surveillance of Space Project Team and the MacDonald Dettwiler and Associates Sapphire Project Team, successfully delivered the Sapphire satellite system to the Canadian Armed Forces and coordinated Sapphire’s formal certification and incorporation into the international Space Surveillance Network. This critical new Space Situational Awareness system has allowed Canada to re-establish the capability to directly monitor the heavily congested Earth-orbit environment after a hiatus of more than 20 years.
Sapphire is a $65 million satellite that contributes to – and benefits from – the data produced by a 25-billion-dollar global network of ground- and space-based sensors which help protect the active satellites presently on Earth orbit with a total value exceeding $1 trillion. Many of these are critical to Canadian domestic and international interests in the fields of communications, environment, transportation, navigation, defense, and public safety. This new space-based capability comes at a time when space assets are becoming increasingly critical to successful military, commercial and civilian operations. After only a few months of full operations, Sapphire has proven to be an extremely valuable addition to the array of Space Situational Awareness sensors, as it monitors space debris and active satellites in the critical deep space regime.

Sapphire is a key niche contributor to the Space Surveillance Network and has received much attention and accolades from both the Canadian and U.S. operational communities. This unqualified success would not have been possible without the well-coordinated efforts of the collective Sapphire Project Team, who have delivered an outstanding contribution to the advancement of Canadian space applications. Sapphire is a system of which the entire country should be proud.

**The Roméo Vachon Award**

The Roméo Vachon Award was introduced in 1969 by the Canadian Aeronautics and Space Institute in memory of one of Canada’s outstanding bush pilots.

It is presented for outstanding display of initiative, ingenuity and practical skills in the solution of a particular challenging problem or series of challenging problems in aeronautics and space activities in Canada. The achievement for which the award is given shall be of technological nature, particularly practical skills, not necessarily in the scientific or engineering fields. The recipient shall have been a Canadian citizen at the time the contribution was made.

**Stéphan Werlen**

Stéphan Werlen has worked since 1984 at the National Research Council in Ottawa in support of the Pratt & Whitney Canada Altitude Test Cell, Icing Cell, HPCR and Wind Tunnels.

During the 1990’s the NRC operation was not as well-integrated into the full P&WC organization as it is today and the facility itself was a patchwork of equipment and systems that had grown over the years. The few drawings that existed were heavily marked up with the impromptu modifications that had been done over the years. This facility was eventually decommissioned and replaced by the custom-designed facility that exists today. Stéphan’s resourcefulness and innovative thinking were critical to our successful operation during the period prior to the new facility coming on-stream.
Stephan was responsible for the instrumentation, data acquisition and control systems and did an excellent job in both the routine work such as keeping the instrumentation calibrated and also in modifying the control system to accommodate the peculiarities of individual tests. Often this would require him to design the modifications and then carry out the installation. An added challenge would be that often this had to be done with parts on hand as time constraints would not allow us to order the perfect solution so Stephan would need to design around what we did have rather than what we would like to have. Stephan thrived on those challenges and his success rate was always very high.

Three examples illustrate the kinds of challenges Stephan successfully met in that era:

The altitude facility control system was an antiquated collection of relays and timers and inconsistent logic. Stephan migrated the control system over to a scrounged programmable logic controller, doing all the programming himself as well as drawing up the wiring schedules. He also fixed the control logic so that is was consistent and also fail safe in nature. He did all this while still supporting the day to day testing and calibration work that continued during the upgrade. The new system allowed modifications to be made easily for different programs and increased the reliability of the facility as system interlocks and fail safes were greatly improved.

His creativity and ability to solve problems are demonstrated by an issue we had performing fuel spike tests. The existing data acquisition system was old and slow and did not have a fast enough scan rate to capture the full effects of a spike. A data acquisition system upgrade was financially out of the question and there appeared to be little chance that any meaningful data could be obtained. Stephan found a way to capture, synchronize and merge data from three different acquisition systems. The result was the ability to capture complete and valid data, and in fact this turned out to be the fastest data acquisition system in P&WC.

The third example concerns the automated endurance running of a fan engine. P&WC wanted to run up 3000 hours and 4000 starts on an engine as quickly as possible but this would require automating the endurance cycle. Stéphan used equipment that was on hand, some of it borrowed, and turned it into an integrated and fully functioning system. In this instance the major challenge was ensuring the system was fail safe as any failure, either engine, facility, control or test sequence had to be detected. The endurance running was a great success and Stephan’s control system was so well conceived and designed that it needed very little tweaking as the testing progressed.