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Our File: 32143607 AG

**APPROVAL IN PRINCIPLE**

November 10, 2021

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 is in reference to the University of Victoria’s (UVic) application of July 5, 2021, for the ORCASat Satellite in a non-geostationary satellite orbit.

The application meets all the requirements outlined in *CPC-2-6-02 — Licensing of Space Stations*. This approval authorizes the operation of one (1) satellite using radio frequency spectrum as outlined in the table below and associated with the International Telecommunication Union (ITU) filing ORCASAT. The use of these frequencies is authorized on a no interference, no protection basis.

Frequency Bands (MHz)		Use
Earth-to-space	space-to-Earth	
437.0475 – 437.0725	437.0475 – 437.0725	Space Research; Amateur Satellite, TT&C

.../2

As prescribed in Condition 14, UVic must submit the administrative licensing information, set out in [Annex D](#) of CPC-2-6-02, at least 60 calendar days in advance of the anticipated launch date. At that time, Innovation, Science and Economic Development Canada (“the Department”), will issue a radio licence, subject to fees set in the *Radiocommunication Regulations*.

This approval includes coverage of visible Earth, subject to UVic obtaining appropriate regulatory approvals in other jurisdictions if/where necessary.

All earth stations in Canada communicating with the satellite, 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](#).

This approval is subject to the conditions listed in the attachment to this letter. UVic must comply, on an ongoing basis, with all conditions of licence. Failure to do so may result in the revocation of this approval and any licences issued pursuant to it.

In keeping with the Department’s commitment to fair, open and transparent licensing processes, a copy of this approval may be posted on the Department’s Spectrum Management and Telecommunications website. Should you have any questions, please contact Andrea Godin at 613-608-8534.

Yours sincerely,



Suneil Kanjeekal  
Director  
Space Services – Operations

Attachment

## Attachment

### Conditions of Licence for University of Victoria Use of UHF Spectrum for Space Research Service in a Non-Geostationary Satellite Orbit

#### 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. The licensee 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. The licensee must maintain direction and control of the satellite(s) at all times. The primary physical control facility and the network operations center must be located in Canada and must be capable of the functions listed in CPC 2-6-02—*Licensing of Space Stations*. For any changes to the direction and control facilities, the licensee must seek prior approval from Innovation, Science and Economic Development Canada (“the Department”).

#### Relocation of a satellites

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

#### Milestones

6. The licensee must ensure that all implementation milestones and related requirements, as set out in the table below, are met:

Milestone number	Milestone	Due date (Fixed from date of authorization)	Requirement
1	<p>Executed contract to begin construction process</p> <p>Confirm location of the ground facilities</p>	3 years	<p>The licensee must submit a copy of the contract to begin the construction process for the satellite(s) that is consistent with:</p> <ul style="list-style-type: none"> <li>• the existing ITU filing(s)</li> <li>• the terms of the authorization</li> </ul> <p>IF the initial contract is not for the full constellation, then Milestone 1(a) will apply.</p> <p>The licensee must submit the location and a description of TT&amp;C, NOC, Canadian gateway facilities, as applicable.</p>
1(a)	Executed final construction contract	4 years	<p>The licensee must submit a copy of the final contract for construction of the satellite(s) that is consistent with:</p> <ul style="list-style-type: none"> <li>• the existing ITU filing(s)</li> <li>• the terms of the authorization, including Canadian coverage and minimum technical requirements as outlined in section 3.2.4* and</li> <li>• a delivery date that allows for the satellite(s) to be placed into the assigned orbit; by the date established for Milestone 3.</li> </ul>
2	Executed launch contract	5 years	The licensee must submit copy of launch contract to place the satellite(s) into the assigned orbit by the dates established for Milestones 3 and 4.
3	<p>One-third of constellation in operation</p> <p>Complete construction of the ground facilities.</p>	6 years	<p>The licensee must certify that:</p> <ul style="list-style-type: none"> <li>• one-third of the authorized constellation has been launched and placed into the assigned orbit</li> <li>• in-orbit operation has been tested and found to be consistent with the terms of the authorization.</li> </ul> <p>The licensee must certify that construction of the TT&amp;C, NOC and Canadian gateway facilities, as applicable, has been completed, tested and that the facilities are operational.</p>

Milestone number	Milestone	Due date (Fixed from date of authorization)	Requirement
4	Full constellation in operation	9 years	The licensee must certify that: <ul style="list-style-type: none"> <li>• the full constellation has been launched and placed into the assigned orbit</li> <li>• in-orbit operation has been tested and found to be consistent with the terms of the authorization.</li> </ul>
* If the technical parameters (as outlined in <a href="#">section 3.2.4</a> ) are different from those that were approved, the new parameters must be submitted to, and approved by Innovation, Science and Economic Development Canada (“the Department”).			

### Coordination

7. It is the responsibility of the licensee to participate, on an ongoing basis, in coordination activities with a view to protecting its network and fulfilling ITU obligations. To this end, the licensee 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 the Department, 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 satellite system complies with any arrangements and agreements undertaken by Canada with respect to the coordination of the satellite system.
8. The licensee must maintain a valid ITU filing associated with the satellite system at all times.
9. In order to avoid harmful interference, the licensee will be required to coordinate its satellite system with other potentially affected Canadian satellite and terrestrial services. It is the sole responsibility of the licensee 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.

### **Provision of service**

11. The satellites must be in-service within six months of meeting the final implementation milestone, and must maintain operations in accordance with the international *Radio Regulations*, its associated ITU filing(s), and domestic authorization(s).

### **Space debris mitigation**

12. The licensee 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 satellite(s). The licensee must also include the requirement for the satellite(s) to de-orbit within 25 years of end of operational life.

### **Earth station licensing**

13. 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](#).

### **Satellite licensing information for radio licences**

14. The licensee must submit the administrative licensing information, set out in [Annex D](#) of CPC-2-6-02, at least 60 calendar days in advance of the anticipated launch date of the first satellite.

### **Reporting requirements**

15. The licensee 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. The licensee is also required to report any suspension of service to the Department.
16. The licensee shall, 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,
  - the licensee has lost or is in danger of losing control of a satellite, or
  - there has been a breach in the security of the licensed system.

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

17. The licensee shall submit an annual report. It is expected that the system will be coordinated and notified prior to launch. Therefore, before launch, the report must include progress on meeting implementation milestones and updates on coordination discussions. Following the start of operations, the reports must indicate continued compliance with conditions of licence. For NGSO systems, these reports must also include plans for the upcoming year for replacing and/or de-orbiting individual satellites within the constellation. This report is due March 31<sup>st</sup> of each year.
18. The licensee shall notify the Department at least three (3) months in advance of when a satellite will be decommissioned or de-orbited, and certify that the decommissioning will not result in any unplanned disruption of service to customers. At the end of life of the satellites, the licensee 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 satellite(s) have been de-commissioned.
19. The licensee shall provide any information requested by the Department, within the timeframe established in the request.
20. All reports are to be submitted to the Director, Space Services – Operations at [satelliteauthorization-autorisationsatellite@ised-isde.gc.ca](mailto:satelliteauthorization-autorisationsatellite@ised-isde.gc.ca).

#### **Payment of fees**

21. Licence fees are payable on an annual basis, in advance, and are due by March 31<sup>st</sup> of each year.