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April 4, 2022

Our File: 34490876 AG

DEVELOPMENTAL RADIO LICENCE – 2022-2023

Professor Afzal Suleman
Director, Centre for Aerospace Research
University of Victoria
Department of Mechanical Engineering
Centre for Aerospace Research
PO Box 1700 STN CSC
Victoria, BC V8W 2Y2
Canada

Dear Professor Suleman:

This letter constitutes a developmental radio licence issued to the University of Victoria for the operation of the ORCASat CubeSat Project (ORCASat). ORCASat is authorized to operate according to the table below:

Frequency Bands (MHz)		Use
Earth-to-space	Space-to-Earth	
437.035131 - 437.084869		TT&C Download Data Amateur Satellite

As a condition of this developmental licence, the University of Victoria must provide the Department with the results of research conducted on this mission. In addition, this licence is subject to the standard conditions outlined in the attachment. The University of Victoria must comply, on an ongoing basis, with all conditions of licence, including implementation milestones. Failure to do so may result in the revocation of this licence.

This licence is valid until March 31, 2023.

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In keeping with our commitment to open, fair and transparent licensing processes, this licence may be posted on the Department's spectrum and telecommunications website. If you have any questions regarding this letter, please contact Andrea Godin at 613-608-8534.

Yours sincerely,

A handwritten signature in black ink, appearing to read "S. J. Kanjeekal". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Suneil Kanjeekal
Director
Space Services - Operations

Attachment

Attachment

Conditions of Licence for University of Victoria to operate a non-geostationary satellite network in the Amateur band

Eligibility

1. The licensee must comply with the eligibility criteria as set out in the [Radiocommunication Regulations](#).

Licence transferability

2. Licences may not be transferred or assigned without the prior authorization of the Minister. For clarification and without limiting the generality of the foregoing, "transfer" includes any leasing, sub-leasing or other disposition of the rights and obligations of the licence.

Laws and regulations

3. University of Victoria and its use of the spectrum assigned in this authorization are subject to and must comply with the International Telecommunication Union (ITU) [Radio Regulations](#), the Canadian [Radiocommunication Act](#), the Canadian Radiocommunication Regulations, and Canada's spectrum utilization policies pertaining to the licensed radio frequency bands.

Canadian direction and control

4. University of Victoria must maintain direction and control of the satellites at all times. For any changes to the direction and control facilities, University of Victoria must seek prior approval from the Department.

Relocation of a satellites

5. Satellites may not be relocated without the prior authorization of the Minister.

Milestones

6. University of Victoria must ensure that all implementation milestones and related requirements, as set out in the table below, are met.

Milestone number	Milestone	Due date	Requirement
4	Satellite in operation*	10 November, 2030	Licensees must certify that: - The space station has been launched and placed in its authorized orbital location or non-geostationary orbit; and - Its in-orbit operation has been tested and found to be consistent with the terms of the authorization.
* If the technical parameters (as outlined in section 3.2.4) are different from those that were approved, the new parameters must be submitted to, and approved by ISED.			

Coordination

7. It is the responsibility of University of Victoria to participate, on an ongoing basis, in coordination activities with a view to protecting its network and fulfilling ITU obligations. To this end, University of Victoria must undertake the following:
 - participate, at its own expense, in the coordination of the satellite network with the satellite and terrestrial networks of other countries;
 - provide ISED, in a manner acceptable to the ITU, with the satellite coordination, notification and administrative due diligence information required by the ITU;
 - pay the applicable ITU cost recovery charges for satellite network filings; and,
 - ensure that the operation of the satellites complies with any arrangements and agreements undertaken by Canada with respect to the coordination of the satellites.
8. University of Victoria must maintain a valid ITU filing associated with the satellite system or network at all times.
9. In order to avoid harmful interference, University of Victoria will be required to coordinate its satellite system with other potentially affected Canadian satellite and terrestrial services. It is the sole responsibility of University of Victoria to identify these networks.
10. In the event that coordination cannot be successfully completed, the Department may impose the implementation of mitigation techniques. The satellite system must be operated in a manner consistent with any arrangements made, or techniques imposed, to facilitate satellite coordination.

Space debris mitigation

11. University of Victoria must implement space debris mitigation measures in accordance with the guidelines established by the Inter-Agency Space Debris Coordination Committee, at the end-of-life of the satellites. University of Victoria must also include the requirement for the satellites to de-orbit within 25 years of end of operational life.

Earth station licensing

12. All earth stations in Canada communicating with the satellites, except those exempted from the licensing requirement pursuant to the *Radiocommunication Act* and *Radiocommunication Regulations*, shall be licensed prior to operation pursuant to Client Procedure Circular, CPC 2-6-01, [Procedure for the Submission of Applications to License Fixed Earth Stations and to Approve the Use of Foreign Satellites in Canada](#) or Client Procedure Circular, CPC-2-6-06, [Guidelines for the Submission of Applications for the Provision of Mobile-Satellite Services in Canada](#).

Reporting requirements

13. University of Victoria shall immediately inform the Department of any changes to its contact information or to information concerning satellite development, operations and/or control, including any change in control facilities.
14. University of Victoria shall provide the Department with a contact with 24/7 availability and, as soon as feasible, notify the Department in writing if it has reasonable grounds to believe that:
 - the licensed system poses a danger to the environment, public health or the safety of persons or property;
 - University of Victoria has lost or is in danger of losing control of a satellites; or,
 - there has been a breach in the security of the licensed system.

Within 21 calendar days after notifying the Department, University of Victoria shall provide a written report that describes the situation, its probable cause and the corrective measures taken or proposed to be taken.

15. As a condition of this developmental licence, University of Victoria must provide the Department with the results of research conducted on this mission. In addition, this

licence is subject to the standard conditions outlined in the attachment. University of Victoria must comply, on an ongoing basis, with all conditions of licence, including implementation milestones. Failure to do so may result in the revocation of this licence.

16. University of Victoria shall submit an annual report for each year of operation, indicating continued compliance with these conditions. This report is due by March 31 of each year.
17. University of Victoria shall notify the Department at least 3 months in advance of when the satellites will be decommissioned or de-orbited. At the end of life of the satellites, University of Victoria shall submit a final report to the Department detailing the space debris mitigation measures undertaken. This report shall be submitted no later than 60 calendar days after the satellites have been de-commissioned.
18. University of Victoria shall provide any information requested by the Department, within the timeframe established in the request.
19. All reports are to be submitted to the Director, Space Services at ic.satelliteauthorization-autorisationsatellite.ic@ised-isde.gc.ca.

Authorized Communications

20. Amateur Radio operators are permitted to communicate with ORCASat for the purpose of self-training, intercommunication or technical investigation by individuals who are interested in radio technique solely with a personal aim and without pecuniary interest. Amateur Radio operators are prohibited to communicate with ORCASat for the purpose of telemetry, telecommand and control of the satellite.

Licence term

21. This licence is valid until March 31, 2023.