



**RETURN BIDS TO:  
RETOURNER LES SOUMISSIONS À:**

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**LETTER OF INTEREST  
LETTRE D'INTÉRÊT**

Comments - Commentaires

Vendor/Firm Name and Address  
Raison sociale et adresse du  
fournisseur/de l'entrepreneur

Issuing Office - Bureau de distribution  
Civilian Aircraft Division/Division des Avions Civils  
Portage III 8C1 - 50  
11 Laurier St./11 rue Laurier  
Gatineau  
Québec  
K1A 0S5

<b>Title - Sujet</b> Remotely Piloted Aircraft System	
<b>Solicitation No. - N° de l'invitation</b> T8493-150035/C	<b>Date</b> 2019-06-10
<b>Client Reference No. - N° de référence du client</b> T8493-150035	<b>GETS Ref. No. - N° de réf. de SEAG</b> PW-\$CAG-004-27353
<b>File No. - N° de dossier</b> 004cag.T8493-150035	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> <b>on - le 2019-08-21</b>	
<b>Time Zone</b> <b>Fuseau horaire</b> Eastern Daylight Saving Time EDT	
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Bootsma, Lena	<b>Buyer Id - Id de l'acheteur</b> 004cag
<b>Telephone No. - N° de téléphone</b> (873) 469-3864 ( )	<b>FAX No. - N° de FAX</b> ( ) -
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b> DEPARTMENT OF TRANSPORT 200 COMET PRIVATE OTTAWA Ontario K1V9B2 Canada	

Instructions: See Herein

Instructions: Voir aux présentes

<b>Delivery Required - Livraison exigée</b> See Herein	<b>Delivery Offered - Livraison proposée</b>
<b>Vendor/Firm Name and Address</b> <b>Raison sociale et adresse du fournisseur/de l'entrepreneur</b>	
<b>Telephone No. - N° de téléphone</b> <b>Facsimile No. - N° de télécopieur</b>	
<b>Name and title of person authorized to sign on behalf of Vendor/Firm</b> <b>(type or print)</b> <b>Nom et titre de la personne autorisée à signer au nom du fournisseur/</b> <b>de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</b>	
<b>Signature</b>	<b>Date</b>



## **Letter of Interest (LOI) T8493-150035/C**

### **Remotely Piloted Aircraft System for the National Aerial Surveillance Program in Canada's Arctic**

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## 1. Introduction and Background

Transport Canada (TC) requires a Remotely Piloted Aircraft System (RPAS) that is capable of operation Beyond Visual Line of Sight (BVLOS). TC will operate the RPAS as a proof of concept in order to evaluate RPAS technology to support the National Aerial Surveillance Program (NASP) in conjunction with the existing fleet of manned surveillance aircraft to maintain persistent domain awareness in Canada's Arctic.

In March 2016, Canada sought Industry consultation on the development of a proposed competitive procurement for the RPAS, initiated by Letter of Interest (LOI) T8493-150035/A. The Consultative Process provided any interested party in Industry an opportunity to participate in the development of the RPAS technical requirements and procurement elements by providing Canada with feedback in the form of answers to Canada's questions of interest, comments, questions, recommendations and suggestions for improvement to the draft Baseline Statement of Requirements (SOR) and draft Evaluation Plan.

In August 2016, Canada posted a second LOI, T8493-150035/B, giving an overview of the Industry Consultative Process that had taken place. Companies registered as Participants were provided with a detailed document summarizing the feedback received from Industry and the outcome on the development of the Request for Proposal (RFP). Canada has since sent requests for and received further feedback from Industry Participants on the development of the requirement. While developing the draft RFP in 2017, the possibility to acquire a surplus High Altitude Long Endurance RPAS from the Federal Republic of Germany became available and Canada explored that option. After much investigation, it was determined to continue with Industry Engagement on a potential competitive solicitation. The RPAS project team has finalized the requirements and developed the RFP, which is released with this LOI as a Draft.

## 2. Purpose

Public Works and Government Service Canada (PWGSC) is seeking to engage further with Industry through consultation on the draft Request for Proposal (RFP) for the acquisition of a Remotely Piloted Aircraft System (RPAS) for the Government of Canada, Transport Canada (TC).

The purpose of this LOI is to:

- 1) initiate further engagement with industry and invite interested suppliers to participate in the Engagement Activities;
- 2) identify if the bid and technical requirements of the draft RFP are clearly understood by potential bidders; and
- 3) identify what capability exists in the marketplace to perform the Work of the proposed requirement.



### 3. Objectives

The objectives of this LOI are to:

- 1) Provide the Draft RFP document (Attachment 2 to LOI);
- 2) Obtain review and feedback from potential suppliers to the draft RFP, in particular response to the specific Questions for Feedback. (Attachment 1 to LOI); and
- 3) Open 1-on-1 meetings with Canada's RPAS project team to potential bidders to discuss understanding of the RFP process and their capability of meeting the requirements of the draft RFP.

### 4. Industry Engagement

#### Consultation Period:

The Consultation Period will conclude with the release of the final RFP, or when the Contracting Authority notifies Participants, whichever is sooner. Participants are welcome to contact the Contracting Authority during this period.

#### Participants:

Participants in this draft RFP phase of the Consultative Process should be potential suppliers to the requirement. Participants who provide written feedback as described in this LOI may be contacted by the PWGSC Contracting Authority if clarification or further feedback is needed.

Representatives from PWGSC, TC and third party consultants are involved with the Engagement Activities. A third party Fairness Monitor continues to be an integral part of the process.

#### Written Feedback:

Canada is looking for Participants to provide specific responses, as brief as possible, to the Questions for Feedback at Attachment 1, and to come forward with any questions or issues. Canada is not looking for full proposals. Responses should be submitted in electronic format (MS Word or Adobe PDF preferable).

#### One-on-one meetings:

Potential bidders for this requirement may request a one-on-one meeting with Canada. Potential bidders may include their subcontractors or consultants at meetings, subject to space limitations.

One or multiple meetings may take place in person and/or by teleconference. The purpose of the meetings is to discuss the responses to the Questions for Feedback at Attachment 1.



## 5. Submission of Responses

Written feedback, request for clarification, and, if applicable, request for a one-on-one meeting must only be sent to the PWGSC Contracting Authority identified below via email and are requested to be received by the Submission of Responses date indicated in the Schedule below, but are also welcome before that date. A point of contact for the Respondent should be included in the package, including the company legal name, corporate address, respective title, email address and phone number. The same information will be required for all representatives that attend a one-on-one meeting.

Changes to this LOI may occur and will be advertised on the Government Electronic Tendering System. It is the Respondents responsibility to visit [www.buyandsell.gc.ca](http://www.buyandsell.gc.ca) regularly to check for changes, if any. The website provides information on how to get notifications for new tenders and amendments on its' main page under "Help With Tenders".

### **PWGSC Contracting Authority:**

Lena Bootsma  
Public Works and Government Services Canada  
Acquisitions Branch  
Place du Portage, Phase III, 8C1  
11 Laurier Street  
Gatineau, QC K1A 0S5  
Telephone: 873-469-3864  
E-mail: [lena.bootsma@tpsgc-pwgsc.gc.ca](mailto:lena.bootsma@tpsgc-pwgsc.gc.ca)

## 6. Schedule

In providing responses, the following schedule should be utilized as a baseline:

- Letter of Interest (LOI) – June 10, 2019
- Submission of Responses – July 18, 2019
- One on One sessions – August 6-9, 2019
- RFP issued – Fall 2019
- Contract Award – Spring 2020

## 7. Important Note to Respondents

This LOI is neither a call for tender nor a Request for Proposal (RFP). No agreement or contract will be entered into based on this LOI. The issuance of this LOI is not to be considered in any way a commitment by the Government of Canada, nor as authority to potential respondents to undertake any work that could be charged to Canada. This LOI is not to be considered as a commitment to issue a subsequent solicitation or award contract(s) for the work described herein.



Although the information collected may be provided as commercial-in-confidence (and, if identified as such, will be treated accordingly by Canada), Canada may use the information to assist in drafting performance specifications (which are subject to change) and for budgetary purposes.

Respondents are encouraged to identify, in the information they share with Canada, any information that they feel is proprietary, third party or personal information. Please note that Canada may be obligated by law (e.g. in response to a request under the Access of Information and Privacy Act) to disclose proprietary or commercially-sensitive information concerning a respondent (for more information: <http://laws-lois.justice.gc.ca/eng/acts/a-1/>).

Respondents are asked to identify if their response, or any part of their response, is subject to the Controlled Goods Regulations.

Participation in this LOI is encouraged, but is not mandatory. There will be no short-listing of potential suppliers for the purposes of undertaking any future work as a result of this LOI. Similarly, participation in this LOI is not a condition or prerequisite for the participation in any potential subsequent solicitation.

Respondents will not be reimbursed for any cost incurred by participating in this LOI.

The LOI closing date published herein is not the deadline for comments or input. Comments and input will be accepted any time up to the time when/if a follow-on solicitation is published.

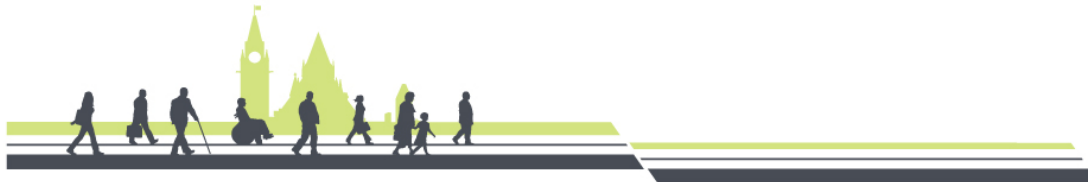
Changes to this LOI may occur and will be advertised on the Government Electronic Tendering System. Canada asks Respondents to visit [Buyandsell.gc.ca](http://Buyandsell.gc.ca) regularly to check for changes, if any.

The information provided is for consultation purposes only and is subject to change.

## 8. Requirement Summary

Transport Canada (TC) requires a Remotely Piloted Aircraft System (RPAS) that is capable of operation Beyond Visual Line of Sight (BVLOS) which will be used by TC as a proof of concept to evaluate RPAS technology as a supplement to the capabilities of manned surveillance aircraft operated under the National Aerial Surveillance Program (NASP). The RPAS must include one or more Remotely Piloted Aircrafts (RPA) or Optionally Piloted Aircrafts (OPA) of the same type; sensor equipment to be carried as payload on board each RPA; communication links; and the RPAS mission control stations (MCS). The Contractor must provide initial training.

The Contractor must provide the Optional Goods described herein, such as spares, equipment, and parts necessary to maintain and operate the RPAS, and additional components of the RPAS, as requested by Canada to support the first 2000 hours of operation or period of the contract whichever is less.



The RPA(s) may be new or used. All sensors, all equipment and components in the MCS, and all payloads, must be new only.

TC will operate the RPAS in conjunction with the existing fleet of manned surveillance aircraft to maintain persistent domain awareness in Canada's North. Operational surveillance activities with the RPA(s) will occur primarily between N60 and N72 degrees of latitude.

The period of the Contract will be five (5) years from date of Contract.

Delivery of the RPAS is required on or before 24 months after date of contract, to Transport Canada, Aircraft Services Directorate, 200 Comet Private, Hangar T- 58, Ottawa Airport, Ottawa Ontario, or to a designated facility within 350KM of Ottawa, Ontario.

## 9. Potential Scope of Work

### 9.1 High Level Deliverables

Item
One (1) RPAS, potentially comprised of multiple RPA's, fully integrated with:
a) Appropriate proven sensor packages
b) Sufficient deployable/fixed Ground Control Station (s) (GCS) and related equipment required for the operation and support of the RPAS capability
c) Satellite and terrestrial communications components and capability for command and control of the RPA and transmission of sensor data to ground facilities
d) Simulator capability that can be used by the RPA operator and the payload operator for training purposes.
Technical data packages.
Training for RPAS personnel operating and maintaining the RPA, its sensors or analyzing sensor data from the GCS. System-specific training systems/packages for operations, and maintenance personnel.
spares to support the first 2000 hours of operation
Tooling, Equipment and Ground Support Equipment



## 9.2 High Level Capabilities of the UAS

The UAS must have the following high level capabilities:

	High Level Capabilities
<b>Awareness</b>	<b>Surveillance:</b> Ability to conduct surveillance and reconnaissance in Canada's Arctic region to detect, track, and obtain positive identification of sea surface anomalies such as oil pollution, icebergs, sea ice, marine mammals, foreign vessels, fishing vessels, etc., in arctic weather conditions, day and night.
<b>Reach</b>	<b>Range:</b> Each RPA must have a minimum total flying range of 1400 nautical miles with full payload, at normal cruise speed (assume zero wind).
<b>Persistence</b>	<b>Endurance:</b> Each RPA must be capable of flying at least 500 nautical miles, loiter on station for 5 hours and then return to the point of departure (round trip distance 1000 nm plus loiter distance) with full payload (assume zero wind).
<b>Responsiveness</b>	<b>Operational Suitability:</b> Ability to conduct operations in appropriate classes of airspace, under specified adverse weather conditions. Ability to operate from paved runways and in typical arctic weather conditions.
	<b>Dynamic Control:</b> Ability to dynamically control the unmanned aircraft and payload, in near-real time, under visual line of sight (VLOS), beyond visual line of sight (BVLOS), and remote split operations (RSO), and respond to situational changes and new taskings.
	<b>Operations Tempo:</b> The overall RPAS availability must be no less than less 20 hrs / mission, 40 hrs / week, 500 hours per year for each RPA.
<b>Flexibility/ Growth Capacity</b>	The UAS must possess the flexibility, growth capacity, and standard interfaces required to integrate new payloads to support enhanced capabilities.





## **ATTACHMENT 1 to LOI T8493-150035/C QUESTIONS FOR FEEDBACK**

**Canada is specifically asking potential bidders for their feedback and answers to these questions.**

### **SECTION A: DRAFT RFP PROCUREMENT QUESTIONS**

#### **PART 1 - GENERAL INFORMATION**

- 1) Do you have any issues, questions or need any clarification? If yes, please identify.

#### **PART 2 – BIDDER INSTRUCTIONS**

- 2) Do you have any issues, questions or need any clarification? If yes, please identify.
- 3) As indicated in this PART 2, Bidders are bound by the instructions, clauses and conditions of the bid solicitation (including those referenced by number, date, and title only) and accept the clauses and conditions of the resulting contract (PART 7). If you cannot comply with any of the instructions, clauses and conditions, indicate which Part and Article number and identify what the issue is. For PART 7 please respond under PART 7 below.
- 4) Can the RPAS you propose be provided Direct Commercial Sale?

#### **PART 3 – BID PREPARATION INSTRUCTIONS**

- 5) Do you have any issues complying with the submission requirements for a technical bid, financial bid, and the certifications? If yes, identify the issues.
- 6) Do you have any other issues, questions or need any clarification? If yes, please identify.

#### **PART 4 – EVALUATION PROCEDURES AND BASIS OF SELECTION**

- 7) Is the Phased Bid Compliance Process clear? If response is no, identify what needs to be clarified.
- 8) Is the Basis of Selection clear, fair, and reasonable? If response is no, identify what needs to be clarified, and what elements you consider not fair or reasonable and why.
- 9) Do you have any issues, other questions or need any clarification? If yes, please identify.

#### **PART 5 - CERTIFICATIONS AND ADDITIONAL INFORMATION**

- 10) Do you have any issues, questions or need any clarification? If yes, please identify.

#### **PART 6 – SECURITY, FINANCIAL AND OTHER REQUIREMENTS**

- 11) Do you have any questions or need any clarification about the Controlled Goods Program registration requirement?
- 12) Do you have any other issues, questions or need any clarification? If yes, please identify.

#### **PART 7 – RESULTING CONTRACT CLAUSES**

- 13) Respond to question 3 above regarding Part 7.
- 14) Does the requirement include hardware purchase, software development or modification, and/or the provision of software for which the Supplemental General Conditions apply?



ATTACHMENT 4 to PART 4 FINANCIAL BID PRESENTATION AND EVALUATION SHEET

- 15) For budgetary purposes only, please identify the cost range (in Canadian Dollars) and of your solution for the following requirements as described in the Statement of Work by checking off the applicable box:

RPAS and Initial Training	< \$10M	\$10M - \$14.9M	\$15M - \$19.9M	\$20M - \$24.9M	\$25M - \$29.9M	>\$30M

To support first 2000 hours of operation	<\$250K	\$250K- \$499K	\$500K - \$999K	\$1M - \$1.4M	\$1.5M – \$1.9M	>\$2M
RPAS Spares						
Tooling and Equipment						
Ground Support Equipment						

- 16) Can you meet the mandatory requirements within the Maximum Funding stated in the draft RFP? If no, which mandates are not possible to provide within the Maximum Funding?
- 17) Can you meet the mandatory requirements and many desirable requirements of the Statement of Work at Annex A within the Maximum Funding?
- 18) Do you have any issues, questions or need any clarification? If yes, please identify.

**SECTION B: DRAFT RFP TECHNICAL REQUIREMENT and EVALUTION QUESTIONS**

ANNEX A – STATEMENT OF WORK (includes all its appendices)

- 1) Can your solution meet the minimum range requirements identified in the SOW? Can you exceed these requirements?
- 2) Is Induction System Icing Protection standard on your solution?
- 3) Is an Ice Protection System standard on your solution?
- 4) To what Latitude has your solution been tested? Can you meet the requirement for up to 72 degrees of north latitude?
- 5) Is ADS-B, TCAS, and TAWS integrated on your system and is this equipment TSO'd?
- 6) Can you provide a Maritime Search Radar that meet's TC's mandatory requirements?
- 7) Can you provide a Data Link solution that is suitable for communication (full duplex) between the RPA and the ground station over all Canadian airspace up to 72 degrees north latitude?
- 8) Can you provide a Command and Control (C2) System for Radio Line of Sight and Satellite communications that is secure in all phases of operation over all Canadian airspace up to 72 degrees north latitude? Describe the level of redundancy, encryption and protections against jamming and spoofing technologies.
- 9) Is the concept of operations that TC describes for the Mission Control Station main operating base viable?



- 10) Confirm your ability to operate from a Forward Operating Base as described in the SOW? Are there any issues regarding this concept that you would like to make TC aware of?
- 11) Do you have any issues or comments on the requirements for the provision of engineering and technical data? Will you be able to provide the level of engineering and technical data requested?
- 12) Do you foresee any issues with the training requirements? Can you provide full training?
- 13) Will you be able to provide a list of recommended spares for the first 2000 hours?
- 14) Are there any issues with providing TC with a Maintenance Plan (MP) and Schedule so that TC can set up a maintenance program for your solution?
- 15) ) Does the proposed RPAS contain any hazardous materials or controlled substances requiring special handling or precautions during maintenance, incident or accident and consideration as part of an environmental hazard assessment of the system?
- 16) Can you provide all the information requested in Appendix B – STANAG 4671 Edition 2 / AEP-4671 Edition A Version 1 Compliance Matrix for the Preliminary Design Review Meeting?
- 17) As identified in the SOW, TC is expecting to perform RPAS maintenance activities in house at the main operating base (MOB) in Ottawa. Do you see any issues with this approach? What level of maintenance activities do you foresee TC being able to perform at the MOB? Are there any specialized maintenance activities that TC will not be able to perform at the MOB?
- 18) Is there any specialized software development required for you to meet TC's requirements?
- 19) What level of IP will you be able to provide to TC?

ATTACHMENT 1 to PART 4 of the BID SOLICITATION: MANDATORY TECHNICAL CRITERIA

- 20) Are there any mandatory technical criteria that you would not be able to meet? If so do you offer an alternative that would still meet TC's objectives?

ATTACHMENT 2 to PART 4 of the BID SOLICITATION: POINT RATED TECHNICAL CRITERIA

- 21) Are there any issues for comments relevant to the Point Rated Technical Criteria that you would like to share?



**ATTACHMENT 2 to LOI T8493-150035/C  
DRAFT RFP**

The Draft RFP is not a final document and is subject to change

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## **PART 1 - GENERAL INFORMATION**

### **1.1 Introduction**

The bid solicitation is divided into seven parts plus attachments and annexes, as follows:

- Part 1 General Information: provides a general description of the requirement;
- Part 2 Bidder Instructions: provides the instructions, clauses and conditions applicable to the bid solicitation;
- Part 3 Bid Preparation Instructions: provides Bidders with instructions on how to prepare their bid;
- Part 4 Evaluation Procedures and Basis of Selection: indicates how the evaluation will be conducted, the evaluation criteria that must be addressed in the bid, and the basis of selection;
- Part 5 Certifications and Additional Information: includes the certifications and additional information to be provided;
- Part 6 Security, Financial and Other Requirements: includes specific requirements that must be addressed by Bidders; and
- Part 7 Resulting Contract Clauses: includes the clauses and conditions that will apply to any resulting contract.

The Annexes include the Statement of Work, the Basis of Payment, the Task Authorization Form, and the List of Authorized Subcontractors. The Attachments include the Electronic Payment Instruments, Mandatory Technical Criteria, Point Rated Technical Criteria, Operation and Maintenance Cost Evaluation, Financial Bid Presentation and Evaluation Sheet, and the Federal Contractors Program for Employment Equity - Certification.

### **1.2 Summary**

#### **1.2.1 Summary of Requirement**

Transport Canada (TC) requires a Remotely Piloted Aircraft System (RPAS) that is capable of operation Beyond Visual Line of Sight (BVLOS) which will be used by TC as a proof of concept to evaluate RPAS technology as a supplement to the capabilities of manned surveillance aircraft operated under the National Aerial Surveillance Program (NASP). The RPAS must include one or more Remotely Piloted Aircrafts (RPA) or Optionally Piloted Aircrafts (OPA) of the same type; sensor equipment to be carried as payload on board each RPA; communication links; and the RPAS mission control stations (MCS). The Contractor must provide initial training.

The Contractor must provide the Optional Goods described herein, such as spares, equipment, and parts necessary to maintain and operate the RPAS, and additional components of the RPAS, as requested by Canada to support the first 2000 hours of operation or period of the contract whichever is less.

The RPA(s) may be new or used. All sensors, all equipment and components in the MCS, and all payloads, must be new only.

---

TC will operate the RPAS in conjunction with the existing fleet of manned surveillance aircraft to maintain persistent domain awareness in Canada's North. Operational surveillance activities with the RPA's will occur primarily between N60 and N72 degrees of latitude.

The period of the Contract will be five (5) years from date of Contract.

Delivery of the RPAS is required on or before 24 months after date of contract, to Transport Canada, Aircraft Services Directorate, 200 Comet Private, Hangar T- 58, Ottawa Airport, Ottawa Ontario, or to a designated facility within 350KM of Ottawa, Ontario.

#### **1.2.2 Comprehensive Land Claims Agreement(s)**

This procurement is subject to the Comprehensive Land Claims Agreement(s) in the Northwest Territories, Nunavut, northern Quebec, and northern Labrador.

Operations by Transport Canada's National Aerial Surveillance Program of the RPAS is expected to occur in those areas. During the period of the Contract, the Contractor will perform Acceptance Testing by flight demonstration in Iqaluit.

Delivery of the RPAS and spares by the Contractor under the contract is to Ottawa, Ontario or a designated facility within 350km. Final delivery of the RPAS and spares by Canada may be to Iqaluit, depending on the solution provided by the selected Contractor.

#### **1.2.3 Controlled Goods Program**

This procurement is subject to the Controlled Goods Program. The *Defence production Act* defines Canadian Controlled Goods as certain goods listed in Canada's Export Control List, a regulation made pursuant to the Export and Import Permits Act (EIPA).

#### **1.2.4 National Security Exception**

The national security exceptions provided for in the trade agreements have been invoked; therefore, this procurement is excluded from all of the obligations of all the trade agreements.

#### **1.2.5 Federal Contractors Program**

The Federal Contractors Program (FCP) for employment equity applies to this procurement; see Part 5 – Certifications and Additional Information, Part 7 - Resulting Contract Clauses and the Attachment 1 to Part 5 titled [Federal Contractors Program for Employment Equity - Certification](#).

#### **1.2.6 epost Connect**

This bid solicitation allows bidders to use the epost Connect service provided by Canada Post Corporation to transmit their bid electronically. Bidders must refer to Part 2 entitled Bidder Instructions, and Part 3 entitled Bid Preparation Instructions, of the bid solicitation, for further information.

#### **1.2.7 Phased Bid Compliance Process**

The Phased Bid Compliance Process (PBCP) applies to this requirement.

### **1.3 Debriefings**

Bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within 15 working days from receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.



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## 1.4 Communications Notification

The successful bidder must notify the Contracting Authority a minimum of ten (10) calendar days in advance of any public announcement related to the award of this contract.

## PART 2 - BIDDER INSTRUCTIONS

### 2.1 Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the [Standard Acquisition Clauses and Conditions Manual](https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual) (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

Bidders who submit a bid agree to be bound by the instructions, clauses and conditions of the bid solicitation and accept the clauses and conditions of the resulting contract.

The 2003 (2018-05-22) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

- Subsection 5.4 of 2003, Standard Instructions - Goods or Services - Competitive Requirements, is amended as follows:

Delete: 60 days  
Insert: 240 days

- Section 08, entitled Transmission by facsimile or by epost Connect, is amended as follows:

Subsection 2. is deleted entirely and replaced with the following:

#### 2. epost Connect

- a. Unless specified otherwise in the bid solicitation, bids may be submitted by using the [epost Connect service](#) provided by Canada Post Corporation.
  - i. PWGSC, National Capital Region: The only acceptable email address to use with epost Connect for responses to bid solicitations issued by PWGSC headquarters is:

[tpsgc.dgareceptiondessoumissions-abbidreceiving.pwgsc@tpsgc-pwgsc.gc.ca](mailto:tpsgc.dgareceptiondessoumissions-abbidreceiving.pwgsc@tpsgc-pwgsc.gc.ca)

or, if applicable, the email address identified in the bid solicitation.

- ii. PWGSC regional offices: The only acceptable email address to use with epost Connect for responses to bid solicitations issued by PWGSC regional offices is identified in the bid solicitation.
- b. To submit a bid using epost Connect service, the Bidder must either:
  - i. send directly its bid only to the specified PWGSC Bid Receiving Unit, using its own licensing agreement for epost Connect provided by Canada Post Corporation; or
  - ii. send as early as possible, and in any case, at least six business days prior to the solicitation closing date and time, (in order to ensure a response), an email that includes the bid solicitation number to the specified PWGSC Bid Receiving Unit

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requesting to open an epost Connect conversation. Requests to open an epost Connect conversation received after that time may not be answered.

- c. If the Bidder sends an email requesting epost Connect service to the specified Bid Receiving Unit in the bid solicitation, an officer of the Bid Receiving Unit will then initiate an epost Connect conversation. The epost Connect conversation will create an email notification from Canada Post Corporation prompting the Bidder to access and action the message within the conversation. The Bidder will then be able to transmit its bid afterward at any time prior to the solicitation closing date and time.
- d. If the Bidder is using its own licensing agreement to send its bid, the Bidder must keep the epost Connect conversation open until at least 30 business days after the solicitation closing date and time.
- e. The bid solicitation number should be identified in the epost Connect message field of all electronic transfers.
- f. It should be noted that the use of epost Connect service requires a Canadian mailing address. Should a bidder not have a Canadian mailing address, they may use the Bid Receiving Unit address specified in the solicitation in order to register for the epost Connect service.
- g. For bids transmitted by epost Connect service, Canada will not be responsible for any failure attributable to the transmission or receipt of the bid including, but not limited to, the following:
  - i. receipt of a garbled, corrupted or incomplete bid;
  - ii. availability or condition of the epost Connect service;
  - iii. incompatibility between the sending and receiving equipment;
  - iv. delay in transmission or receipt of the bid;
  - v. failure of the Bidder to properly identify the bid;
  - vi. illegibility of the bid;
  - vii. security of bid data; or,
  - viii. inability to create an electronic conversation through the epost Connect service.
- h. The Bid Receiving Unit will send an acknowledgement of the receipt of bid document(s) via the epost Connect conversation, regardless of whether the conversation was initiated by the supplier using its own license or the Bid Receiving Unit. This acknowledgement will confirm only the receipt of bid document(s) and will not confirm if the attachments may be opened nor if the content is readable.
- i. Bidders must ensure that they are using the correct email address for the Bid Receiving Unit when initiating a conversation in epost Connect or communicating with the Bid Receiving Unit and should not rely on the accuracy of copying and pasting the email address into the epost Connect system.
- j. A bid transmitted by epost Connect service constitutes the formal bid of the Bidder and must be submitted in accordance with section 05.

## 2.2 Submission of Bids

Bids must be submitted only to Public Works and Government Services Canada (PWGSC) Bid Receiving Unit by the date, time and place indicated on page 1 of the bid solicitation.

Note: For bidders choosing to submit using epost Connect for bids closing at the Bid Receiving Unit in the National Capital Region (NCR) the email address is:

[tpsgc.dgareceptiondessoumissions-abbidreceiving.pwgsc@tpsgc-pwgsc.gc.ca](mailto:tpsgc.dgareceptiondessoumissions-abbidreceiving.pwgsc@tpsgc-pwgsc.gc.ca)

Note: Bids will not be accepted if emailed directly to this email address. This email address is to be used to open an epost Connect conversation, as detailed in Standard Instructions 2003, or to send

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bids through an epost Connect message if the bidder is using its own licensing agreement for epost Connect.

Due to the nature of the bid solicitation, bids transmitted by facsimile to PWGSC will not be accepted.

### **2.3 Enquiries - Bid Solicitation**

All enquiries must be submitted in writing to the Contracting Authority no later than fifteen (15), calendar days before the bid closing date. Enquiries received after that time may not be answered.

Bidders should reference as accurately as possible the numbered item of the bid solicitation to which the enquiry relates. Care should be taken by Bidders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as "proprietary" will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the question(s) or may request that the Bidder do so, so that the proprietary nature of the question(s) is eliminated and the enquiry can be answered to all Bidders. Enquiries not submitted in a form that can be distributed to all Bidders may not be answered by Canada.

### **2.4 Applicable Laws**

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Ontario, Canada.

Bidders may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their bid, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the Bidders.

### **2.5 Improvement of Requirement During Solicitation Period**

Should bidders consider that the specifications or Statement of Work contained in the bid solicitation could be improved technically or technologically, bidders are invited to make suggestions, in writing, to the Contracting Authority named in the bid solicitation. Bidders must clearly outline the suggested improvement as well as the reason for the suggestion. Suggestions that do not restrict the level of competition nor favour a particular bidder will be given consideration provided they are submitted to the Contracting Authority at least fifteen (15) calendar days before the bid closing date. Canada will have the right to accept or reject any or all suggestions.

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## PART 3 - BID PREPARATION INSTRUCTIONS

### 3.1 Bid Preparation Instructions

- If the Bidder chooses to submit its bid electronically, Canada requests that the Bidder submits its bid in accordance with section 08 of the 2003 standard instructions. Bidders must provide their bid in a single transmission. The epost Connect service has the capacity to receive multiple documents, up to 1GB per individual attachment.

The bid must be gathered per section and separated as follows:

Section I: Technical Bid  
Section II: Financial Bid  
Section III: Certifications

- If the Bidder chooses to submit its bid in hard copies, Canada requests that the Bidder submits its bid in separately bound sections as follows:

Section I: Technical Bid (1 hard copy and 4 soft copies on DVD, identify the original soft copy)

Section II: Financial Bid (1 hard copies and 1 soft copy on DVD)

Section III: Certifications (1 hard copies and 1 soft copy on DVD)

If there is a discrepancy between the wording of the soft copy and the hard copy, the wording of the hard copy will have priority over the wording of the soft copy.

- If the Bidder is simultaneously providing copies of its bid using multiple acceptable delivery methods, and if there is a discrepancy between the wording of any of these copies and the electronic copy provided through epost Connect service, the wording of the electronic copy provided through epost Connect service will have priority over the wording of the other copies.

**Prices must appear in the financial bid only. No prices must be indicated in any other section of the bid.**

Canada requests that Bidders follow the format instructions described below in the preparation of their bid:

- (a) use 8.5 x 11 inch (216 mm x 279 mm) paper;
- (b) use a numbering system that corresponds to the bid solicitation.

In April 2006, Canada issued a policy directing federal departments and agencies to take the necessary steps to incorporate environmental considerations into the procurement process [Policy on Green Procurement](http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/politique-policy-eng.html) (<http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/politique-policy-eng.html>). To assist Canada in reaching its objectives, Bidders should:

- 1) use 8.5 x 11 inch (216 mm x 279 mm) paper containing fibre certified as originating from a sustainably-managed forest and containing minimum 30% recycled content; and

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- 2) use an environmentally-preferable format including black and white printing instead of colour printing, printing double sided/duplex, using staples or clips instead of cerlox, duotangs or binders.

### **Section I: Technical Bid**

In their technical bid, Bidders should demonstrate their understanding of the requirements contained in the Statement Work at Annex A of the bid solicitation and explain how they will meet these requirements. Bidders should demonstrate their capability and describe their approach in a thorough, concise and clear manner.

The technical bid should address clearly and in sufficient depth the points that are subject to the evaluation criteria against which the bid will be evaluated (see 4.1.2, Technical Evaluation). Simply repeating the statement contained in the bid solicitation is not sufficient. Canada requests that Bidders address and present topics in the order of the evaluation criteria under the same headings. To avoid duplication, Bidders may refer to different sections of their bids by identifying the specific paragraph and page number where the subject topic has already been addressed.

In order to facilitate the evaluation of the bid and avoid duplication, Bidders must identify in the Technical Evaluation Matrices at Attachments 1 and 2 to Part 4 the specific paragraph and page number where the subject topic has been addressed.

### **Section II: Financial Bid**

- 3.1.1** Bidders must submit their financial bid in accordance with Attachment 3 to Part 4, Financial Bid Presentation and Evaluation Sheet. The total amount of Applicable Taxes must be shown separately.

#### **3.1.2 Electronic Payment of Invoices – Bid**

If you are willing to accept payment of invoices by Electronic Payment Instruments, complete Attachment 1 to Part 3, Electronic Payment Instruments, to identify which ones are accepted.

If Attachment 1 to Part 3, Electronic Payment Instruments is not completed, it will be considered as if Electronic Payment Instruments are not being accepted for payment of invoices.

Acceptance of Electronic Payment Instruments will not be considered as an evaluation criterion.

#### **3.1.3 Exchange Rate Fluctuation**

The requirement does not offer exchange rate fluctuation risk mitigation. Requests for exchange rate fluctuation risk mitigation will not be considered. All bids including such provision will render the bid non-responsive.

### **Section III: Certifications**

Bidders must submit the certifications and additional information required under Part 5.

## **PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION**

### **4.1 Evaluation Procedures**

- (a) Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical and financial evaluation.
- (b) An evaluation team composed of representatives of Canada will evaluate the bids.
- (c) Canada will use the Phased Bid Compliance Process described below.

#### **4.1.1 Phased Bid Compliance Process**

##### **4.1.1.1 (2018-07-19) General**

- (a) Canada is conducting the PBCP described below for this requirement.
- (b) Notwithstanding any review by Canada at Phase I or II of the PBCP, Bidders are and will remain solely responsible for the accuracy, consistency and completeness of their Bids and Canada does not undertake, by reason of this review, any obligations or responsibility for identifying any or all errors or omissions in Bids or in responses by a Bidder to any communication from Canada.

THE BIDDER ACKNOWLEDGES THAT THE REVIEWS IN PHASE I AND II OF THIS PBCP ARE PRELIMINARY AND DO NOT PRECLUDE A FINDING IN PHASE III THAT THE BID IS NON-RESPONSIVE, EVEN FOR MANDATORY

REQUIREMENTS WHICH WERE SUBJECT TO REVIEW IN PHASE I OR II AND NOTWITHSTANDING THAT THE BID HAD BEEN FOUND RESPONSIVE IN SUCH EARLIER PHASE. CANADA MAY DEEM A BID TO BE NON-RESPONSIVE TO A MANDATORY REQUIREMENT AT ANY PHASE.

THE BIDDER ALSO ACKNOWLEDGES THAT ITS RESPONSE TO A NOTICE OR A COMPLIANCE ASSESSMENT REPORT (CAR) (EACH DEFINED BELOW) IN PHASE I OR II MAY NOT BE SUCCESSFUL IN RENDERING ITS BID RESPONSIVE TO THE MANDATORY REQUIREMENTS THAT ARE THE SUBJECT OF THE NOTICE OR CAR, AND MAY RENDER ITS BID NON-RESPONSIVE TO OTHER MANDATORY REQUIREMENTS.

- (c) Canada may, in its discretion, request and accept at any time from a Bidder and consider as part of the Bid, any information to correct errors or deficiencies in the Bid that are clerical or administrative, such as, without limitation, failure to sign the Bid or any part or to checkmark a box in a form, or other failure of format or form or failure to acknowledge; failure to provide a procurement business number or contact information such as names, addresses and telephone numbers; inadvertent errors in numbers or calculations that do not change the amount the Bidder has specified as the price or of any component thereof that is subject to evaluation. This shall not limit Canada's right to request or accept any information after the bid solicitation closing in circumstances where the bid solicitation expressly provides for this right. The Bidder will have the time period specified in writing by Canada to provide the necessary documentation. Failure to meet this deadline will result in the Bid being declared non-responsive.
- (d) The PBCP does not limit Canada's rights under Standard Acquisition Clauses and Conditions

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(SACC) 2003 (2018-05-22) Standard Instructions – Goods or Services – Competitive Requirements nor Canada's right to request or accept any information during the solicitation period or after bid solicitation closing in circumstances where the bid solicitation expressly provides for this right, or in the circumstances described in subsection (c).

- (e) Canada will send any Notice or CAR by any method Canada chooses, in its absolute discretion. The Bidder must submit its response by the method stipulated in the Notice or CAR. Responses are deemed to be received by Canada at the date and time they are delivered to Canada by the method and at the address specified in the Notice or CAR. An email response permitted by the Notice or CAR is deemed received by Canada on the date and time it is received in Canada's email inbox at Canada's email address specified in the Notice or CAR. A Notice or CAR sent by Canada to the Bidder at any address provided by the Bidder in or pursuant to the Bid is deemed received by the Bidder on the date it is sent by Canada. Canada is not responsible for late receipt by Canada of a response, however caused.

#### **4.1.1.2 (2018-03-13) Phase I: Financial Bid**

- (a) After the closing date and time of this bid solicitation, Canada will examine the Bid to determine whether it includes a Financial Bid and whether any Financial Bid includes all information required by the solicitation. Canada's review in Phase I will be limited to identifying whether any information that is required under the bid solicitation to be included in the Financial Bid is missing from the Financial Bid. This review will not assess whether the Financial Bid meets any standard or is responsive to all solicitation requirements.
- (b) Canada's review in Phase I will be performed by officials of the Department of Public Works and Government Services.
- (c) If Canada determines, in its absolute discretion that there is no Financial Bid or that the Financial Bid is missing all of the information required by the bid solicitation to be included in the Financial Bid, then the Bid will be considered non-responsive and will be given no further consideration.
- (d) For Bids other than those described in c), Canada will send a written notice to the Bidder ("Notice") identifying where the Financial Bid is missing information. A Bidder, whose Financial Bid has been found responsive to the requirements that are reviewed at Phase I, will not receive a Notice. Such Bidders shall not be entitled to submit any additional information in respect of their Financial Bid.
- (e) The Bidders who have been sent a Notice shall have the time period specified in the Notice (the "Remedy Period") to remedy the matters identified in the Notice by providing to Canada, in writing, additional information or clarification in response to the Notice. Responses received after the end of the Remedy Period will not be considered by Canada, except in circumstances and on terms expressly provided for in the Notice.
- (f) In its response to the Notice, the Bidder will be entitled to remedy only that part of its Financial Bid which is identified in the Notice. For instance, where the Notice states that a required line item has been left blank, only the missing information may be added to the Financial Bid, except that, in those instances where the addition of such information will necessarily result in a change to other calculations previously submitted in its Financial Bid, (for example, the calculation to determine a total price), such necessary adjustments shall be identified by the Bidder and only these adjustments shall be made. All submitted information must comply with the requirements of this solicitation.

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- (g) Any other changes to the Financial Bid submitted by the Bidder will be considered to be new information and will be disregarded. There will be no change permitted to any other Section of the Bidder's Bid. Information submitted in accordance with the requirements of this solicitation in response to the Notice will replace, in full, **only** that part of the original Financial Bid as is permitted above, and will be used for the remainder of the bid evaluation process.
- (h) Canada will determine whether the Financial Bid is responsive to the requirements reviewed at Phase I, considering such additional information or clarification as may have been provided by the Bidder in accordance with this Section. If the Financial Bid is not found responsive for the requirements reviewed at Phase I to the satisfaction of Canada, then the Bid shall be considered non-responsive and will receive no further consideration.
- (i) Only Bids found responsive to the requirements reviewed in Phase I to the satisfaction of Canada, will receive a Phase II review.

#### **4.1.1.3 (2018-03-13) Phase II: Technical Bid**

- (a) Canada's review at Phase II will be limited to a review of the Technical Bid to identify any instances where the Bidder has failed to meet any Eligible Mandatory Criterion. This review will not assess whether the Technical Bid meets any standard or is responsive to all solicitation requirements. Eligible Mandatory Criteria are all mandatory technical criteria that are identified in this solicitation as being subject to the PBCP. Mandatory technical criteria that are not identified in the solicitation as being subject to the PBCP, will not be evaluated until Phase III.
- (b) Canada will send a written notice to the Bidder (Compliance Assessment Report or "CAR") identifying any Eligible Mandatory Criteria that the Bid has failed to meet. A Bidder whose Bid has been found responsive to the requirements that are reviewed at Phase II will receive a CAR that states that its Bid has been found responsive to the requirements reviewed at Phase II. Such Bidder shall not be entitled to submit any response to the CAR.
- (c) A Bidder shall have the period specified in the CAR (the "Remedy Period") to remedy the failure to meet any Eligible Mandatory Criterion identified in the CAR by providing to Canada in writing additional or different information or clarification in response to the CAR. Responses received after the end of the Remedy Period will not be considered by Canada, except in circumstances and on terms expressly provided for in the CAR.
- (d) The Bidder's response must address only the Eligible Mandatory Criteria listed in the CAR as not having been achieved, and must include only such information as is necessary to achieve such compliance. Any additional

information provided by the Bidder which is not necessary to achieve such compliance will not be considered by Canada, except that, in those instances where such a response to the Eligible Mandatory Criteria specified in the CAR will necessarily result in a consequential change to other parts of the Bid, the Bidder shall identify such additional changes, provided that its response must not include any change to the Financial Bid.



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- (e) The Bidder's response to the CAR should identify in each case the Eligible Mandatory Criterion in the CAR to which it is responding, including identifying in the corresponding section of the original Bid, the wording of the proposed change to that section, and the wording and location in the Bid of any other consequential changes that necessarily result from such change. In respect of any such consequential change, the Bidder must include a rationale explaining why such consequential change is a necessary result of the change proposed to meet the Eligible Mandatory Criterion. It is not up to Canada to revise the Bidder's Bid, and failure of the Bidder to do so in accordance with this subparagraph is at the Bidder's own risk. All submitted information must comply with the requirements of this solicitation.
- (f) Any changes to the Bid submitted by the Bidder other than as permitted in this solicitation, will be considered to be new information and will be disregarded. Information submitted in accordance with the requirements of this solicitation in response to the CAR will replace, in full, **only** that part of the original Bid as is permitted in this Section.
- (g) Additional or different information submitted during Phase II permitted by this section will be considered as included in the Bid, but will be considered by Canada in the evaluation of the Bid at Phase II only for the purpose of determining whether the Bid meets the Eligible Mandatory Criteria. It will not be used at any Phase of the evaluation to increase or decrease any score that the original Bid would achieve without the benefit of such additional or different information. For instance, an Eligible Mandatory Criterion that requires a mandatory minimum number of points to achieve compliance will be assessed at Phase II to determine whether such mandatory minimum score would be achieved with such additional or different information submitted by the Bidder in response to the CAR. If so, the Bid will be considered responsive in respect of such Eligible Mandatory Criterion, and the additional or different information submitted by the Bidder shall bind the Bidder as part of its Bid, but the Bidder's original score, which was less than the mandatory minimum for such Eligible Mandatory Criterion, will not change, and it will be that original score that is used to calculate any score for the Bid
- (h) Canada will determine whether the Bid is responsive for the requirements reviewed at Phase II, considering such additional or different information or clarification as may have been provided by the Bidder in accordance with this Section. If the Bid is not found responsive for the requirements reviewed at Phase II to the satisfaction of Canada, then the Bid shall be considered non-responsive and will receive no further consideration.
- (i) Only Bids found responsive to the requirements reviewed in Phase II to the satisfaction of Canada, will receive a Phase III evaluation.

#### **4.1.1.4 (2018-03-13) Phase III: Final Evaluation of the Bid**

- (a) In Phase III, Canada will complete the evaluation of all Bids found responsive to the requirements reviewed at Phase II. Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical and financial evaluation criteria.
- (b) A Bid is non-responsive and will receive no further consideration if it does not meet all mandatory evaluation criteria of the solicitation.

#### **4.1.2 Technical Evaluation**

For evaluation purposes, the Technical Bids will proceed through the following three (3) stages, in conjunction with the Phased Bid Compliance Process described above at 4.1.1. Only bids that pass Phase I above will be considered in this Technical Evaluation. Bids that do not pass Phase I will be deemed NON-RESPONSIVE and receive no further consideration.

##### **4.1.2.1 Technical Evaluation Stage 1 - Mandatory Technical Criteria**

**The Phased Bid Compliance Process will apply to all mandatory technical criteria.**

See Attachment 1 to Part 4, Mandatory Technical Criteria, for complete details of the technical criteria which a bid must be compliant with in order to pass to the next stage of the technical evaluation.

The evaluation team will review each bid individually and assess for demonstrated compliance to those Mandatory Technical requirements. The evaluation team will review the entire bid until all mandatory technical requirements have been considered.

If a bid fails to meet one or more of the mandatory technical requirements, it is declared NON-RESPONSIVE and will receive no further consideration. Reasons for declaring a bid as NON-RESPONSIVE will be clearly documented by the evaluation team. Bids deemed compliant with all of the Mandatory Technical Criteria will be considered for further evaluation and be scored in accordance with Technical Evaluation Stage 2 – Point Rated Technical Criteria.

##### **4.1.2.2 Technical Evaluation Stage 2 - Point Rated Technical Criteria**

See Attachment 2 to Part 4, Point Rated Technical Criteria, for complete details of the rated criteria for which the bid will be scored. The evaluation team will review each bid individually and allocate points in accordance with the scoring grid based on the information demonstrated in the bid.

The evaluation team will document the points achieved for each Point Rated Technical Criteria and the points will be tallied to come to a total score for this stage and provide to PWGSC. In the event points allocated for each criteria differ amongst the members of the evaluation team, PWGSC will hold a Consensus Meeting with the evaluation team to come to agreement and the Overall Technical Score.

#### **4.1.3 Financial Evaluation**

For evaluation purposes only, PWGSC will conduct the financial evaluation based on the methodology detailed in Attachment 3 to Part 4, Financial Bid Presentation and Evaluation Sheet, independently of the technical evaluation and in conjunction with the Phased Bid Compliance Process described at 4.1.1.

#### **4.2 Basis of Selection**

##### **4.2.1 Basis of Selection – Highest Combined Rating of Technical Merit and Price**

1. To be declared responsive, a bid must:
  - a. Comply with all the requirements of the bid solicitation; and
  - b. Meet all mandatory criteria.
2. Bids not meeting (a) or (b) will be declared non-responsive.

3. The selection will be based on the highest responsive combined rating of technical merit and price. The ratio will be 60% for the technical merit and 40% for the price.
4. To establish the technical merit score, the overall technical score for each responsive bid will be determined as follows: total number of points obtained / maximum number of points available multiplied by the ratio of 60%.
5. To establish the pricing score, each responsive bid will be prorated against the lowest evaluated price and the ratio of 40%.
6. For each responsive bid, the merit score and the pricing score will be added to determine its combined rating.
7. Neither the responsive bid obtaining the highest technical score nor the one with the lowest evaluated price will necessarily be accepted. The responsive bid with the highest combined rating of technical merit and price will be recommended for award of a contract, provided that the Bid Evaluated Price does not exceed the Maximum Funding for this requirement identified in Attachment 4 to Part 4, Financial Bid Presentation and Evaluation Sheet.

The table below illustrates an example where all three bids are responsive and the selection of the contractor is determined by a 60/40 ratio of technical merit and price, respectively. The total available points equals 135 and the lowest evaluated price is \$45,000 (45). Values used are for example purposes only.

Basis of Selection - Highest Combined Rating Technical Merit (60%) and Price (40%)				
		Bidder 1	Bidder 2	Bidder 3
Overall Technical Score		115/135	89/135	92/135
Bid Evaluated Price		\$55,000.00	\$50,000.00	\$45,000.00
Calculations	Technical Merit Score	$115/135 \times 60 = 51.11$	$89/135 \times 60 = 39.56$	$92/135 \times 60 = 40.89$
	Pricing Score	$45/55 \times 40 = 32.73$	$45/50 \times 40 = 36.00$	$45/45 \times 40 = 40.00$
Combined Rating		83.84	75.56	80.89
Overall Rating		1st	3rd	2nd

In the event more than one responsive bid has the same highest Combined Rating, the responsive bid of those with the highest Combined Rating that has the highest total score for the Operations and Maintenance Cost Evaluation will be recommended for contract award. Bidders who have not met the Conditions for Contracting in the time allotted for contracting by Canada will be deemed non-responsive and their bids will be disqualified.

Canada reserves the right to enter into contract negotiations with the Bidder who has submitted a responsive bid with the highest Combined Rating before recommending the Bidder for contract award. Only one contract will be issued as a result of this bid solicitation.

## PART 5 – CERTIFICATIONS AND ADDITIONAL INFORMATION

Bidders must provide the required certifications and additional information to be awarded a contract.

The certifications provided by Bidders to Canada are subject to verification by Canada at all times. Unless specified otherwise, Canada will declare a bid non-responsive, or will declare a contractor in default if any certification made by the Bidder is found to be untrue, whether made knowingly or unknowingly, during the bid evaluation period or during the contract period.

The Contracting Authority will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply and to cooperate with any request or requirement imposed by the Contracting Authority will render the bid non-responsive or constitute a default under the Contract.

### 5.1 Certifications and Additional Information Required with the Bid

Bidders must submit the following duly completed certifications as part of their bid.

#### 5.1.1 Integrity Provisions - Declaration of Convicted Offences

In accordance with the Integrity Provisions of the Standard Instructions, all bidders must provide with their bid, **if applicable**, the Integrity declaration form available on the [Forms for the Integrity Regime](http://www.tpsgc-pwgsc.gc.ca/ci-if/declaration-eng.html) website (<http://www.tpsgc-pwgsc.gc.ca/ci-if/declaration-eng.html>), to be given further consideration in the procurement process.

#### 5.1.2 List of Proposed Subcontractors

If the bid includes the use of subcontractors, the Bidder must provide a list of all subcontractors including a description of the things to be purchased, a description of the work to be performed and the location of the performance of that work. The list should not include the purchase of off-the-shelf items, software and such standard articles and materials as are ordinarily produced by manufacturers in the normal course of business, or the provision of such incidental services as might ordinarily be subcontracted in performing the Work.

### 5.2 Certifications Precedent to Contract Award and Additional Information

The certifications and additional information listed below should be submitted with the bid but may be submitted afterwards. If any of these required certifications or additional information is not completed and submitted as requested, the Contracting Authority will inform the Bidder of a time frame within which to provide the information. Failure to provide the certifications or the additional information listed below within the time frame specified will render the bid non-responsive.

#### 5.2.1 Integrity Provisions – Required Documentation

In accordance with the [Ineligibility and Suspension Policy](http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html) (<http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html>), the Bidder must provide the required documentation, as applicable, to be given further consideration in the procurement process.

### 5.2.2 Federal Contractors Program for Employment Equity - Bid Certification

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "FCP Limited Eligibility to Bid" list available at the bottom of the page of the [Employment and Social Development Canada \(ESDC\) - Labour's website](http://www.esdc.gc.ca/en/jobs/workplace/human_rights/employment_equity/federal_contractor_program.page?&_ga=1.229006812.1158694905.1413548969#afed) ([http://www.esdc.gc.ca/en/jobs/workplace/human\\_rights/employment\\_equity/federal\\_contractor\\_program.page?&\\_ga=1.229006812.1158694905.1413548969#afed](http://www.esdc.gc.ca/en/jobs/workplace/human_rights/employment_equity/federal_contractor_program.page?&_ga=1.229006812.1158694905.1413548969#afed)).

Canada will have the right to declare a bid non-responsive if the Bidder, or any member of the Bidder if the Bidder is a Joint Venture, appears on the "FCP Limited Eligibility to Bid" list at the time of contract award.

Canada will also have the right to terminate the Contract for default if a Contractor, or any member of the Contractor if the Contractor is a Joint Venture, appears on the "[FCP Limited Eligibility to Bid](#)" list during the period of the Contract.

The Bidder must provide the Contracting Authority with a completed Attachment 1 to Part 5, [Federal Contractors Program for Employment Equity - Certification](#), before contract award. If the Bidder is a Joint Venture, the Bidder must provide the Contracting Authority with a completed Federal Contractors Program for Employment Equity - Certification, for each member of the Joint Venture.

### 5.2.3 Rate or Price Certification for Optional Goods

The Bidder certifies that the Firm Rates and Firm Prices proposed:

- a. are not in excess of the lowest rates or prices charged anyone else, including the Bidder's most favoured customer, for the like quality and quantity of the goods, services or both;

The Bidder must provide, on Canada's request, on or more of the following price support:

- a. a current published price list indicating the percentage discount available to Canada
- b. a copy of paid invoices for the like quality and quantity of the goods, services or both sold to other customers; or
- c. any other supporting documentation as requested by Canada.

## PART 6 - SECURITY, FINANCIAL AND OTHER REQUIREMENTS

### 6.1 Security Requirements

There is no security requirement associated with this procurement.

### 6.2 Financial Capability

1. **Financial Capability Requirement:** The Bidder must have the financial capability to fulfill this requirement. To determine the Bidder's financial capability, the Contracting Authority may, by written notice to the Bidder, require the submission of some or all of the financial information detailed below during the evaluation of bids. The Bidder must provide the following information to the Contracting Authority within fifteen (15) working days of the request or as specified by the Contracting Authority in the notice:
  - a. Audited financial statements, if available, or the unaudited financial statements (prepared by the Bidder's outside accounting firm, if available, or prepared in-house if no external statements have been prepared) for the Bidder's last three fiscal years, or for the years that the Bidder has been in business if this is less than three years (including, as a minimum, the Balance Sheet, the Statement of Retained Earnings, the Income Statement and any notes to the statements).
  - b. If the date of the financial statements in (a) above is more than five months before the date of the request for information by the Contracting Authority, the Bidder must also provide, unless this is prohibited by legislation for public companies, the last quarterly financial statements (consisting of a Balance Sheet and a year-to-date Income Statement), as of two months before the date on which the Contracting Authority requests this information.
  - c. If the Bidder has not been in business for at least one full fiscal year, the following must be provided:
    - i. the opening Balance Sheet on commencement of business (in the case of a corporation, the date of incorporation); and
    - ii. the last quarterly financial statements (consisting of a Balance Sheet and a year-to-date Income Statement) as of two months before the date on which the Contracting Authority requests this information.
  - d. A certification from the Chief Financial Officer or an authorized signing officer of the Bidder that the financial information provided is complete and accurate.
  - e. A confirmation letter from all of the financial institution(s) that have provided short-term financing to the Bidder outlining the total of lines of credit granted to the Bidder and the amount of credit that remains available and not drawn upon as of one month prior to the date on which the Contracting Authority requests this information.
  - f. A detailed monthly Cash Flow Statement covering all the Bidder's activities (including the requirement) for the first two years of the requirement that is the subject of the bid solicitation, unless this is prohibited by legislation. This statement must detail the Bidder's major sources and amounts of cash and the major items of cash expenditures on a monthly basis, for all the Bidder's activities. All assumptions made should be explained as well as details of how cash shortfalls will be financed.

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- g. A detailed monthly Project Cash Flow Statement covering the first two years of the requirement that is the subject of the bid solicitation, unless this is prohibited by legislation. This statement must detail the Bidder's major sources and amounts of cash and the major items of cash expenditures, for the requirement, on a monthly basis. All assumptions made should be explained as well as details of how cash shortfalls will be financed.
2. If the Bidder is a joint venture, the financial information required by the Contracting Authority must be provided by each member of the joint venture.
3. If the Bidder is a subsidiary of another company, then any financial information in 1. (a) to (f) above required by the Contracting Authority must be provided by the ultimate parent company. Provision of parent company financial information does not by itself satisfy the requirement for the provision of the financial information of the Bidder, and the financial capability of a parent cannot be substituted for the financial capability of the Bidder itself unless an agreement by the parent company to sign a Parental Guarantee, as drawn up by Public Works and Government Services Canada (PWGSC), is provided with the required information.
4. **Financial Information Already Provided to PWGSC:** The Bidder is not required to resubmit any financial information requested by the Contracting Authority that is already on file at PWGSC with the Contract Cost Analysis, Audit and Policy Directorate of the Policy, Risk, Integrity and Strategic Management Sector, provided that within the above-noted time frame:
- a. the Bidder identifies to the Contracting Authority in writing the specific information that is on file and the requirement for which this information was provided; and
  - b. the Bidder authorizes the use of the information for this requirement.
- It is the Bidder's responsibility to confirm with the Contracting Authority that this information is still on file with PWGSC.
5. **Other Information:** Canada reserves the right to request from the Bidder any other information that Canada requires to conduct a complete financial capability assessment of the Bidder.
6. **Confidentiality:** If the Bidder provides the information required above to Canada in confidence while indicating that the disclosed information is confidential, then Canada will treat the information in a confidential manner as permitted by the [Access to Information Act](#), R.S., 1985, c. A-1, Section 20(1) (b) and (c).
7. **Security:** In determining the Bidder's financial capability to fulfill this requirement, Canada may consider any security the Bidder is capable of providing, at the Bidder's sole expense (for example, an irrevocable letter of credit from a registered financial institution drawn in favour of Canada, a performance guarantee from a third party or some other form of security, as determined by Canada).

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### 6.3 Controlled Goods Program – Bid

1. As the resulting contract will require the production of or access to controlled goods that are subject to the [Defence Production Act](#), R.S. 1985, c. D-1, bidders are advised that within Canada only persons who are registered, exempt or excluded under the Controlled Goods Program (CGP) are lawfully entitled to examine, possess or transfer controlled goods. Details on how to register under the CGP are available at: [Controlled Goods Program](#) and registration is carried out as follows:
  - a. When the bid solicitation includes controlled goods information or technology, the Bidder must be registered, exempt or excluded under the CGP before receiving the bid solicitation. Requests for technical data packages or specifications related to controlled goods should be made in writing to the Contracting Authority identified in the bid solicitation and must contain the CGP registration number or written proof of exemption or exclusion of the Bidder and of any other person to whom the Bidder will give access to the controlled goods.
  - b. When the bid solicitation does not include controlled goods information or technology but the resulting contract requires the production of or access to controlled goods, the successful Bidder and any subcontractor who will be producing or accessing controlled goods must be registered, exempt or excluded under the CGP before examining, possessing or transferring controlled goods.
  - c. When the successful Bidder and any subcontractor proposed to examine, possess or transfer controlled goods are not registered, exempt or excluded under the CGP at time of contract award, the successful Bidder and any subcontractor must, within seven (7) working days from receipt of written notification of contract award, ensure that the required application(s) for registration or exemption are submitted to the CGP. No examination, possession or transfer of controlled goods must be performed until the successful Bidder has provided proof, satisfactory to the Contracting Authority that the successful Bidder and any subcontractor are registered, exempt, or excluded under the CGP.

Failure to provide proof, satisfactory to the Contracting Authority, that the successful Bidder and any subcontractor are registered, exempt or excluded under the CGP, within thirty (30) days from receipt of written notification of contract award, will be considered a default under the resulting contract except to the extent that Canada is responsible for the failure due to delay in processing the application.

2. Bidders are advised that all information on the Application for Registration (or exemption) Form will be verified and errors or inaccuracies may cause significant delays and/or result in denial of registration or exemption.

### 6.4 Insurance- Proof of Availability Prior to Contract Award

The Bidder must provide a letter from an insurance broker or an insurance company licensed to operate in Canada stating that the Bidder, if awarded a contract as a result of the bid solicitation, can be insured in accordance with the Insurance Requirements specified in Annex E.

If the information is not provided in the bid, the Contracting Authority will so inform the Bidder and provide the Bidder with a time frame within which to meet the requirement. Failure to comply with the request of the Contracting Authority and meet the requirement within that time period will render the bid non-responsive.



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## PART 7 - RESULTING CONTRACT CLAUSES

The following clauses and conditions apply to and form part of any contract resulting from the bid solicitation.

### 7.1 Statement of Work

The Contractor must perform the Work in accordance with the Statement of Work at Annex A.

#### 7.1.1 Optional Goods

The Contractor grants to Canada the irrevocable option to acquire the goods described at Annex A, Statement of Work, Article 13, Optional Goods, under the same conditions and at the prices and/or rates stated in the Contract.

Optional Goods will be purchased using the Task Authorization described at 7.1.2 below.

#### 7.1.2 Task Authorization

The Optional Goods to be performed under the Contract will be on an "as and when requested basis" using a Task Authorization (TA). The Work described in the TA must be in accordance with the scope of the Contract.

##### 7.1.2.1 Task Authorization Process

1. The Project Authority will provide the Contractor with a description of the task using the Task Authorization" form specified in Annex C.
2. The Task Authorization (TA) will contain the details of the activities to be performed, a description of the deliverables, and a schedule indicating completion dates for the major activities or submission dates for the deliverables. The TA will also include the applicable basis (bases) and methods of payment as specified in the Contract.
3. The Contractor must provide the Project Authority, within 5 calendar days of its receipt, the proposed total estimated cost for performing the task and a breakdown of that cost, established in accordance with the Basis of Payment specified in the Contract.
4. The Contractor must not commence work until a TA authorized by the Project Authority and the Contracting Authority has been received by the Contractor. The Contractor acknowledges that any work performed before an authorized TA has been received will be done at the Contractor's own risk.

##### 7.1.2.4 Canada's Obligation - Portion of the Work - Task Authorizations

Canada's obligation with respect to the portion of the Work under the Contract that is performed through task authorizations is limited to the total amount of the actual tasks performed by the Contractor

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## 7.2 Standard Clauses and Conditions

All clauses and conditions identified in the Contract by number, date and title are set out in the Standard Acquisition Clauses and Conditions Manual(<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

### 7.2.1 General Conditions

\*2030 (2018-06-21), General Conditions - Higher Complexity - Goods; and  
2035 (2018-06-21), General Conditions – Higher Complexity – Services,  
apply to and form part of the Contract.

\* 2030 is amended as follows:

Section 22, Warranty, sub-section 1, replace the period of 12 months with:

- a. for the RPAS, 24 months, and
- b. for Spares, Tooling, Equipment and Ground Support Equipment, 12 months after installation or four (4) years, whichever occurs first,

1031-2 (2012-07-16), Contract Cost Principles

### 7.2.2 Supplemental General Conditions

The following supplemental general conditions apply to and form part of the Contract:

4001 (2015-04-01), Hardware Purchase, Lease and Maintenance;  
4002 (2010-08-16), Software Development or Modification Services;  
4003 (2010-08-16), Licensed Software;  
4006 (2010-08-16), Contractor to Own Intellectual Property Rights in Foreground Information.

### 7.2.3 List of Authorized Subcontractors

Further to General Conditions 2030 Section 06, Subcontracts, the Contractor is authorized to subcontract with the List of Authorized Subcontractors at Annex D for the work to be performed and at the location described therein.

## 7.3 Security Requirements

7.3.1 There is no security requirement applicable to the Contract.

## 7.4 Term of Contract

### 7.4.1 Period of the Contract

The period of the Contract is from date of Contract to (MM-DD-YYYY) inclusive. **(date to be inserted at contract award will be five (5) years from date of Contract).**

### 7.4.2 Delivery Date

The RPAS must be delivered on or before 24 months from date of Contract.

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#### 7.4.3 Comprehensive Land Claims Agreements (CLCAs)

The Contract is subject to the Comprehensive Land Claims Agreement(s) in the Northwest Territories, Nunavut, northern Quebec, and northern Labrador. Operations by Transport Canada's National Aerial Surveillance Program of the RPAS occurs in those areas. During the period of the Contract, the Contractor will perform Acceptance Testing by flight demonstration in Iqaluit.

Delivery of the RPAS and spares by the Contractor under the contract is to Ottawa, Ontario or a designated facility within 350KM. Final delivery of the RPAS and spares by Canada may be to Iqaluit, depending on the solution provided by the selected Contractor.

#### 7.4.4 Delivery Points

Delivery of the requirement will be made to Transport Canada, Aircraft Services Directorate, 200 Comet Private, Hangar T- 58, Ottawa Airport, Ottawa Ontario (or to a designated facility within 350KM of Ottawa, Ontario).

### 7.5 Authorities

#### 7.5.1 Contracting Authority

The Contracting Authority for the Contract is:

Lena Bootsma  
Supply Specialist  
Public Works and Government Services Canada  
Acquisitions Branch  
Aerospace Equipment Program Directorate  
11 Laurier Street, Portage III, 8C1-45  
Gatineau, Quebec K1A 0S5

Telephone: 873-469-3864  
E-mail: lena.bootsma@tpsgc-pwgsc.gc.ca

The Contracting Authority is responsible for the management of the Contract and any changes to the Contract must be authorized in writing by the Contracting Authority. The Contractor must not perform work in excess of or outside the scope of the Contract based on verbal or written requests or instructions from anybody other than the Contracting Authority.

#### 7.5.2 Project Authority

The Project Authority for the Contract is:

***(to be inserted at Contract award)***

Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Organization: \_\_\_\_\_  
Address: \_\_\_\_\_

Telephone: \_\_\_\_-\_\_\_\_-\_\_\_\_\_  
Facsimile: \_\_\_\_-\_\_\_\_-\_\_\_\_\_  
E-mail address: \_\_\_\_\_

The Project Authority is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters concerning the technical content of the Work under the Contract. Technical matters may be discussed with the Project Authority; however, the Project Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

### 7.5.3 Contractor's Representative

**(to be inserted at Contract award)**

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Organization: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_-\_\_\_\_-\_\_\_\_

E-mail address: \_\_\_\_\_

### 7.6 Payment

#### 7.6.1 Basis of Payment for RPAS & Initial Training– Firm Price

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid a firm price as specified in Annex B. Customs duties are included and Applicable Taxes are extra. Canada will not pay the Contractor for any design changes, modifications or interpretations of the Work, unless they have been approved, in writing, by the Contracting Authority before their incorporation into the Work.

#### 7.6.2 Basis of Payment for Task Authorizations of Optional Goods

##### **Basis of Payment – Firm Unit Price(s) or Firm Lot Price - Task Authorizations**

In consideration of the Contractor satisfactorily completing all of its obligations under the authorized Task Authorization (TA), the Contractor will be paid the firm unit price(s) in accordance with the Basis of Payment in Annex B, as specified in the authorized TA. Customs duties are included and Goods and Applicable Taxes are extra.

Canada will not pay the Contractor for any design changes, modifications or interpretations of the Work unless they have been approved, in writing, by the Technical Authority before their incorporation into the Work.

##### **7.6.2.1 Limitation of Expenditure – Cumulative Total of all Task Authorizations**

1. Canada's total liability to the Contractor under the Contract for all authorized Task Authorizations (TAs), inclusive of any revisions, must not exceed the Total Estimated Cost to a Limitation of Expenditure as specified in Annex B. Customs duties are included and Applicable Taxes are extra.
2. No increase in the total liability of Canada will be authorized or paid to the Contractor unless an increase has been approved, in writing, by the Contracting Authority.

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3. The Contractor must notify the Contracting Authority in writing as to the adequacy of this sum:
    - a. when it is 75 percent committed, or
    - b. four (4) months before the contract expiry date, or
    - c. as soon as the Contractor considers that the sum is inadequate for the completion of the Work required in all authorized TAs, inclusive of any revisions, whichever comes first.
  4. If the notification is for inadequate contract funds, the Contractor must provide to the Contracting Authority, a written estimate for the additional funds required. Provision of such information by the Contractor does not increase Canada's liability.

### **7.6.3 Method of Payment**

#### **7.6.3.1 Method of Payment for RPAS & Initial Training - Milestone Payments**

Canada will make milestone payments in accordance with the Schedule of Payment Milestones detailed in Annex B, Basis of Payment, and the payment provisions of the Contract if:

- a. an accurate and complete claim for payment using [PWGSC-TPSGC 1111](#), Claim for Progress Payment, and any other document required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
- b. all the certificates appearing on form [PWGSC-TPSGC 1111](#) have been signed by the respective authorized representatives;
- c. all work associated with the milestone and as applicable any deliverable required has been completed and accepted by Canada.

#### **7.6.3.2 Method of Payment for Task Authorizations of Optional Goods**

One of the types of method of payment at (a) or (b) below will form part of the authorized Task Authorization (TA).

##### **(a) Single Payment**

Canada will pay the Contractor upon completion and delivery of the Work in accordance with the payment provisions of the Contract if:

- a. an accurate and complete invoice and any other documents required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
- b. all such documents have been verified by Canada;
- c. the Work delivered has been accepted by Canada.

##### **(b) Multiple Payments**

Canada will pay the Contractor upon completion and delivery of units in accordance with the payment provisions of the Contract if:

- 
- a. an accurate and complete invoice and any other documents required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
  - b. all such documents have been verified by Canada;
  - c. the Work delivered has been accepted by Canada.

#### **7.6.4 SACC Manual Clauses**

A9117C (2007-11-30), T1204 – Direct Request by Customer Department  
C2000C (2007-11-30), Taxes – Foreign-based Contractor

#### **7.6.5 Electronic Payment of Invoices – Contract**

*Contract will reproduce below as per Contractor's bid, Attachment 1 to Part 3, Electronic Payment Instruments.*

The Contractor accepts to be paid using any of the following Electronic Payment Instrument(s):

- a. Direct Deposit (Domestic and International);
- b. Electronic Data Interchange (EDI);
- c. Wire Transfer (International Only);

#### **7.6.6 Discretionary Audit**

SACC Manual Clause C0705C (2010-01-11), Discretionary Audit

#### **7.7 Invoicing Instructions – Progress Payment Claim**

1. The Contractor must submit a claim for payment using form [PWGSC-TPSGC 1111](#), Claim for Progress Payment.

Each claim must show:

- a. all information required on form [PWGSC-TPSGC 1111](#);
- b. all applicable information detailed under the section entitled "Invoice Submission" of the general conditions;
- c. the description and value of the milestone claimed as detailed in the Contract.

Each claim must be supported by:

- a. a copy of the monthly progress report.
2. Applicable Taxes must be calculated on the total amount of the claim.
  3. The Contractor must prepare and certify one original of the claim on form [PWGSC-TPSGC 1111](#), and forward it electronically to the Project Authority identified under the section entitled

"Authorities" of the Contract for appropriate certification after inspection and acceptance of the Work takes place. The Project Authority will then forward the claim to the Contracting Authority for certification and onward submission to the Payment Office for the remaining certification and payment action.

4. The Contractor must not submit claims until all work identified in the claim is completed.

## **7.8 Certifications and Additional Information**

### **7.8.1 Compliance**

Unless specified otherwise, the continuous compliance with the certifications provided by the Contractor in its bid or precedent to contract award, and the ongoing cooperation in providing additional information are conditions of the Contract and failure to comply will constitute the Contractor in default. Certifications are subject to verification by Canada during the entire period of the Contract.

### **7.8.2 Federal Contractors Program for Employment Equity - Default by the Contractor**

The Contractor understands and agrees that, when an Agreement to Implement Employment Equity (AIEE) exists between the Contractor and Employment and Social Development Canada (ESDC)-Labour, the AIEE must remain valid during the entire period of the Contract. If the AIEE becomes invalid, the name of the Contractor will be added to the "[FCP Limited Eligibility to Bid](#)" list. The imposition of such a sanction by ESDC will constitute the Contractor in default as per the terms of the Contract.

## **7.9 Applicable Laws**

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in \_\_\_\_\_. (will be Ontario, Canada unless another Canadian province or territory is specified by the Bidder in its bid)

## **7.10 Priority of Documents**

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

- (a) the Articles of Agreement;
- (b) the supplemental general conditions:
  - 4001 (2015-04-01), Hardware Purchase, Lease and Maintenance;
  - 4002 (2010-08-16), Software Development or Modification Services;
  - 4003 (2010-08-16), Licensed Software;
  - 4006 (2010-08-16), Contractor to Own Intellectual Property Rights in Foreground Information;
- (c) the general conditions - [2030 \(2018-06-21\)](#), General Conditions - Higher Complexity – Goods; and [2035 \(2018-06-21\)](#), General Conditions – Higher Complexity – Services;
- (d) Annex A, Statement of Work;
- (e) Annex B, Basis of Payment;
- (f) the signed Task Authorizations (including all of its annexes, if any) ;
- (g) Annex D, List of Authorized Subcontractors;
- (h) the Contractor's bid dated \_\_\_\_\_,

## **7.11 Foreign Nationals (Canadian Contractor [OR](#) Foreign Contractor)**

SACC Manual clause [A2000C](#) (2006-06-16) Foreign Nationals (Canadian Contractor)

[OR](#)

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SACC Manual clause [A2001C](#) (2006-06-16) Foreign Nationals (Foreign Contractor)

## 7.12 Insurance – Specific Requirements

The Contractor must comply with the insurance requirements specified in Annex E. The Contractor must maintain the required insurance coverage for the duration of the Contract. Compliance with the insurance requirements does not release the Contractor from or reduce its liability under the Contract.

The Contractor is responsible for deciding if additional insurance coverage is necessary to fulfill its obligation under the Contract and to ensure compliance with any applicable law. Any additional insurance coverage is at the Contractor's expense, and for its own benefit and protection.

The Contractor must forward to the Contracting Authority within ten (10) days after the date of award of the Contract, a Certificate of Insurance evidencing the insurance coverage and confirming that the insurance policy complying with the requirements is in force. For Canadian-based Contractors, coverage must be placed with an Insurer licensed to carry out business in Canada, however, for Foreign-based Contractors, coverage must be placed with an Insurer with an A.M. Best Rating no less than "A-". The Contractor must, if requested by the Contracting Authority, forward to Canada a certified true copy of all applicable insurance policies.

## 7.13 Controlled Goods Program - Contract

1. As the Contract requires production of or access to controlled goods that are subject to the [Defence Production Act](#) R.S. 1985, c. D-1, the Contractor and any subcontractor are advised that, within Canada, only persons who are registered, exempt or excluded under the Controlled Goods Program (CGP) are lawfully entitled to examine, possess or transfer controlled goods. Details on how to register under the CGP are available at: [Controlled Goods Program](#)
2. When the Contractor and any subcontractor proposed to examine, possess or transfer controlled goods are not registered, exempt or excluded under the CGP at time of contract award, the Contractor and any subcontractor must, within seven (7) working days from receipt of written notification of the contract award, ensure that the required application(s) for registration or exemption are submitted to the CGP. No examination, possession or transfer of controlled goods must be performed until the Contractor has provided proof, satisfactory to the Contracting Authority, that the Contractor and any subcontractor are registered, exempt or excluded under the CGP.  
Failure of the Contractor to provide proof, satisfactory to the Contracting Authority, that the Contractor and any subcontractor are registered, exempt or excluded under the CGP, within thirty (30) days from receipt of written notification of contract award, will be considered a default under the Contract except to the extent that Canada is responsible for the failure due to delay in processing the application.
3. The Contractor and any subcontractor must maintain registration, exemption or exclusion from the CGP for the duration of the Contract and in any event for so long as they will examine, possess or transfer controlled goods

## 7.14 Loss or Damage to Remotely Piloted Aircraft System Prior to Delivery

Should a Remotely Piloted Aircraft System be damaged prior to the delivery and title transfer, the Contractor is responsible for repairing the RPAS or, if the RPAS is damaged beyond repair, for replacing the damaged RPAS.



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## 7.15 Inspection and Acceptance

The Project Authority is the Inspection Authority. All reports, deliverable items, documents, goods and all services rendered under the Contract are subject to inspection by the Inspection Authority or representative. Should any report, document, good or service not be in accordance with the requirements of the Statement of Work and to the satisfaction of the Inspection Authority, as submitted, the Inspection Authority will have the right to reject it or require its correction at the sole expense of the Contractor before recommending payment.

## 7.16 Final Acceptance

The Contractor must provide seven (7) calendar days' notice to the Project Authority and Contracting Authority before the RPAS will be ready for preliminary inspection and final acceptance.

1. Inspection will be carried out by the Project Authority at time of acceptance. All Work completed on the aircraft will be inspected in compliance with the requirements identified in Annex A, Statement of Work, and, if applicable, of the Canadian Aviation Regulations and is subject to final verification by the Technical Authority.
2. Acceptance procedures are described in Annex A Statement of Work.
3. The Contractor must provide reasonable office space, equipment and access to clerical assistance to the inspection personnel to aid in the acceptance and delivery process.
4. Any items not accompanying the completed RPAS must be delivered in accordance with Incoterms 2010, DDP (Delivered Duty Paid) to Transport Canada in Ottawa, ON, or a designated facility within 350km.

## 7.17 Delivery Inspection

Inspection and acceptance must be carried out by and to the satisfaction of Canada at destination. The Contractor must demonstrate to the satisfaction of the Project Authority or his/her representative, that the equipment meets the specification as detailed under the Annex A. Any defects or damages noted during delivery inspection must be documented. The Contractor will be responsible for and assume all costs to repair any such defects or damages. Should the work or any portion thereof not be in accordance with the requirements of any resultant contract, the Project Authority, or his/her authorized representative, has the right to reject it or to require its correction. Provided that the RPAS is free from defects and damages, Canada will assume ownership of the RPAS. The transfer of the RPAS titles and deeds to Canada will constitute delivery of the RPAS to Canada.

Any formal communication with the Contractor regarding the quality of the work must be undertaken by the Project Authority through the Contracting Authority.

## 7.18 Conditions for transfer of the Remotely Piloted Aircraft System

1. Title and risk of loss in and to the RPAS will transfer from the Contractor to Canada and be accepted by Canada from the Contractor on the applicable final delivery inspection date, subject to the provisions of Article 7.16, Delivery Inspection.
2. Canada's obligation to take delivery, possession and risk of loss in and to the (RPAS) on the applicable Final Delivery Date hereunder from the Contractor will be subject to the occurrence of the following events and the receipt by Canada of the following documents on the applicable Final Delivery Date (save and except if Canada expressly waives occurrence or receipt of same):
  - a) a current standard Certificate of Airworthiness in the transport category issued by Transport Canada for the completed RPAS in the case of OPV for manned configuration;

- 
- b) an assignment of warranties for the completed RPAS executed by the Contractor in favour of Canada;
  - c) that the completed RPAS conforms to the description set forth in Annex "A" attached hereto;
  - d) Canada having satisfactorily completed the inspection of the completed RPAS and the Contractor having made all corrections to deficiencies and non-conformities to the completed RPAS.

#### **7.19 Notice of Labour Disputes**

Whenever the Contractor has knowledge that any actual or potential labour dispute is delaying or threatens to delay the timely performance of this Contract, the Contractor shall immediately give notice thereof, including all relevant information with respect thereto, to the Contracting Authority

#### **7.20 Liens – Section 427 of the Bank Act**

1. If any lien under section 427 of the Bank Act exists in respect to any materials, parts, work-in-process, or finished work for which the Contractor intends to claim payment, the Contractor agrees to inform the Contracting Authority without delay and agrees, unless otherwise instructed by the Contracting Authority, either
  - a) to cause the bank to remove such lien and to furnish the Contracting Authority, with written confirmation from the bank; or,
  - b) to furnish or cause to be furnished to the Contracting Authority an undertaking from the bank to the Contracting Authority that the bank will not make any claim under section 427 of the Bank Act on materials, parts, work-in-process, or finished work in respect of which payment is made to the Contractor under this Contract.
2. Failure to inform the Contracting Authority of such lien or failure to implement paragraph 1(a) or (b) above shall constitute default under the clause entitled "Default by Contractor" in the General Conditions of the Contract and shall entitle Canada to terminate the Contract.

#### **7.21 Shipping Instructions - Delivery at Destination**

Goods must be consigned to the destination specified in the Contract and Delivered Duty Paid (DDP) to Ottawa, ON, Canada (or to a designated facility within 350KM of Ottawa, Ontario), Incoterms 2010 for all shipments from a commercial contractor.

#### **7.22 Rights to Reproduce Documentation**

Where documentation deliverables provided by the Contractor as described in the attached Statement of Work represents or contains intellectual property owned by the Contractor, Canada has the right to reproduce and translate such documentation provided that such reproductions and translations be solely for the use of Canada and that reproductions and translations be subject to the same restrictions on use and disclosure as may apply to the Contractor-owned documentation. Canada is not obligated to provide any translated copy to the Contractor.

#### **7.23 Communications Consent**

The Contractor must obtain the prior consent of Canada for any public announcement related to the Work of this contract.

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## ANNEX A - STATEMENT OF WORK

*(insert attached Annex A here)*

## ANNEX B - BASIS OF PAYMENT

### 1.0) RPAS & Initial Training

Delivery of the complete integrated RPAS, all associated documentation, and initial training for RPA operators, sensor operators and maintenance engineers, in accordance with the Statement of Work at Annex A.

“All-inclusive” means that all costs incurred for the Work to be performed and delivered under the Contract, including any goods and/or services necessary to fully meet the requirement that are in excess of the Statement of Work identified in the Contractors’ bid, must be incorporated into the price for the Cost Items. Additional fees, cost items, or conditions on pricing will not be accepted.

<b>Total All-Inclusive Firm Price</b> <i>(CAD, Customs duties are included and Applicable Taxes are extra)</i> Inclusive of all labour, equipment, parts, subcontracts, materials and supplies, fees, packing, overhead and profit and all other related costs required to perform the Work	\$ _____
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SCHEDULE OF PAYMENT MILESTONES			
Canada will make milestone payments in accordance with this Schedule of Payment Milestones subject to the Method of Payment and Invoicing provisions of the Contract.			
Milestone Number	Milestone Description or Deliverable	% of Total All-Inclusive Firm Price	Milestone \$ value ( = % x Total All-Inclusive Firm Price)
1.001	Agreement by Canada that the Contractor has completed Project Initiation Meeting and Final Project Management Plan	1%	
1.002	Agreement by Canada that the Contractor has completed Preliminary Design Review and Documentation Package	2%	
1.003	Agreement by Canada that the Contractor has completed Critical Design Review and Documentation Package	3%	
1.004	Preliminary RPAS Acceptance Test #1 at Contractor’s Facility. All issues identified have been rectified to the satisfaction of Canada.	44% divided by # RPAs	
1.005	Preliminary RPAS Acceptance Test #2 Flight test in Iqaluit. All Issues identified have been rectified to the satisfaction of Canada.	25% divided by # RPAs	
1.006	Contractual Acceptance RPAS Title and Deed Transfer	15% divided by # RPAs	
1.007	Final receipt of all deliverables	10%	

## 2.0) Optional Goods (ordered via Task Authorization)

**Total Estimated Cost to a Limitation of Expenditure \$ \_\_\_\_\_**

*(CAD, customs duties included Applicable Taxes extra)*

Canada will pay the Contractor for completion and delivery of the work subject to the Method of Payment and Invoicing provisions of the Contract.

The Contractor must provide Canada with any further price reductions in effect as a result of a special offering due to year end or surplus manufacturing runs, special job lots, sales, clearances or promotions.

Item No.	Description	Percentage Discount
2.1*	RPAS Spares The Contractor will be paid the OEM Published Price List with a discount no less than	_____ %
2.2*	Tooling and Equipment The Contractor will be paid the OEM Published Price List with a discount no less than	_____ %
2.3*	Ground Support Equipment The Contractor will be paid the OEM Published Price List with a discount no less than	_____ %

\*The Contractor must provide an electronic link or electronic file for the published price lists.

*If the OEM does not have a published price list, the following price certification and price support provisions will apply to the applicable items:*

### **Price Certification**

The Contractor certifies that the price proposed at the time of the Task Authorization:

- is not in excess of the lowest price charged anyone else, including the Contractor's most favoured customer, for the like quality and quantity of the goods, services or both under similar terms and conditions, including delivery and warranty;

### **Price Support**

The Contractor must provide, on Canada's request, one or more of the following price support, if applicable:

- copies of paid invoices for the like quality and quantity of the goods, services or both sold to other customers; or
- any other supporting documentation as requested by Canada.

Price support may be requested by Canada before or after issuance of a Task Authorization.

### ANNEX C - TASK AUTHORIZATION FORM

PWGSC FILE NO.: \_\_\_\_\_

CONTRACT SERIAL NO.: \_\_\_\_\_

TASK NO.: \_\_\_\_\_

TASK AMENDMENT NO.: \_\_\_\_\_

TITLE: \_\_\_\_\_

REASON FOR AMENDMENT, IF APPLICABLE:

**1.0 DESCRIPTION OF THE WORK:** As follows \_\_\_\_ See attached \_\_\_\_\_

**Deliverables** : As follows \_\_\_\_ See attached \_\_\_\_

**Delivery Date(s) :**



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## **ANNEX D - LIST OF AUTHORIZED SUBCONTRACTORS**

*(to be inserted at Contract Award in accordance with Canada's authorization of subcontractors proposed in the Contractors' bid submission and contract article 7.2.3 )*



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## ANNEX E - INSURANCE REQUIREMENTS

### Commercial General Liability Insurance (G2001C)

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1. The Contractor must obtain Commercial General Liability Insurance, and maintain it in force throughout the duration of the Contract, in an amount usual for a contract of this nature, but for not less than \$2,000,000 per accident or occurrence and in the annual aggregate.
2. The Commercial General Liability policy must include the following:
  - a. Additional Insured: Canada is added as an additional insured, but only with respect to liability arising out of the Contractor's performance of the Contract. The interest of Canada should read as follows: Canada, as represented by Public Works and Government Services Canada.
  - b. Bodily Injury and Property Damage to third parties arising out of the operations of the Contractor.
  - c. Products and Completed Operations: Coverage for bodily injury or property damage arising out of goods or products manufactured, sold, handled, or distributed by the Contractor and/or arising out of operations that have been completed by the Contractor.
  - d. Personal Injury: While not limited to, the coverage must include Violation of Privacy, Libel and Slander, False Arrest, Detention or Imprisonment and Defamation of Character.
  - e. Cross Liability/Separation of Insureds: Without increasing the limit of liability, the policy must protect all insured parties to the full extent of coverage provided. Further, the policy must apply to each Insured in the same manner and to the same extent as if a separate policy had been issued to each.
  - f. Blanket Contractual Liability: The policy must, on a blanket basis or by specific reference to the Contract, extend to assumed liabilities with respect to contractual provisions.
  - g. Employees and, if applicable, Volunteers must be included as Additional Insured.
  - h. Employers' Liability (or confirmation that all employees are covered by Worker's compensation (WSIB) or similar program)
  - i. Broad Form Property Damage including Completed Operations: Expands the Property Damage coverage to include certain losses that would otherwise be excluded by the standard care, custody or control exclusion found in a standard policy.
  - j. Notice of Cancellation: The Contractor will provide the Contracting Authority thirty (30) days prior written notice of policy cancellation or any changes to the insurance policy.
  - k. If the policy is written on a claims-made basis, coverage must be in place for a period of at least 12 months after the completion or termination of the Contract.

- 
- l. Owners' or Contractors' Protective Liability: Covers the damages that the Contractor becomes legally obligated to pay arising out of the operations of a subcontractor.
  - m. Non-Owned Automobile Liability - Coverage for suits against the Contractor resulting from the use of hired or non-owned vehicles.
  - n. All Risks Tenants Legal Liability - to protect the Contractor for liabilities arising out of its occupancy of leased premises.
  - o. Litigation Rights: Pursuant to subsection 5(d) of the [Department of Justice Act](#), S.C. 1993, c. J-2, s.1, if a suit is instituted for or against Canada which the Insurer would, but for this clause, have the right to pursue or defend on behalf of Canada as an Additional Named Insured under the insurance policy, the Insurer must promptly contact the Attorney General of Canada to agree on the legal strategies by sending a letter, by registered mail or by courier, with an acknowledgement of receipt.

**For the province of Quebec, send to:**

*Director Business Law Directorate,  
Quebec Regional Office (Ottawa),  
Department of Justice,  
284 Wellington Street, Room SAT-6042,  
Ottawa, Ontario, K1A 0H8*

**For other provinces and territories, send to:**

*Senior General Counsel,  
Civil Litigation Section,  
Department of Justice  
234 Wellington Street, East Tower  
Ottawa, Ontario K1A 0H8*

A copy of the letter must be sent to the Contracting Authority. Canada reserves the right to co-defend any action brought against Canada. All expenses incurred by Canada to co-defend such actions will be at Canada's expense. If Canada decides to co-defend any action brought against it, and Canada does not agree to a proposed settlement agreed to by the Contractor's insurer and the plaintiff(s) that would result in the settlement or dismissal of the action against Canada, then Canada will be responsible to the Contractor's insurer for any difference between the proposed settlement amount and the amount finally awarded or paid to the plaintiffs (inclusive of costs and interest) on behalf of Canada.

**ATTACHMENT 1 to PART 3 OF THE BID SOLICITATION**

**ELECTRONIC PAYMENT INSTRUMENTS**

The Bidder accepts to be paid by any of the following Electronic Payment Instrument(s):

- ☐ Direct Deposit (Domestic and International);
- ☐ Electronic Data Interchange (EDI);
- ☐ Wire Transfer (International Only);

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## **ATTACHMENT 1 to PART 4 OF THE BID SOLICITATION**

### **MANDATORY TECHNICAL CRITERIA**

*(insert attached ATTACHMENT 1 to PART 4 here)*

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**ATTACHMENT 2 to PART 4 OF THE BID SOLICITATION**  
**POINT RATED TECHNICAL CRITERIA**

*(insert attached ATTACHMENT 2 to PART 4 here)*

### ATTACHMENT 3 to PART 4 OF THE BID SOLICITATION

#### FINANCIAL BID PRESENTATION and EVALUATION SHEET

The Bidder must submit their financial bid in accordance with this Financial Bid Presentation and Evaluation Sheet. The price of the bid will be evaluated as described herein.

- (a) The Bidder must submit one all-inclusive firm price, rate or discount in the space provided for each and every Item as indicated in the Financial Bid Pricing Table below.
- (b) All-inclusive means that all costs incurred for the Work to be performed and delivered under the Contract, including any goods and/or services necessary to fully meet the requirement that are in excess of the Statement of Work (SOW) identified in the bidder's bid, must be incorporated into the price for the Cost Items. Additional fees, cost items, or conditions on pricing will not be accepted.
- (c) Prices must be in Canadian dollars (CAD), Applicable Taxes excluded, FOB destination, Canadian customs duties and excise taxes included.
- (d) **Maximum Funding, Not to Exceed Amount:** The maximum funding available for the Contract resulting from the bid solicitation is \$32M CAD (Applicable Taxes extra). Bids with a Bid Evaluated Price in excess of this amount will be considered non-responsive. This disclosure does not commit Canada to pay the maximum funding available.

#### Financial Bid Pricing Table

COST ITEMS	Estimated Volume *	1.0 Firm Fixed Price 2.0 % Discount	Total Price for each Cost Item (calculated as indicated in the formula)
	(i)	(ii)	(iii)
<b>1.0 RPAS &amp; Initial Training</b> At the following firm all-inclusive fixed prices. Inclusive of all labour, equipment, parts, subcontracts, materials and supplies, fees, packing, overhead and profit and all other related costs required to perform the Work			
1.1 Delivery of complete RPAS	1	\$	\$ (i x ii)
1.2 Training for RPA Operators (6 personnel)	1	\$	\$ (i x ii)
1.3 Training for Sensor Operators (6 personnel)	1	\$	\$ (i x ii)
1.4 Training for Maintenance Engineers (6 personnel)	1	\$	\$ (i x ii)

<b>2.0 Optional Goods</b>			
<b>Parts and Equipment</b> At a % Discount rate off OEM List not less than the following: The Contractor must provide Canada with any further price reductions in effect as a result of a special offering due to year end or surplus manufacturing runs, special job lots, sales, clearances or promotions.			
2.1) RPAS Spare Parts	<b>\$1,500,000</b>	%	\$ ((i x (1 – ii))
2.2) Tooling and Equipment	<b>\$250,000</b>	%	\$ ((i x (1 – ii))
2.3) Ground Support Equipment	<b>\$250,000</b>	%	\$ ((i x (1 – ii))
<p><i>* Estimated Volumes provided in this table are for evaluation purposes only and should not be construed as a commitment or expectation on the part of Canada.</i></p> <p>For evaluation purposes only, the price of the bid will be determined as follows:</p> <p><b>BID EVALUATED PRICE = sum of the Total Prices for all Cost Items</b></p>			<p>\$</p> <p>_____</p>

---

## ATTACHMENT 1 to PART 5 OF THE BID SOLICITATION

### FEDERAL CONTRACTORS PROGRAM FOR EMPLOYMENT EQUITY – CERTIFICATION

I, the Bidder, by submitting the present information to the Contracting Authority, certify that the information provided is true as of the date indicated below. The certifications provided to Canada are subject to verification at all times. I understand that Canada will declare a bid non-responsive, or will declare a contractor in default, if a certification is found to be untrue, whether during the bid evaluation period or during the contract period. Canada will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply with any request or requirement imposed by Canada may render the bid non-responsive or constitute a default under the Contract.

For further information on the Federal Contractors Program for Employment Equity visit [Employment and Social Development Canada \(ESDC\) – Labour's](#) website.

Date: \_\_\_\_\_ (YYYY/MM/DD) (If left blank, the date will be deemed to be the bid solicitation closing date.)

Complete both A and B.

A. Check only one of the following:

- ☐ A1. The Bidder certifies having no work force in Canada.
- ☐ A2. The Bidder certifies being a public sector employer.
- ☐ A3. The Bidder certifies being a [federally regulated employer](#) being subject to the [Employment Equity Act](#).
- ☐ A4. The Bidder certifies having a combined work force in Canada of less than 100 permanent full-time and/or permanent part-time employees.

A5. The Bidder has a combined workforce in Canada of 100 or more employees; and

- ☐ A5.1. The Bidder certifies already having a valid and current [Agreement to Implement Employment Equity](#) (AIEE) in place with ESDC-Labour.

OR

- ☐ A5.2. The Bidder certifies having submitted the [Agreement to Implement Employment Equity \(LAB1168\)](#) to ESDC-Labour. As this is a condition to contract award, proceed to completing the form Agreement to Implement Employment Equity (LAB1168), duly signing it, and transmit it to ESDC-Labour.

B. Check only one of the following:

- ☐ B1. The Bidder is not a Joint Venture.

OR

- ☐ B2. The Bidder is a Joint venture and each member of the Joint Venture must provide the Contracting Authority with a completed annex Federal Contractors Program for Employment Equity - Certification. (Refer to the Joint Venture section of the Standard Instructions)



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## Annex A

### Statement of Work

### Remotely Piloted Aircraft System

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## 1. Introduction

Transport Canada (TC) is responsible for the Government of Canada's transportation policies and programs. The Department develops legislative and regulatory frameworks, and conducts transportation oversight through legislative, regulatory, surveillance and enforcement activities. TC's vision of a sustainable transportation system integrates the following three guiding principles:

- The highest possible safety and security of life and property, supported by performance-based standards and regulations;
- The efficient movement of people and goods to support economic prosperity and a sustainable quality of life, based on competitive markets and targeted use of regulation and government funding; and
- Respect of the environmental legacy of future generations of Canadians, guided by environmental assessment and planning processes in transportation decisions and selective use of regulation and government funding.

As part of TC's mandate related to the environmental legacy, TC is the lead federal department responsible for preventing oil pollution from ships. The National Aerial Surveillance Program (NASP) is one method by which this is achieved. The NASP uses manned aircraft in the Canadian Arctic, and on the Eastern and Western Coasts to support a reduction of the harmful impacts of oil pollution on marine ecosystems, and to provide ice reconnaissance. These manned platforms also provide the Government of Canada as a whole with safety and security information in support of marine domain awareness, search and rescue, and illegal fishing enforcement. Data from the NASP is shared with Canada's Marine Security Operations Centres (MSOC) and its five core partners (TC, Royal Canadian Mounted Police (RCMP), Canadian Coast Guard (CCG), Department of National Defense (DND) and Canada Border Services Agency (CBSA)).

Three TC owned and operated aircraft are located across Canada to deliver the NASP services:

- One Dash 8 aircraft, located in Moncton, NB, is responsible for the surveillance of the Waters from Thunder Bay, ON, to the outer limits of the Exclusive Economic Zone (200 nautical miles) off the Coast of Newfoundland and Labrador;
- One Dash 7 aircraft, located in Ottawa, ON, during the Winter Season and in the Arctic from July to October annually, is responsible for the surveillance of the entire Arctic. It is also used to supplement surveillance in the Great Lakes, the St Lawrence Seaway and the East Coast when not providing surveillance in the Arctic; and,
- One Dash 8 aircraft, located in Vancouver, BC, is responsible for the surveillance of all waters under Canadian jurisdiction on the West Coast of Canada.

The current suite of sensors on these manned aircraft is called the Maritime Surveillance System (MSS) 6000 and is comprised of the following six components/sensors

- Side Looking Airborne Radar (SLAR) – anomaly detection;
- Electro-optical Infrared Camera System (EO/IR) – source identification;
- Infrared / Ultraviolet Line Scanner (IR/UV) – anomaly analysis;
- Digital Still & Video Camera Systems – evidence support;
- Automatic Identification System (AIS) – evidence support and vessel identity and voyage information; and,
- Satellite Communication System – communication to the ground and enables streaming video to command centres.

## 2. Background

Since 2009, the NASP aircraft have been used more frequently (upwards of 3000 hours in Fiscal Year 2014/2015) for compliance and enforcement of regulations or Canadian Sovereignty. This is mainly due to the remote

sensing equipment that is integrated on each of the surveillance aircraft and the highly trained surveillance officers that use the equipment. In addition, the NASP has conducted surveillance for:

- Environment Canada, Canadian Ice Service – Ice Patrol (in partnership with the Canadian Coast Guard)
- Environment Canada, Environmental Enforcement Branch – Environmental Enforcement
- Environment Canada, Canadian Wildlife Service – Bird Survey
- Department of Fisheries and Oceans – Fisheries Patrol (Arctic Only) and Cetacean Research Program (Whale Surveys)
- Royal Canadian Mounted Police – Manhunts & other security related events
- Department of National Defense – Canada's Joint Operational Command – Sovereignty Patrols
- Department of National Defense – Search and Rescue (secondary resource)
- Canadian Coast Guard – Environmental Response (Oil Spill Response)
- Defense Research Development Canada (R&D Projects)
- Natural Resources Canada (Offshore Petroleum Boards)

While the NASP is very effective at achieving the TC surveillance goals with its manned platforms, it has limitations which a Remotely Piloted Aircraft System (RPAS) will address. For example: manned aircraft have limited flight time and persistent coverage is often critical during the response to an environmental disaster or a security related event; the need for a qualified pilot on board the aircraft can restrict flight times and flying in environments that are difficult or dangerous to get to; and, flight planning in the Arctic is affected by such things as sea ice conditions, weather, aircraft range, aircraft performance, the absence of good infrastructure and limited alternate airports. The use of RPAS in these scenarios will allow TC to better meet its surveillance requirements.

There are also a number of external drivers for the need of a RPAS. For example: there is an increased presence of domestic marine activity and foreign vessels in the Arctic thereby increasing the need for surveillance in support of marine operations and pollution and ice condition monitoring. As well, with the rapid technological changes arising in the development of both communications and RPAS technology, the deployment of RPAS in remote areas is becoming more attractive from both a cost and results perspective.

It is anticipated that the RPAS will supplement the operations of the Arctic NASP aircraft, and flying hours are estimated at this time to be approximately 500 per year.

### 3. Objective

Transport Canada (TC) requires an RPAS that is capable of operation Beyond Visual Line of Sight (BVLOS) which will be used by TC as a proof of concept to evaluate RPAS technology as a supplement to the capabilities of manned surveillance aircraft operated under the NASP. The RPAS must include one or more Remotely Piloted Aircraft (RPA) or Optionally Piloted Aircraft (OPA) of the same type, sensor equipment to be carried as payload on board each RPA, communication links, and the RPAS mission control station (s) (MCS). The Contractor must provide initial training. The Contractor must provide the Optional Goods described herein, such as spares, equipment, and parts necessary to maintain and operate the RPAS, and additional components of the RPAS, as requested by to support the first 2000 hours of operation or period of the contract whichever is less.

The RPA(s) may be new or used. All sensors, all equipment and components in the MCS, and all payloads, must be new only. The aircraft and all its components should have a minimum amount of operating time since new and a maximum amount of service life remaining at time of delivery to Canada.

TC will operate the RPAS in conjunction with the existing fleet of manned surveillance aircraft to maintain maritime domain awareness in Canada's North. Operational surveillance activities with RPA's will occur primarily between N60 and N72 degrees of latitude however operations may be expanded to augment NASP operations on the east and west coasts. The RPAS main operating base will be in Ottawa, Canada. If required by the configuration of the RPAS provided by the Contractor, the RPA(s) may be located at a forward operating base Iqaluit (CYFB) to achieve the operational objectives. Heated aircraft hangar facilities may be available at each

forward operating base, however, circumstances may require the RPA to remain parked outside for extended periods in Arctic conditions.

The Aircraft Services Directorate (ASD) of TC will operate and maintain the RPAS, as well as develop any associated concept of operations. The Aircraft Services Directorate is an Air Operator and Approved Maintenance Organization (AMO) certified under Canadian Aviation Regulations and delivers services to other government departments through its National Headquarters in Ottawa, adjacent to MacDonald Cartier International Airport and its regional bases located in Vancouver, British Columbia; Winnipeg, Manitoba, Hamilton, Ontario, Montreal, Quebec; and Moncton, New Brunswick.

## 4. Scope of Work

The Contractor must be responsible for the delivery of an RPAS as specified in the Transport Canada Remotely Piloted Aircraft System Baseline Statement of Requirements Document, provided in Appendix A of this SOW.

Nothing contained or omitted from this Statement of Work absolves the Contractor from delivering a complete, airworthy and fully functioning RPAS, suitable for operation in Northern Canada.

In addition to the avionics required for safe flight operations, each RPA must be equipped with a Standard Full Payload that must include a Maritime Search Radar, an Automatic Identification System (AIS) receiver, and an Electro-optical Infrared camera system (EO/IR). Each RPA must also include a VHF/UHF radio that can be used as a relay between the MCS and the shipping industry, and Air Traffic Control via the RPA. All sensors must comply with the technical requirements stipulated in the Baseline Statement of Requirements Document (Appendix A). Each RPA must be capable of accepting secondary payloads, potentially from manufacturers other than those that will provide the RPAS and Standard Full Payload, and use open source physical connectors and communications protocols that comply with recognized international standards. The overall system availability must be no less than 20 hours per mission, 40 hours per week and 500 hours per year.

### 4.1. Concept of Operations

Depending on the delivered configuration, the Concept of Operations may include launch-and-recovery operations at the forward operating base, through line of sight communication links, while RPA and payload operators based at the main operating base in Ottawa will execute command and control of the mission via beyond-line-of-sight links. Emphasis will be placed on minimizing the number of forward operating bases and the deployment of personnel and equipment to those locations. Personnel and resources employed at the applicable forward operating base will be used to support RPAS launch and recovery operations at the forward operating bases if applicable.

The RPAS must include a fixed (primary) MCS located in Ottawa Canada and a mobile (secondary, truck based) MCS located in Ottawa, Canada. Each type of MCS must include two RPA operator consoles and one payload operator console for each RPA provided. The RPAS must include a Launch and Recovery Component (LRC) for each RPA provided. The LRC must include provisions to provide real time traffic voice alerts to the RPA operator during taxi and take-off operations to mitigate the risk of the RPA running into another aircraft on the ground. The LRC must also allow for radio line of sight (RLOS) safety monitoring and manual intervention during automatic takeoff and landing (ATOL).

Each RPA must be equipped with Radio Line of Sight (RLOS) and satellite communication links capable of supporting RPA control and sensor data requirements. TC will conduct operations with two RPA operators and one payload operator in direct communication with the RPA. The RPA must also be capable of limited autonomous operations in response to lost link situations and to provide opportunities to reduce bandwidth requirements during routine patrol operations. The primary means of communication between the MCS and the

RPA will be via satellite. No communication relays using other RPAs or terrestrial ground communications to extend coverage will be considered.

The MCS must be capable of receiving and collating data received from all sensors installed on the RPA. The MCS must include sensor data integration and visualization capabilities in the MCS (as outlined in Appendix A) to provide the RPA operator with a combined presentation of all sensor inputs. The MCS must also include RPAS flight planning tools, including the ability to remotely upload data to the RPA prior to takeoff or during flight. In an effort to reduce the consumption of satellite bandwidth for transmission of payload sensor data TC intends to transmit payload sensor data via satellite, only upon the detection of an anomaly by the maritime radar. In this scenario, the concept of operations will require that the maritime radar and associated data recording devices be activated at the initiation of surveillance activities. Once an anomaly is detected by the maritime radar, the RPAS must be capable of automatically relaying a message to the MCS indicating that an anomaly has been detected. At this time the payload operator can make the decision to initiate satellite data streaming of payload sensor data. As well, AIS and maritime radar data fusion must take place on the RPA and be transmitted to the MCS every fifteen minutes during surveillance activities.

## 5. Project Authority Responsibilities / Support

The Project Authority will:

- Provide a fully constructed space, constructed to the Contractor's specifications, and to include, all electrical, data and HVAC connections, any needed partitions, and other required structural elements, for the installation of the Fixed MCS
- Provide access to TC facilities for the installation of the Fixed MCS
- Obtain all Canadian flight authorizations, including a Special Flight Operations Certificate (SFOC) for flight acceptance testing in Canada.
- Make all flight test arrangements for flight tests held in Canada, including any necessary engagement with Aboriginal communities.
- Provide meeting facilities for meetings held in Ottawa
- Provide review, approval / acceptance of deliverables as appropriate

## 6. Project Requirements Overview

The Contractor must prepare and deliver a Project Management Plan and associated documents describing the management methodology and processes to be used in the administration of this project. This must be provided to the Project Authority, subsequent to the Project Initiation meeting.

During the Project Implementation phase, the Contractor must conduct Preliminary and Critical Design Reviews to enable Canada to review all aspects of the RPAS design for compliance with the Baseline Requirements stipulated in Appendix A.

Following the completion of RPAS production, the Contractor must confirm these items for Canada during RPAS Acceptance, when the Contractor must verify that the proposed RPAS meets all technical, operational and performance parameters as specified in this Statement of Work. Preliminary RPAS acceptance test #1 will be executed at the Contractor's facilities, Preliminary RPAS acceptance test #2 will be executed in Iqaluit, Canada. Final RPAS acceptance test will be executed at Ottawa, Canada (or to a designated facility within 350KM of Ottawa, Ontario).

Prior to acceptance testing of the RPAS, or the first RPA, the Contractor must deliver the training curriculum, materials and training courses for RPA Operators, Payload Operators, and Maintenance personnel.

The Contractor must provide a detailed maintenance program for the delivered RPAS outlining the required RPAS maintenance activities that will be performed by Transport Canada operating as the RPAS maintenance facility.

The Contractor must deliver the design data necessary to support the integration of additional secondary RPA payloads without assistance from the Contractor.

Following RPAS acceptance, the Contractor must deliver the RPAS to TC, Aircraft Services Directorate, 200 Comet Private, Hangar T- 58, Ottawa Airport, Ottawa Ontario (or to a designated facility within 350KM of Ottawa, Ontario).

Where the RPAS Requirements refer to Certification in accordance with a Standard or Regulation, the appropriate documents must accompany the deliverable item, as proof of compliance.

## **7. Project Management**

The Contractor must assign a Project Manager to the project, who must be given the authority and resources to successfully execute the project.

The Project Manager must be the main point of contact for communication between the Contractor and Canada.

The Contractor must provide the necessary personnel, management systems and infrastructure to ensure effective and efficient administration, execution, monitoring, control reporting and delivery of all aspects of the RPAS Contract.

### **7.1. Project Management Plan**

The Contractor's Project Management system must reflect industry best practices, such as those found in the Project Management Body of Knowledge (PMBOK).

The full PMP must be delivered to the Project Authority one month after contract award for review and acceptance. Subsequent amendments to the PMP must be forwarded to Canada for review and acceptance.

All activities for this project must be managed in accordance with the accepted PMP.

The PMP must identify and describe all activities and processes necessary to conduct the project, the resources that will be allocated to complete the activities.

The PMP must include the following, as a minimum:

- a. Master Project Schedule;
- b. Contractor Communication and Issue Management Plan;
- c. Quality Management Plan;
- d. Configuration and Change Management Plan;
- e. Security Management plan;
- f. Monthly Project Progress Reports.

### **7.2. Master Project Schedule**

As part of the Project Management Plan, the Contractor must provide a Master Project Schedule (MPS).

The MPS must establish the baseline for measurement of progress and performance by the Contractor and must clearly identify contractual commitments and milestones in the order of their planned occurrence.

The MPS must outline the project milestones, associated activities and deliverables extending from Contract Award through to the delivery of the RPAS and project close out activities, including details describing production and must, as a minimum:



- a. Include a detailed Work Breakdown Structure and the corresponding activity list to at least two levels (if applicable), in sufficient detail to define and monitor the scope of work;
- b. Identify time sequence and durations required to achieve all milestones and activities;
- c. Indicate relationships and inter-dependencies between all activities;
- d. Provide a corresponding Gantt chart, highlighting the Contractor's deliverables and significant events and all Critical Path Activities; and
- e. Indicate activities requiring Canada's participation such as training, test, acceptance and delivery.

The Contractor must update the MPS for delivery as part of the Project progress report each month.

### **7.3 Contractor Communication and Issue Management Plan**

The Communication and Issue Management Plan must describe the policies, procedures and management systems pertaining to communications with Canada and the management of project issues and action items.

The Communications and Issue Management Plan must address the following, as a minimum:

- a. Establish a Project Issues Register and define how responses to issues pertaining to project technical and schedule areas of concern will be managed and communicated within the Contractor's organization and to Canada; and
- b. Establish a Project Action Item Register to consolidate and record action items identified during all project meetings, providing a description of the assigned responsibilities and deadlines and identifying the designated actioner.

### **7.4 Quality Management Plan**

As part of the Project Management Plan, the Contractor must provide a Project Quality Management Plan (QMP).

The QMP must describe the policies, procedures and management systems within the Contractor's organization that are used to manage quality assurance and quality control activities.

The Contractor's quality management principles and standards must comply with ISO 9001:2015 or later, or have formal acceptance by a Civil Aviation Authority or a National Military Airworthiness Authority.

Canada reserves the right to audit the Contractor's Quality Management System. Should Canada decide to exercise this right, Canada will provide the Contractor two weeks' written notice.

### **7.5 Configuration and Change Management Plan**

As part of the Project Management Plan, the Contractor must provide a Project Configuration and Change Management Plan (CMP).

The CMP must describe the policies, procedures and management systems within the Contractor's organization used to define and manage project changes during the project.

The CMP must define the following, as a minimum:

- a. The Contractor's plan and process to track, control and provide requirements traceability, pertaining to the RPAS Baseline Requirements for the duration of the project in order to ensure that the delivered RPAS fulfills the requirements of the Contract;
- b. The Design Scope and Change Management process for seeking approval from Canada to make project changes including procedures for the initiation and approval of any change requests and the associated roles and responsibilities for the Contractor and Canada; and
- c. The physical configuration audit process for confirming that the as-built RPAS configuration reflects the contractual requirements and that all RPAs, payloads, MCS, and other components are identical.

The Configuration and Change Management Plan must be consistent with ISO 10007:2003 Guidance Document, or equivalent.

## **7.6 Security Management Plan**

The Contractor must provide a plan to ensure that activities that are required for export including International Traffic in Arms Regulations (ITAR) requirements, Canadian Controlled Goods, Missile Technology Control Regime (MTCR), etc. will be executed according to the Project Schedule.

## **7.7 Project Progress Reports**

The Contractor must be responsible to submit monthly Project Progress Reports (MPPR) to the Contracting Authority, no later than the third Thursday of each month, for the duration of the project.

The report must indicate the progress of the project work, including accomplishments and areas of concern, which must be supported with a written explanation for each item.

The MPPR must include, as a minimum of the following items:

- a. A written assessment of the current status of the project;
- b. A qualitative and quantitative explanation of the physical progress of the work for the current monthly reporting period;
- c. An updated Master Project Schedule, including project activity and milestone accomplishments, as well as areas of concern for each item identified and an explanation of any work around plans necessary to maintain project schedule;
- d. Identification and explanation of unresolved project, technical and material issues;
- e. Photos must be included, as appropriate, to explain project progress or issues, expected project activities and milestone accomplishments for each of the next three reporting periods;
- f. An updated Project Action Item Register, identifying the status of all action items arising from project meetings; and,
- g. An updated Project Issues Register addressing any project, technical or schedule areas of concern

Where assistance is required from Canada, the Contractor must formally provide a written request to the Project Authority.

## **8. Project Meetings**

The Contractor must hold Project Meetings to ensure that Canada is kept current concerning the performance of the Contractor's contractual obligations and to ensure an exchange of information between the Contractor and Canada.

The Contractor must provide suitable representation at all project meetings and teleconferences to ensure that decision making authority is available to satisfy project requirements and that the project schedule is maintained.

The Contractor must arrange and provide conference facilities that are adequate to accommodate the attendees for all meetings.

Unless otherwise stated, the Contractor must provide clerical support for all meetings and must be responsible to take minutes and record action items of all meetings and any subsequent meeting.

Unless otherwise stated, the Contractor must provide a draft of all meeting minutes for review and acceptance by Canada, a maximum of five (5) working days following the meeting. The final agreed minutes between the parties must be prepared by the Contractor and forwarded to Canada for acceptance and signature.

The Contractor must record action items identified during all meetings with assigned responsibilities and deadlines. All action items must be consolidated after each meeting and provided to Canada with the meeting minutes.

Canada may cancel meetings at its discretion. Rescheduling of meetings must be done by mutual agreement between the Contractor and Canada. Meeting requirements can be satisfied through teleconferences, face-to-face, video conferencing or any other method agreed to between the Contractor and Canada.

Project Meetings must be held during the course of the project as indicated below.

## **8.1. Project Initiation Meeting**

The main objective of the Project Initiation Meeting (PIM) is to discuss the project at a high level and introduce and discuss the role of each team member. The PIM will be held at the Contractor's facility and will be an opportunity to do initial high-level planning, discuss logistics, scope, and timeline, and confirm key elements of the Project Plan including:

- Master Project Schedule;
- Contractor Communication and Issue Management Plan;
- Quality Management Plan;
- Configuration and Change Management Plan;
- Security Management plan
- Preliminary Acceptance Test Plan
- Final Training Plan.

The PIM must be held 25 working days after contract award. The Contractor must prepare and submit a draft PIM agenda to Canada for review and concurrence, ten (10) working days prior to the PIM. The Contractor must prepare and distribute the final agenda and all meeting documentation five (5) working days before the PIM.

## **8.2 Project Progress Review Meetings**

Project Progress Review Meetings (PRM) must be held on a quarterly basis.

The PRM must be held at the Contractor's facility and will be chaired by Canada. The purpose of the PRM is to review the progress of the project, including but not limited to any deviations from the work plan, risks and risk mitigation strategies, the Master Project Schedule and Project Management Plan.

The Contractor must prepare and submit a draft PRM agenda to Canada for review and concurrence, ten (10) working days prior to each PRM. The Contractor must prepare and distribute the final agenda and all meeting documentation five (5) working days before the PRM.

The status of the Master Project Schedule must be a standing item on the agenda for the Progress Review Meetings.

PRM action items must be reviewed during each meeting to provide the status of all items.

## **8.3 Ad-Hoc Meetings**

Ad-hoc or unscheduled meetings may be required during the course of the project for reasons to address issues such as schedule delay, or significant concerns of a technical or contractual nature, which warrant immediate discussion or action. An unscheduled meeting may be initiated by the Contractor or Canada. All Ad-Hoc Meetings must be conducted either by tele/video conference or at Contractor's facility.

## **8.4 Design and Configuration Meetings**

Canada requires insight into the adaptations required to the existing system to have the system fully meet the requirements of the Baseline Statement of requirements. To this end, design review meetings are required as follows to disclose any proposed changes or additions to the existing design.

### **8.4.1 Preliminary Design Review Meeting**

The Preliminary Design Review Meeting (PDR) must be held at the Contractor's facility on the date specified in the Master Project Schedule. The Contractor must chair the PDR.

The purpose of the PDR is to present the preliminary RPAS design to Canada, corresponding to the Baseline Statement of Requirements, and to ascertain that it satisfies the contractual requirements, with acceptable risk and within the project cost and schedule constraints, before proceeding with detailed design. The PDR Meeting must establish the basis for proceeding with detailed design.

The Contractor must prepare and submit a draft PDR agenda and all associated draft meeting materials to Canada for review, ten (10) working days prior to the meeting.

The Contractor must prepare the final agenda and all final meeting and all meeting documentation five (5) working days before the PDR. Meeting and presentation materials must include documentation and drawings identifying the equipment configurations, specifications and interfaces for proposed RPAS design option to include but not be limited to: System Requirements Specifications; System Interface Control Document; System Design Description; System Performance Specification that includes information on reliability and includes Technical Readiness Level (TRL); Meantime Between Failure (MTBF), and Meantime Between Repair (MTBR). This information must be provided in the form of drawings and data sheets in a mutually agreeable format. In addition Appendix B STANAG 4671 Edition 2 / AEP-4671 Edition A Version 1 Compliance Matrix, and Appendix C Evaluation of Operation and Maintenance Costs (below) must be presented.

During the PDR the Contractor must present and demonstrate the following:

- a. all selected design options which have been compiled and developed specifically to satisfy the requirements of the Contract;
- b. interfaces have been identified, and verification methods are described;
- c. all system requirements have been allocated, the requirements are complete, and the flow down is adequate to verify system performance;
- d. the design is verifiable and that the risks have been identified, characterized, and mitigated, as appropriate; and
- e. the proposed design satisfies the specified RPAS Baseline and all contractual requirements.

The PDR will be defined as complete when Canada is satisfied that the proposed RPAS design will fulfill the requirements of the Contract and all outstanding PDR action items are resolved to the satisfaction of Canada.

### **8.4.2 Critical Design Review Meeting**

The Critical Design Review (CDR) must be held at the Contractor's facility on the date specified in the Master Project Schedule. The Contractor must chair the CDR.

The purpose of the CDR is for the Contractor to demonstrate to Canada that the proposed RPAS design satisfies the contractual requirements and that the maturity of the proposed final design is sufficient to proceed to fabrication, assembly and integration. The CDR will address the interfaces between configuration items.

The Contractor must prepare and submit a draft CDR agenda and all associated draft meeting materials to Canada for review, ten (10) working days prior to the meeting. The final agreed agenda and meeting materials will be prepared by the Contractor for distribution five (5) working days before the CDR.

Meeting and presentation materials must include final design fabrication documentation and this information must be provided in the form of drawings and data sheets in mutually agreed format and must be reviewed by Canada to ensure that the design fulfills contractual requirements.

The CDR documentation package must include the following information:

- a. Final Design Documents and production drawings and schematics for proposed RPAS design;
- b. The complete finalized aircraft Maintenance Plan; and
- c. Recommended Spares List.
- d. Recommended Tooling List
- e. Recommended Ground Support Equipment List

During the CDR the Contractor must demonstrate that the following objectives have been met:

- a. The production processes and controls confirm that the design can proceed to the fabrication stage;
- b. The planned Quality Assurance (QA) activities have established the requisite verification and screening processes to ensure design integrity;
- c. Show that the proposed design satisfies the specified TC RPAS Baseline Statement of Requirements at Appendix A; and
- d. The final design resolves all issues and action items identified during PDR and CDR.

The CDR will be defined as complete when Canada is satisfied that the proposed RPAS design will fulfill the requirements of the Contract, is sufficiently mature to proceed with production and that all outstanding PDR and CDR action items are resolved to the satisfaction of Canada.

## **9. RPAS Acceptance**

Prior to delivery and title transfer of the RPAS, the Contractor must conduct Acceptance Tests to determine that the RPAS satisfies the requirements of the Contract.

Delivery and acceptance of the RPAS by Canada will in no way relieve the Contractor of responsibility for product quality and the responsibility for assuming corrective measures should deficiencies be detected within the warranty period.

### **9.1 RPAS Acceptance Test Plan**

The Contractor must provide a preliminary RPAS Acceptance Test Plan (ATP), as part of the Project Initiation Meeting.

TC will be responsible for obtaining all Canadian flight authorizations, including a Special Flight Operating Certificate (SFOC) for flight acceptance testing in Canada. The Contractor will be responsible for transport of the RPAS to any flight testing locations, all logistics, and satellite communications.

The final ATP, finalized in cooperation with Canada and the Contractor and based on the requirements outlined in the Baseline Statement of Requirements at Appendix A, must be delivered to Canada for final review and acceptance 20 working days after the CDR.

The ATP must address the following:

- a. Preliminary RPAS Acceptance #1 to be held at the Contractor's facilities on completion of assembly and trials to demonstrate that the RPAS and its support system fully meets the requirements of the SOW. This Operational Acceptance Testing will include the checking done to RPAS systems and equipment to ensure that processes and procedures are in place to allow the RPAS to be operated and maintained. This will be accomplished through test flights, review of flight test manual and manual supplements, maintenance manual and maintenance manual supplements, maintenance planning and analysis data, as well as ground checks and engine run ups;
- b. Preliminary RPAS Acceptance #2 to be held in Iqaluit Canada, on completion of Preliminary Acceptance #1 to demonstrate that the RPAS and its support system fully meets the requirements of the SOW as are related to flights in Arctic conditions. This will be accomplished through test flights, review of flight test manual and manual supplements, maintenance manual and maintenance manual supplements, maintenance planning and analysis data, as well as ground checks and engine run ups. The details of the acceptance test for these conditions can be found in Appendix C to this document and will include a flight of approximately 1300 nautical miles originating in Iqaluit.
- c. Final RPAS Acceptance to be held at the Ottawa Airport (or at a designated alternate within 350 kms of Ottawa) on completion of Preliminary Acceptance #2, and an inspection of the RPAS to determine if it was damaged in shipment and corrections of any found defects. This will be accomplished through test flights, review of flight test manual and manual supplements, maintenance manual and maintenance manual supplements, maintenance planning and analysis data, as well as ground checks and engine run ups. All RPAS systems and equipment must be tested against the requirements identified in the ATP prior to RPAS system acceptance, and may include Certification Acceptance testing if applicable to ensure that the RPAS fulfills the requirements of any applicable design and airworthiness standards.
- d. Contractual acceptance to be held at the Ottawa Airport on completion of a verification that all deliverables in the contract have been accepted by the Project Authority.

The ATP must provide for the following items as a minimum:

- a. Introduction and Objectives;
- b. Test schedule;
- c. Test Methodology;
- d. Test Procedures;
- e. Test roles and responsibilities;
- f. Data Analysis Methodology;
- g. Test data record sheets;
- h. Test results and conclusions; and
- i. Test report.

The RPAS Test Schedule must form part of the Master Project Schedule.

## **9.2. RPAS Acceptance Tests**

Each RPAS Acceptance Test must be conducted for each RPA ordered and witnessed and approved by Canada. The RPAS Acceptance tests must include a physical acceptance inspection and test flight. The Contractor must provide the necessary resources and make available all of the necessary tools to successfully conduct the RPAS Acceptance Testing including, but not limited to, satellite communications and logistics for Preliminary Acceptance

Tests 1 and 2, and the Final Acceptance Test. The RPAS Acceptance must be carried out in accordance with the Acceptance Test Plan.

The RPAS Acceptance Test must include but not be limited to:

- a. Ground checks: external surfaces, RPA visual inspection, MCS checks (fixed, portable, and LRC), engine tests;
- b. Operational checks and demonstrations: to confirm that all operational and mission specific requirements and equipment is functioning for its intended purpose;
- c. Acceptance flight (s): checks during flight of all RPAS systems (including MCS and sensor payload) and RPA behaviour in the whole flight envelope including in Arctic conditions in Northern latitudes;
- d. Physical rework or provision of solutions for all technical and quality issues;
- e. Production of a deficiencies report, corrective action plan and status report; and
- f. Completion of technical acceptance: technical closure of the RPAS and all associated documents attesting the system's compliance and conformity to the technical specification.

### 9.3. RPAS Acceptance Test Report

At the conclusion of the RPAS Acceptance Tests, the Contractor must prepare and present a draft Acceptance Test Report at a meeting to be held following the Acceptance Test. The report must contain the test procedures, the tests conditions, anticipated test results and the actual test results. The draft RPAS Test Report must document any issues, discrepancies or deficiencies that were raised during the test. It must outline corrective action plans and actions taken to resolve outstanding items. The Report must be reviewed and accepted by Canada.

The Contractor must be responsible to coordinate a meeting with all participants immediately following the RPAS Acceptance Test to confirm test results.

Where failures or non-conformities are identified in the draft RPAS Acceptance Test Report, the Contractor must be responsible for taking the necessary action to remedy the defect and ensure compliance.

The final RPAS Acceptance Test Reports must be provided to Canada within ten (10) working days following the test completion.

Canada will not accept the RPAS until all issues, discrepancies or deficiencies identified in the RPAS Acceptance Test Report have been rectified.

### 9.4. RPAS Acceptance Meetings

- 9.4.1. A Preliminary RPAS Acceptance #1 meeting will be held at the Contractor's facilities on completion of assembly and trials to demonstrate that the RPA and its support system fully meets the requirements of the SOW and to address any deficiencies and non-conformities that were identified during the RPAS test. This meeting will be chaired by the Contractor. The Contractor must deliver a draft Preliminary RPAS Acceptance #1 report at this meeting. The Contractor must deliver the Preliminary RPAS Acceptance #1 Meeting minutes, final report, and Action Items within ten (10) working days of the Preliminary RPAS Acceptance #1 Meeting.
- 9.4.2. A Preliminary RPAS Acceptance #2 meeting will be held in Iqaluit Canada after completion of the demonstration of the RPAS in Arctic conditions in Northern latitudes as identified in 9.1b and Appendix C. This meeting will be chaired by the Contractor. The Contractor must deliver a draft Preliminary RPAS Acceptance #2 report at this meeting. The Contractor must deliver the Preliminary RPAS Acceptance #2

Meeting minutes, final report and Action Items within ten (10) working days of the Preliminary RPAS Acceptance #2 Meeting.

9.4.3. A Final RPAS Acceptance meeting to be held at the Ottawa Airport after completion of Preliminary RPAS Acceptance #2 meeting and an inspection of the RPA to determine if the RPAS was damaged in shipment and corrections of any found defects. The Final RPAS Acceptance Meeting will be co-chaired by the Contractor and Canada. The Contractor must deliver a draft final RPAS Acceptance report at this meeting. The Contractor must deliver the Final RPAS Acceptance Meeting minutes, final report and Action Items within ten (10) working days of the Final RPAS Acceptance meeting. During the Final RPAS Acceptance meeting the Contractor must demonstrate the following:

- Corrective action plans have been implemented and any deficiencies and non-conformities of the RPAS have been resolved to the satisfaction of Canada;
- The transfer of the RPAS's technical records, related drawings and manuals to Canada, including all supplemental instructions for continued airworthiness; and
- Preparation of the documentation for change of ownership and delivery of the aircraft.

9.4.4. A Contractual Acceptance at the Ottawa Airport to be held on completion of a verification that all deliverables in the contract have been accepted by the Project Authority and that any action items resultant of the Final RPAS Acceptance meeting have been closed.

## 10. Final RPAS Delivery, Meeting, and Title Transfer

The Contractor must transport the RPAS to Ottawa Canada (or to a designated facility within 350KM of Ottawa, Ontario). Subsequent to this, the Contractual RPAS acceptance will take place.

Upon arrival at Ottawa, the Contractor and Canada must jointly meet to conduct the RPAS delivery inspection to confirm that the RPAS is delivered in the same condition that it was at the completion of trials and preliminary and final acceptance.

Any defects or damages noted during delivery must be documented as part of the Final RPAS Delivery Meeting minutes and Action Items. The Contractor must be responsible and assume all costs to repair any defects or damage. Any defects noted must be rectified and needed repairs must be completed before final RPAS title and deeds will be transferred to Canada and contractual acceptance takes place.

Subject to the aircraft being free from defects and damages, Canada will assume ownership of the RPAS. The transfer of the RPAS title and deeds to Canada will constitute delivery of the RPAS to Canada.

The Contractor must deliver the Final RPAS Delivery Meeting minutes and Action Items within ten (10) working days of Final RPAS Delivery meeting.

## 11. Training

The Contractor must provide training courses for RPA Operators, Payload Operators and Maintenance Personnel in English. Maintenance training must be sufficient to enable personnel to maintain the complete RPAS and must include but not be limited to the airframe, engines, propellers and their subsystems and the ground control station including command and control data link. These courses must be delivered to Canada at the Contractor's facilities.

For the purposes of this document, one training course is defined as one continuous training session, having a maximum of 6 participants from Canada.



Unless otherwise stated, the Contractor must provide a complete set of training materials and manuals to each candidate upon arrival to training. All training materials and manuals must be provided in hard copy and will be retained by each candidate.

## 11.1. Training Plan

The final Training Plan must be delivered as part of the PIM.

The Contractor must provide the following training to Transport Canada before the acceptance testing of the RPAS begins:

- a. Factory training for six (6) RPA operators including simulator and live flight training that will be sufficient to allow RPA operators to fully operate the RPAS;
- b. Factory training for six (6) payload operators, including simulator and live flight training, that will be sufficient to allow payload operators to fully operate RPAS payload;
- c. Factory training for six (6) RPAS maintenance personnel before the flight testing period, that will be sufficient to allow the maintenance personnel to fully support RPAS operations (maintenance training must include but not be limited to the airframe, engines, and their subsystems, and the Mission Control Station fixed and mobile and the Launch and Recovery Component including command and control data link);
- d. Training for two (2) Ground Control Systems maintainers before the flight testing period, that will be sufficient to allow the communications/data link specialist to fully support RPAS operations

The prerequisite level of training of the trainees will be as follows:

- RPA Operators will be licensed pilots with valid Canadian instrument ratings.
- Payload Operators will have High School diplomas, be fluent in English and may not have any previous ISR experience.
- RPAS maintenance personnel will be holders of an Aircraft Maintenance Engineer (AME) license with either an "M" or "E" rating issued by Transport Canada Civil Aviation under the provisions of CAR Part 4 Subpart 3 and CAR Standard 566.

The Contractor must provide all final program curriculum and materials to Canada for review and comment, four (4) weeks prior to the commencement of the first training course.

During the delivery of this training the Contractor must provide the complete Training Program in hard copy and electronic format that is editable and can be used to train RPA operators, payload operators and maintenance personnel on RPAS systems and all other aspects of ground school.

The Contractor must provide Canada with a written release permitting Canada to update, refine, translate, reproduce and use the Contractor provided training material to have the capability to conduct initial and recurrent training.

## 12. Maintenance and Product Support

### 12.1. Maintenance Plan

The Contractor must provide a final detailed Maintenance Plan (MP) and Schedule detailing daily maintenance requirements, scheduled inspection requirements and major component overhaul and life limit schedules and requirements, as a minimum.

- a. The Contractor supplied Maintenance Plan should allow maximum amount of operating time between scheduled maintenance inspections of the airframe, power plant(s), propeller(s), and MCS.
- b. The Contractor supplied Maintenance Plan should allow the maximum amount of operating time between engine overhauls;

- c. The Contractor supplied Maintenance Plan should consider the following parameters: 15 years, 7500 hours, and 375 landings per aircraft, and include all RPAS systems (i.e. engine/propeller, instrumentation, sensors and avionics, and all MCS equipment).

## 12.2. Maintenance Reliability and Support

The Contractor must provide a Maintenance Plan to support TC as the Approved Maintenance Organization to maintain aircraft serviceability for the projected lifespan of the RPAS. The final plan should include the following:

- a. Ability to supply and ship parts to locations within North America within the time frames defined in the SOW/SOR for AOG, Work Stoppage and Routine part procurement;
- b. A Product Support and Field Service Representative (FSR) must be available 24 hours per day, 7 days per week, 365 days per year, through a toll free telephone service;
- c. On-site qualified Field Service Representative (FSR) on an as required basis, on-site to the location of the RPAS within 72 hours of request for support;
- d. Spare part inventory (based on Contractors recommended spares list) to support the RPAS operation as defined within the SOW;
- e. Authorized North American repair facilities to provide quick turnaround times on repair and overhaul (R&O) of components and to minimize shipping expenses;
- f. Availability of exchange components;
- g. Availability of rental components;
- h. Release of Service Bulletins and Advisory Materials to address fleet in-service issues or modifications/improvements;
- i. Revision support of all technical and operational publications eg. Flight manual, maintenance manuals, component manuals etc.;
- j. Software support and upgrades and a system for the management and operational implementation;
- k. As required engineering support for repairs;
- l. As required engineering support for modifications;
- m. Ground support equipment and special tooling support based on Contractor supplied lists;

## 12.3. Spares

The Contractor must provide a spares list, for the RPAS, including sensor payload. The Contractor must identify the recommended spares necessary to support the operation of the RPAS for the first 2000 hours. The recommended spares list should take into account scheduled maintenance requirements, and unscheduled maintenance considering the "Probability of Failures", that would render the RPAS unserviceable.

The list must be provided in MS Excel 2007 format and will be retained by the Approved Maintenance Organization (AMO) to support Canadian RPAS surveillance activities of 500 hours per system annually and one cycle per 20 flight hours. The recommended spares list must include recommended sparing for Ground Support Equipment (GSE).

## 12.4. Tooling and Equipment

The Contractor must provide the tooling and equipment list, (including applicable technical specifications), for the RPAS, including sensor payload, required for handling, testing, maintenance and overhaul. The Contractor must identify the recommended tooling and equipment necessary to support the operation of the RPAS for the first 2000 hours.

## 12.5. Ground Support Equipment

The Contractor must provide the list of all Ground Support Equipment, for the RPAS, including sensor payload. The Contractor must identify the recommended ground support equipment necessary to support the operation of the RPAS for the first 2000 hours.

## 12.6. Simulator Capability

The RPAS must include a simulator capability to emulate RPAS operator control, and allow operators to maintain currency when not flying.

## 12.7. Engineering Data

Canada requires access to intellectual property when required to establish the Type Design airworthiness requirements of the RPAS and payloads in order to carry out future repairs and modifications (including the future integration of new payloads). Therefore, the Contractor must provide access (electronic, Web preferred) to the latest revisions of operating and maintenance manuals, drawings and specifications, engineering reports and other related data (including but not limited to electrical / avionics drawings, engineering data / approval package, custom configuration drawings and mechanical drawings, general arrangement drawings of installed avionics, aircraft modification lists, software specifications, etc.), that defines the configuration and supports the type design features of the RPAS including those of other third party vendors installed in the RPAS. The Contractor must provide other RPAS associated engineering data in a format acceptable to Canada, as required on a case by case basis whenever Web data isn't available and required by Canada.

## 12.8. System Safety Case and Suitability Assessment

Utilizing the CONOPS stated within the SOW (SOW Item 4.1), the mission profiles in Appendix E, and the RPAS requirements of the SOR, the Contractor must provide a RPAS System Safety Case (SSC) and suitability assessment detailing the following:

1. Brief system development history;
2. Operational history summary – total hours flown/operated, accident rate (including number of hull losses and the Mean Time Between Losses) and causes, incident rates, fault arising rates, brief details of significant safety of flight issues and resolution, airworthiness certifications received;
3. Take into account all the considerations regarding airworthiness and safety related to performing the RPA System missions, roles and tasks, under all operational circumstances and environments (that is the assessment of the worst possible combination of conditions), to derive the RPAS System Level of Safety considering risks to persons on the ground and other airspace users taking into account the RPAS capabilities for "Sense and Avoid". The SSC must meet the requirements of AEP-4671 USAR.1309.
4. A Suitability Assessment certifying whether the Contractors RPAS is suitable for operation in the environment of the CONOPS, taking into account the RPAS Design Usage Spectrum (as defined within AEP-4671 USAR.U17) performing ISR tasks of up to the maximum endurance / range of the RPAS, carrying the specified payloads. Taking into account the RPAS reliability rate and scheduled maintenance program, the system availability for a single aircraft operation must permit at a minimum, an RPAS capable of 20 hours per mission, 40 hours per week and 500 hours per year while deployed.

## 13. Optional Goods

The Contractor must provide the following Goods during the course of the Contract period if opted and requested by Canada:

### 13.1. Spares Procurement

Canada may purchase, within the contract period, spare parts for TC stores inventory.

## **13.2. Tooling and Equipment Procurement**

Canada may purchase, within the contract period, tooling and equipment required to operate and maintain the RPAS.

## **13.3. Ground Support Equipment Procurement**

Canada may purchase, within the contract period, ground support equipment required to operate and maintain the RPAS.

# **14. Document Management**

The Contractor must take a systematic approach in the way that documentation is prepared and provided to Canada. All documentation must have sufficient detail to provide the reader with a clear and concise understanding of what is being presented. Technical manuals must provide systems and subsystems (as applicable) in greater detail so that the reader can gain a complete understanding of the systems, design, maintenance and operation.

Canada is not obligated to provide any translated copy to the Contractor or third- party.

## **14.1. Documentation Quality**

The Contractor must produce all documentation deliverables listed in this SOW in a high grade commercial standard. OEM documents may remain in their existing format, providing that they do not exceed a format of 8.5 x 11 inch (216 mm to 279 mm). All manuals and other documentation should be clearly marked and bound in hard cover ring type binders.

## **14.2. Language**

Unless otherwise stated, the Contractor must provide all deliverables in English.

## **14.3. Equipment Cataloguing Data**

The Contractor must produce an Equipment Catalogue in Microsoft Excel 2007 for all Equipment supplied.

## **14.4. Media**

All documentation must be provided to Canada in both paper and electronic format.

Draft documentation for review and comment may be provided in electronic format only and may be delivered by email.

## **14.5. Documentation Reviews**

Canada will review draft and final documentation provided by the Contractor in the shortest time possible. The review cycles will be agreed upon between Canada and the Contractor unless otherwise specified in the Statement of Work. Document reviews must be held at the discretion of Canada on an as required basis.

## **14.6. Document Configuration Management**

The Contractor must maintain a configuration management system that employs technical and administrative direction to:

- a. Identify and document the functional and physical characteristics of hardware and software components of the RPAS systems and subsystems;

- b. Control changes to all documents;
- c. Record and report the status of changes to all documents;
- d. Manage and track the timely distribution of all required documents and subsequent amendments to Canada.

#### **14.7. Delivery Ceremony**

As part of the proposal the Contractor must include provisions to host a Contract Award and a "Delivery Ceremony" at the Contractor facility for handover of the RPAS. The ceremony may include Government of Canada personnel, dignitaries and media.

#### **14.8. Photographs**

The Contractor must make provisions to allow Canada to have photographs taken at its facility during the delivery phase of the RPAS.

## 15. Project Milestones and Deliverables

Canada will review all Project Deliverables for acceptance in accordance with the terms of the Contract.

Acceptance of the deliverables by Canada will in no way relieve the Contractor of responsibility for product quality and the responsibility for assuming any corrective measures should deficiencies be detected within the warranty period.

During this project, the Contractor must provide the following project deliverables, as a minimum.

#	Deliverable	Hard Copy	Soft Copy	Format	Date Required
<b>Project Initiation Meeting</b>					
1.	Project Initiation Meeting	N/A	N/A	N/A	CA + 25 working days
2.	Draft Project Initiation Meeting Agenda		x	MS Word	10 working days prior to PIM
3.	Final Project Initiation Meeting Agenda		x	MS Word	5 working days prior to PIM
4.	Project Management Plan		x	MS Word	5 working days prior to PIM
5.	Master Project Schedule		x	MS Project	CA + 20 working days
6.	Communication and Issue Management Plan		x	MS Word	CA + 20 working days
7.	Quality Management Plan		x	MS Word	CA + 20 working days
8.	Configuration and Change Management Plan		x	MS Word	CA + 20 working days
9.	Security Management Plan		x	MS Word	CA + 20 working days
10.	Final Training Plan		x	MS Word	CA + 20 working days
11.	Project Issues Register			MS Excel	CA + 20 working days and ongoing
12.	Project Action Items Register		x	MS Excel	CA + 20 working days and ongoing
13.	Preliminary RPAS Acceptance Test Plan		x	MS Word	CA + 20 working days and ongoing
<b>Monthly Progress Reports</b>					
14.	Monthly Progress Reports		x	MS Word	Third Thursday of each month
<b>Quarterly Project Progress Review</b>					
15.	Quarterly Project Progress Review	N/A	N/A	N/A	Ongoing quarterly

16.	Quarterly Project Progress Review meeting Draft Agenda		x	MS Word	10 working days prior to each quarterly meeting
17.	Quarterly Project Progress Review Meeting Final Agenda		x	MS Word	5 working days prior to each quarterly meeting
18.	Quarterly Project Progress Review Meeting Documentation			MS Word	5 working days prior to each quarterly meeting
19.	Quarterly Project Progress Review Meeting minutes and Action Items		x	MS Word	5 working days after quarterly meeting
<b>Preliminary Design Review Meeting</b>					
20.	Preliminary Design Review Meeting	N/A	N/A	N/A	TBD
21.	Draft Preliminary Design Review Meeting Agenda		x	MS Word	10 working days prior to PDR meeting
22.	Final Preliminary Design Review Meeting Agenda		x	MS Word	5 working days prior to PDR meeting
23.	Preliminary Design Review Documentation Package	x (if in contractor format)	x	MS Word / Contractor Format	5 working days prior to PDR meeting
24.	System Requirements Specifications	x (if in contractor format)	x	MS Word / Contractor Format	5 working days prior to PDR meeting
25.	System Interface Control Document	x (if in contractor format)	x	MS Word / Contractor Format	5 working days prior to PDR meeting
26.	System Design Description	x (if in contractor format)	x	MS Word / Contractor Format	5 working days prior to PDR meeting
27.	System Performance Specification that includes information on reliability and includes Technology Readiness Level (TRL), Mean Time Between Failure (MTBF), and Mean Time Between Repair (MTBR) (draft and final)	x (if in contractor format)	x	MS Word / Contractor Format	5 working days prior to PDR meeting
28.	Appendix B – STANAG 4671 Edition 2 / AEP-4671 Edition A Version 1 Compliance Matrix.	x	x	MS Word	5 working days prior to PDR meeting

29.	Evaluation of Operation and Maintenance Costs	x	x	MS Word	5 working days prior to PDR meeting
30.	Preliminary Design Review minutes and Action Items		x	MS Word	5 working days after PDR meeting
<b>Critical Design Review Meeting</b>					
31.	Critical Design Review Meeting	N/A	N/A	N/A	TBD
32.	Draft Critical Design Review Meeting Agenda		x	MS Word	10 working days prior to CDR meeting
33.	Final Critical Design Review Meeting Agenda		x	MS Word	5 working days prior to CDR meeting
34.	Critical Design Review Meeting Documentation Package	X (if in contractor format)	x	MS Word / Contractor Format	5 working days prior to CDR meeting
35.	Delivery of all aircraft (if applicable), engine and propeller Type Certificates and applicable documentation packages	X	X if available	TBD	5 working days prior to CDR meeting
36.	Updated System Safety Case and Suitability Assessment	x	x	MS Word	5 working days prior to CDR meeting
37.	A detailed Maintenance Program and Schedule	x	x	MS Word / Contractor Format	5 working days prior to CDR meeting
38.	Final Spares List		x		5 working days prior to CDR meeting
39.	Final tooling and equipment list for handling, testing, maintenance and overhaul of the RPAS	x		MS Excel	5 working days prior to CDR meeting
40.	List of required ground Support Equipment for daily operations		x	MS Excel	5 working days prior to CDR meeting
41.	Aircraft (RPAS) Certificate of Airworthiness (If applicable)	x	x	TBD	5 working days prior to CDR meeting
42.	STANAG certification (if applicable)	x	x	TBD	5 working days prior to CDR meeting
43.	RPAS build sheet with technical specifications - Used RPAS	x	x	MS Word / Contractor Format	5 working days prior to CDR meeting
44.	Critical Design Review Minutes and Action Items		x	MS Word	5 working days after CDR meeting
<b>Final RPAS Acceptance Test Plan (ATP)</b>					
45.	Final Acceptance Test Plan (ATP)		x	MS Project / MS word	20 working days after CDR meeting



<b>Training</b>					
46.	RPAS Operator Training curriculum, manuals and course materials	X	x	MS Word / Contractor Format	20 working days prior to the commencement of first training course
47.	RPAS Maintenance Training curriculum, manuals and course materials	X	x	MS Word / Contractor Format	20 working days prior to the commencement of first training course
48.	Payload operator Training curriculum, manuals and course materials	X	x	MS Word / Contractor Format	20 working days prior to the commencement of first training course
49.	Factory training course for operators	N/A	N/A		Course completion 20 working days prior to the Preliminary Acceptance Test #1
50.	Factory training course for maintenance engineers	N/A	N/A		Course completion 20 working days prior to the Preliminary Acceptance Test #1
51.	Factory training course for payload operators	N/A	N/A		Course completion 20 working days prior to the Preliminary Acceptance Test #1
<b>Preliminary RPAS Acceptance Test # 1</b>					
52.	Preliminary RPAS Acceptance Test # 1	N/A	N/A	N/A	TBD
53.	Preliminary RPAS Acceptance Test # 1 Meeting Agenda		x	MS Word	5 working days prior to Acceptance Test #1
54.	Preliminary RPAS Acceptance Test # 1 Meeting Documentation Package		x	MS Word	5 working days prior to Acceptance Test #1
55.	Draft Acceptance Test Report		x	MS Word	At Acceptance Test Meeting, maximum 2 days following Acceptance Test
56.	Preliminary RPAS Acceptance Test # 1 Meeting Minutes ,Action Items, Final Report and Corrective Action Plan		x	MS Word	10 working days after Acceptance Test #1

<b>Preliminary RPAS Acceptance Test # 2</b>					
57.	Preliminary RPAS Acceptance Test # 2	N/A	N/A		TBD
58.	Preliminary RPAS Acceptance Test # 2 Meeting Agenda		x	MS Word	5 working days prior to Acceptance Test #2
59.	Preliminary RPAS Acceptance Test # 2 Meeting Documentation Package		x	MS Word	5 working days prior to Acceptance Test #2
60.	Draft Acceptance Test Report		x	MS Word	At Acceptance Test Meeting, maximum 2 days following Acceptance Test
61.	Preliminary RPAS Acceptance Test # 2 Meeting Minutes, Action Items final Report and Corrective Action Plan.		x	MS Word	10 working days after Acceptance Test #2
<b>Final RPAS Acceptance Test</b>					
62.	Final RPAS Acceptance Test	N/A	N/A		TBD
63.	Final RPAS Acceptance Test Meeting Agenda		x	MS Word	5 working days prior to Final Acceptance Test
64.	Final RPAS Acceptance Test Meeting Documentation Package		x	MS Word	5 working days prior to Final Acceptance Test
65.	Draft Acceptance Test Report		x	MS Word	At Acceptance Test Meeting, maximum 2 days following Acceptance Test
66.	Airframe Maintenance Manual(s)	N/A	x	Contractor Format	Final Acceptance Test Meeting
	RPAS build sheet with technical specifications - New RPAS	X (if in contractor format)	x	MS Word / Contractor Format	Final Acceptance Test Meeting
67.	Aircraft Modification Lists.	N/A	x	MS Word / Contractor Format	Final Acceptance Test Meeting
68.	Engine Maintenance Manual(s)	N/A	x	MS Word / Contractor Format	Final Acceptance Test Meeting
69.	Propeller Maintenance Manual (s) if applicable	N/A	x	MS Word / Contractor Format	Final Acceptance Test Meeting
70.	Avionics/Electrical Maintenance/Wiring Manual(s)	N/A	x	MS Word / Contractor Format	Final Acceptance Test Meeting

71.	Avionics/Electrical Installation Drawings for Installed Equipment	N/A	x	MS Word / Contractor Format	Final Acceptance Test Meeting
72.	Maintenance Instructions for all installed Sensors	N/A	x	MS Word / Contractor Format	Final Acceptance Test Meeting
73.	Vendor Manuals	N/A	x	MS Word / Contractor Format	Final Acceptance Test Meeting
74.	Component Repair and Overhaul Manuals	N/A	x	MS Word / Contractor Format	Final Acceptance Test Meeting
75.	Illustrated Parts Catalogue for Airframe	N/A	x	MS Word / Contractor Format	Final Acceptance Test Meeting
76.	Illustrated Parts Catalogue for Engine(s)	N/A	x	MS Word / Contractor Format	Final Acceptance Test Meeting
77.	Illustrated Parts Catalogue for Propellers (if applicable)	N/A	x	MS Word / Contractor Format	Final Acceptance Test Meeting
78.	Illustrated Parts Catalogue for all Sensors	N/A	x	MS Word / Contractor Format	Final Acceptance Test Meeting
79.	Service Bulletins for the Airframe, Engines, Components, and propellers (if applicable)	N/A	x	MS Word / Contractor Format	Final Acceptance Test Meeting
80.	Technical Bulletins for the Airframe, Engines, Components, and propellers (If applicable)	N/A	x	MS Word / Contractor Format	Final Acceptance Test Meeting
81.	Service Instructions for the Aircraft, Engines, Components, and propellers (If applicable)	N/A	x	MS Word / Contractor Format	Final Acceptance Test Meeting
82.	Other publications such as but not limited to; (IF applicable)	N/A	x	MS Word / Contractor Format	Final Acceptance Test Meeting
	a. Operations Safety Notices				
	b. Information Letters				
	c. Standard Practices Manual				
	d. Electrical Standard Practices Manual				
	e. Corrosion Control Guide				
	f. Special Tools Illustrated Parts Breakdown				
83.	Structural Repair Manual	N/A	x	MS Word / Contractor Format	Final Acceptance Test Meeting

84.	Aircraft (RPAS) Flight Manual/Operating Manual	x	X	PDF	Final Acceptance Test Meeting
85.	Operating Manuals for all installed equipment	x	x	MS Word / Contractor Format	Final Acceptance Test Meeting
86.	Aircraft Equipment List	Optional	x	MS Excel / Contractor Format	Final Acceptance Test Meeting
87.	Electrical Load Analysis	Optional	x	MS Word / Contractor Format	Final Acceptance Test Meeting
88.	Weight and Balance Data	Optional	x	MS Word / Contractor Format	Final Acceptance Test Meeting
89.	Firmware Level and part number(s) for installed equipment	Optional	x	MS Word / Contractor Format	Final Acceptance Test Meeting
90.	Software Level and part number(s) for installed equipment	Optional	x	MS Word / Contractor Format	Final Acceptance Test Meeting
91.	Equipment Electronic Configuration Files	Optional	x	MS Word / Contractor Format	Final Acceptance Test Meeting
92.	Engineering data / approval package including Custom Configuration Drawings and Mechanical Drawings.	N/A	x	MS Word / Contractor Format	Final Acceptance Test Meeting
93.	Technical Log Books	x	Note 2	MS Word / Contractor Format	Final Acceptance Test Meeting
94.	Final RPAS Acceptance Test Meeting Minutes, Action Items, Final Report and Corrective Action Plan	x (if in contractor format)	x	MS Word	10 working days after Final Acceptance Test
<b>Contractual Acceptance</b>					
95.	Contractual Acceptance	N/A	N/A		TBD
96.	RPAS Title and Deeds	x	N/A	TBD	At contractual Acceptance
97.	Full Warranty Bill of Sale	x		TBD	At contractual acceptance
98.	Assignment of Warranties	x		TBD	After contractual acceptance
<b>Final Delivery</b>					
99.	Delivery of one complete RPAS in accordance with the RPAS Baseline Requirements Document (Appendix A) to TC	N/A	N/A	N/A	31-Mar-22

	Aircraft Services, Ottawa, Ontario, Canada				
100.	Certificate of Registration (if applicable)	x	N/A	MS Word / Contractor Format	Final Delivery
101.	If the Contractor is providing an OPA that will be used for both manned and unmanned flight, the OPA must be delivered with a Canadian Certificate of Airworthiness (C of A) issued per CAR 507 and a Canadian Certificate of Registration (C of R) issued per CAR 202 for operation under manned flight.	x	N/A	N/A	Final delivery
102.	Journey Log Books	x	Note 2	MS Word / Contractor Format	Final Delivery

Note 1: Contractor is responsible to supply as required, any manuals or documentation required by Canada during all acceptance tests.

Note 2: Depending on Contractor's technical record system, Canada may accept electronic technical records.

Solicitation No. - N° de l'invitation  
T8493-150035/C Draft RFP  
Client Ref. No. - N° de réf. du client

Amd. No. - N° de la modif.  
File No. - N° du dossier

Buyer ID - Id de l'acheteur  
004CAG  
CCC No./N° CCC - FMS No./N° VME

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Solicitation No. - N° de l'invitation T8493-150035/C Draft RFP Client Ref. No. - N° de réf. du client	Amd. No. - N° de la modif. File No. - N° du dossier	Buyer ID - Id de l'acheteur 004CAG CCC No./N° CCC - FMS No./N° VME
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**APPENDIX A – Baseline Statement of Requirements Document**  
Transport Canada Unmanned Aerial System

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
<b>Operational Suitability Requirements</b>			
1.	The RPAS must have received an airworthiness certification from a Civil Aviation Authority or a National Military Airworthiness Authority.		
2.	The RPAS must have received an operational approval (eg. SFOC, Certificate of Airworthiness) from a Civil Aviation Authority or a National Military Airworthiness Authority.		
3.		RPAS engine (s) should have a type certificate issued by a Civilian Aviation Authority.	
4.		RPAS propeller (s) should have a type certificate issued by a Civilian Aviation Authority.	
5.	Contractors must provide a Status Report showing for all life limited and calendar, time, cycle or landing controlled components, the part number and serial number and the applicable TSN / TSO calendar, cycles, landings and time in service for each component / structure for the airframe, engine and propeller (for used aircraft only)		
6.		The RPAS, and the RPAS operation of an OPA should be designed and certified to comply with STANAG 4671, Edition 1 or STANAG 4671 Edition 2 / AEP-4671 Edition A Version 1, (preferred design standard)	



ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
7.	If the Contractor is providing an OPA that will be used for both manned and unmanned flight, the OPA must be delivered with a Canadian Certificate of Airworthiness (C of A) issued per CAR 507 and a Canadian Certificate of Registration (C of R) issued per CAR 202 for operation under manned flight. The OPA must be equipped and certified for day and night Instrument Flight Rules (IFR), per the requirements of CAR 605.18, and capable of flight in all classes of Canadian airspace.		
8.	The overall RPAS availability must be no less than 20 hours per mission, 40 hours per week and 500 hours per year for each RPA.		
9.	The RPAS must be equipped with a minimum duplicate redundant navigation system including instruments at the MCS to allow the RPAS to operate up to 72 degrees north latitude, during all phases of flight (eg. take-off, enroute, approach and landing) under Instrument Flight Rules (IFR).		
10.		The RPAS should be equipped with a minimum duplicate redundant navigation system consisting of a tightly coupled Inertial Navigation System (INS) and Global Navigation Satellite System utilizing the Satellite-Based Augmentation System, including instruments at the MCS to allow the RPAS to operate up to 72 degrees north latitude, during all phases of flight (eg. take-off, enroute, approach and landing) under Instrument Flight Rules (IFR).	

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
<b>Remotely Piloted Aircraft Requirements</b>			
11.	Each RPA must be capable of flying at least 500 nautical miles, loiter on station for 5 hours and then return to the point of departure (round trip distance 1000 nm plus loiter distance) with full payload and a two hour fuel reserve (assume zero wind).  If the RPA is not Reduced Vertical Separation Minimum (RVSM) certified, then endurance and range calculations must be based on altitudes outside of RVSM airspace.		Full payload includes items 52-55.5 in the Statement of Requirements of Appendix A.
11.1.		Each RPA should be capable of flying more than 500 nautical miles, loiter on station for 5 hours and then return to the point of departure (round trip distance more than 1000 nm plus loiter distance) with full payload and a two hour fuel reserve (assume zero wind).  If the RPA is not Reduced Vertical Separation Minimum (RVSM) certified, then endurance and range calculations must be based on altitudes outside of RVSM airspace.	Full payload includes items 52-55.5 in the Statement of Requirements of Appendix A.
12.	Each RPA must have a minimum total flying range of 1400 nautical miles with full payload and a two hour fuel reserve (assume zero wind).  If the RPA is not Reduced Vertical Separation Minimum (RVSM) certified, then endurance and range calculations must be based on altitudes outside of RVSM airspace.		Full payload includes items 52-55.5 in the Statement of Requirements of Appendix A.

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
12.1.		Each RPA should have a minimum total flying range of more than 1400 nautical miles with full payload and a two hour fuel reserve (assume zero wind).  If the RPA is not Reduced Vertical Separation Minimum (RVSM) certified, then endurance and range calculations must be based on altitudes outside of RVSM airspace.	Full payload includes items 52-55.5 in the Statement of Requirements of Appendix A.
13.	Each RPA must be capable of takeoff and landing from a paved runway with a minimum TODA/LDA of 5000 feet and a minimum Canadian Runway Friction Index (CRFI) of 0.5, at maximum takeoff weight.		
14.		Each RPA should have Induction System Icing Protection meeting the requirements of AEP-4671 USAR. 1093	
15.	Each RPA must have an operational ceiling of at least 15,000' above MSL.		
16.		Each RPA should have ice protection systems suitable for operations in continuous light icing conditions	Refer to AEP-4671 USAR. 1416 and USAR. 1419 requirements.
17.		Each RPA should have a system capable of detecting airframe icing in flight and alerting the RPA operator to the presence of airframe icing.	
18.	Each RPA must be equipped with position and anti-collision lights that meet the requirements of AEP-4671 USAR. 1385 to USAR1401 inclusive.		

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
19.	Each RPA must be capable of flight in ambient outside air temperatures between -55°C and +30°C.		
20.	Each RPA must be able to sustain storage temperatures between -30°C and +30°C for up to 12 hours and then be successfully started and deployed.		
21.	If auxiliary equipment (e.g Herman Nelson) is necessary to start and deploy each RPA after storage of up to 12 hours at temperatures between -30°C and +30°C, this equipment must be supplied for each RPA provided.		Contractors should assume that electrical power will be provided at FOB and MOB
22.	Each RPA must be equipped with heated pitot tubes.		
23.	Each RPA must be equipped with static pressure port anti-icing.		
24.	Static pressure systems, altimeters and other altimetry devices (as defined within CAR Standard 625 Appendix C), must meet the applicable Standards of Airworthiness of the CARs as detailed in Appendix B of Chapter 571 of the Airworthiness Manual.		
25.	The RPAS must include a digital Autopilot system that is capable of automatic take-off and landing and include an automatic abort and go around function.		
25.1.		The Autopilot system should meet the requirements of AEP-4671 USAR.U1490 and U1492.	Refer to AEP-4671 USAR.U1490 and U1492.

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
26.	RPA Operators must be able to dynamically interact with the RPA and override commands as necessary during automatic take-off and landing.		
27.	Each RPA must include an emergency recovery system that is operator definable and complies with AEP-4671 USAR.U1412 (a)(1) and (2), and (b) through (f) inclusive.		Refer to AEP-4671 USAR.U1412 Within this context means the operator has the ability to pre-program any autonomous flight profiles or to select a course of action.
28.	Each RPA must be equipped with an onboard flight recorder complying with STANAG 4671 Edition 1 USAR.1459 or AEP 4671 USAR.1459		Refer to STANAG 4671 Edition 1 or AEP-4671 USAR.1459
29.1.		Each RPA should be equipped with an onboard flight recorder complying with AEP 4671 USAR.1459	
29.2.		The onboard flight recorder should be equipped with an underwater location device complying with AEP-4671 USAR.1459(d)(3)	
30.	Each RPA must include a Navigation system that is capable of operating in the Canadian Arctic within the area of magnetic unreliability.		
30.1.	The Navigation system in each RPA must provide the RPA operator in the MCS with heading indications in "Magnetic" and "True" or be selectable by the RPA operator.		
31.	The heading system in each RPA must be capable of operating with no operational limitations or performance degradation up to 72 degrees north latitude and from a ground or in flight power up condition.		

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
32.		The heading system in each RPA should be capable of operating with no operational limitations or performance degradation up to 90 degrees north latitude and from a ground or in flight power up condition	
33.	Each RPA must be equipped with an ATC transponder and automatic pressure altitude reporting equipment.		
34.	ATC transponders and altitude sensing reporting mechanisms must meet the performance testing requirements detailed in Appendix F of Chapter 571 of the CARs ( <a href="http://www.tc.gc.ca/eng/civilaviation/regserv/cars/part5-standards-a571sf-3233.htm">http://www.tc.gc.ca/eng/civilaviation/regserv/cars/part5-standards-a571sf-3233.htm</a> ).		
35.	The avionics in each RPA must include Automatic Dependent Surveillance - Broadcast (ADS-B In and Out) using 1090 MHz extended squitter (1090ES) with antenna diversity that meets the Aireon space based ADS-B system technical requirements.  The Pressure altitude reported for ADS-B out and the Mode C/S transponders must be derived from the same source.		
36.	ADS-B information must be transmitted to, and displayed in the MCS.		
37.		Each RPA should be equipped with a Traffic Collision Avoidance System-II (TCAS-II). TCAS information should be transmitted to, and displayed in the MCS.	

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
38.		Each RPA should be equipped with a Terrain Awareness Warning System-B (TAWS-B) and has a terrain and airport database compatible with the area of operation, and TAWS information should be transmitted to, and displayed in the MCS.	.
39.		Each RPA should be equipped with an Altitude Alerting System and all alerts and warning signals should be transmitted to and displayed in the MCS.	
40.	Each RPA must include a dual VHF AM two way voice communication system.		
41.	Each RPA must be equipped with a dual VHF FM communication system.		
42.	Each RPA must be capable of relaying VHF AM and FM voice communications between a vessel of interest and the MCS using both the satellite link and the RLOS link, when applicable		
43.	Each RPA must have an engine shut down procedure that complies with AEP-4671 USAR.U1413.		Refer to AEP-4671 USAR.U1413
44.	Each RPA must have a First Person View (FPV) Device.  This requirement cannot be met by the EO/IR camera that is included as part of the payload.		
45.	All Payloads in each RPA must meet the requirements of AEP-4671 USAR.U1481.		

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
46.	Each RPA must be capable of concurrently carrying all payload, communications and mission equipment specified elsewhere in this document.		
47.	Each RPA must have a surplus internal payload capacity of 25 litres volume, 25 kilograms mass and 500 watts power.  Surplus means surplus to the proposed system inclusive of all mandatory equipment and payload		
48.		Each RPA should have a surplus internal payload capacity of more than 25 litres volume, 25 kilograms mass and 500 watts power.  Surplus means surplus to the proposed system inclusive of all mandatory equipment and payload	
49.	Each RPA must be capable of accepting secondary payloads, including from manufacturers other than those that will provide the RPAS and Standard Full Payload, and use open source physical connectors and communications protocols that comply with recognized international standards.		
50.		Each RPA should have a maximum speed in excess of 100 knots.	
51.	Each RPA must be painted in accordance with the TC NASP paint scheme as decided at the Critical Design Phase		



ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
<b>Payload and Sensor Requirements</b>			
52.	The payload must include a maritime Radar that is able to perform moving target indication (MTI), tracking, synthetic aperture radar (SAR) imagery, inverse synthetic aperture radar (ISAR) imagery, and target information integration.		
52.1.	The maritime Radar must be capable of detecting, at operating altitude of the RPA, anomalies that are indicative of oil spills, ice floes and icebergs, vessels and mammals on the ocean surface.		
52.2.		The Maritime Search Radar radar should be capable of simultaneous Air to Air surveillance and tracking.	
52.3.	The maritime radar must be capable of automatically sending a notification to the MCS when an anomaly is detected on the ocean surface regardless of whether it is streaming radar data at the time.		
52.4.	The maritime radar must perform moving target indication (MTI) tracking.		
52.5.		The MTI tracking should have a 125 km or more stand-off detection range at operating altitude of the RPA.	
52.6.		The MTI tracking should be able to detect a 3 m2 target from a range of 14 km or more in Beaufort Sea Scale 3, at operating altitude of the RPA	

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
52.7.		The MTI tracking should be able to detect a 1000 m2 target from a range of 55 km or more in Beaufort Sea Scale 3, at operating altitude of the RPA	
52.8.		The MTI tracking should be able to perform ground and air-to-air moving target indication;	
52.9.	The MTI tracking must be able to perform 360 degree detection.		
52.10.	The maritime radar must be able to track maritime, ground or airborne targets.		
52.11.		The maritime radar should be able to track 75 or more targets simultaneously.	
52.12.	The maritime radar must be capable of 360 degree tracking.		
52.13.	The maritime radar must include a synthetic aperture radar (SAR)		
52.14.	The synthetic aperture radar (SAR) must produce high resolution strip-map images with a resolution of 3 m or better from a range of 30 km or more at operating altitude of the RPA.		
52.15.	The synthetic aperture radar (SAR) must produce low resolution strip-map images for wide-area coverage with a resolution of 10 m or lower and a range swath of 28 km or more from a range of 35 km or more at operating altitude of the RPA.		
52.16.	The synthetic aperture radar (SAR) must produce SAR images with a squint angle between ±30 degrees.		

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
52.17.	The synthetic aperture radar (SAR) must produce high resolution spotlight SAR images with a resolution of 0.6 m or better from a range of 20 km or more.		
52.18.	The synthetic aperture radar (SAR) must produce imagery that is ground range corrected.		
52.19.	The maritime radar must provide inverse synthetic aperture radar (ISAR) functions		
52.20.	The ISAR must produce ISAR images with a resolution of 1 m or better from a distance of 15 km or more.		
53.	The payload must include an Electro Optical/Infrared (EO/IR) to enable ship target detection in clear weather from 40 kilometers, and target recognition from 20 kilometers especially under sub-optimal lighting conditions.		
53.1.	The EO/IR must be integrated with the maritime radar on the MCS Display so that selected radar targets can be slewed to automatically by clicking the radar target on the MCS monitor.		
53.2.	The EO/IR must include the following components: <ul style="list-style-type: none"> <li>• High Definition Electro-optical wide camera</li> <li>• Precision stabilized gimbal with inertial measurement unit (IMU)</li> <li>• High Definition Infrared Thermal Imager</li> <li>• Daylight Zoom</li> <li>• Low Light Zoom</li> <li>• Daylight Spotter</li> <li>• Laser Illuminator</li> <li>• Laser Range Finder</li> </ul>		

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
53.3.	The EO/IR must have a field of view of 360 degree azimuth, >= + 90 to - 120 degree elevation (reference zero degrees forward)		
53.4.	The EO/IR must report the target location in geographical coordinates (latitude, longitude, and altitude) with a geo-pointing error of less than 10 metres at 5 kilometres slant range		
53.5.	The EO/IR must have a ground resolved distance (GRD) value of 30 meters or better at a distance of 10 kilometers.		
53.6.	The EO/IR must automatically slew to a radar target when a payload operator selects a radar target in the moving map display.		
53.7.	The EO/IR must be able to be kept on a designated target via its own auto tracking system and annotate the imagery with position, heading and altitude information of the RPA and target.		
53.8.	The EO/IR must capture still frames annotated with time stamp and position information originating from the system processor.		
53.9.	The EO/IR must provide full motion video		
53.10.	The EO/IR must stream full motion video via satellite and datalink.		

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
53.11.	<p>The EO/IR must be equipped with a Daylight Colour Camera with the following specifications:</p> <ul style="list-style-type: none"> <li>• High definition (1920 X 1080 pixel)</li> <li>• Focal lengths 8.6 – 154 mm</li> <li>• Continuous zoom</li> <li>• Fields of View: 31.2° to 1.8° - 1080p</li> </ul>		
53.12.	<p>The EO/IR must be equipped with a High Definition Infrared (HD IR) Thermal imager camera with the following specifications.</p> <ul style="list-style-type: none"> <li>• Cooled Midwave Infrared</li> <li>• High Definition (1280x1024 pixel)</li> <li>• 6 field of view step-zoom 35.5° to 1.2°.</li> <li>• Pixel Pitch of 15 µm</li> </ul>		
53.13.	<p>The EO/IR must be equipped with a Dual channel spotter, colour and short-wave infrared (SWIR) camera with the following specifications.</p> <ul style="list-style-type: none"> <li>• Colour imager High Definition (1920x1080 pixel)</li> <li>• Visible (VIS) / SWIR imager (640x480 pixel)</li> <li>• 600, 1000, 1500 mm focal length (step)</li> </ul>		
53.14.	<p>The EO/IR must be equipped with a Daylight Colour Spotter with the following specifications:</p> <ul style="list-style-type: none"> <li>• Type: CMOS</li> <li>• Resolution: 1920 x 1080 Pixels</li> <li>• Focal Length: 600/100/1500 mm (step)</li> <li>• Fields of View: 1.1° to 0.43° – 1080 Pixel</li> </ul>		

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
53.15.	<p>The EO/IR must be equipped with a Low Light Zoom camera with the following specifications:</p> <ul style="list-style-type: none"> <li>Type: EMCCD</li> <li>Resolution: 640 x 480 Pixels</li> <li>Field of View: 40.8° to 2.4°</li> </ul>		
53.16.	<p>The EO/IR must include a Laser Range Finder with the following specifications</p> <ul style="list-style-type: none"> <li>ANSI Class 1, eyesafe</li> <li>Wavelength: 1540 nm</li> <li>Range: 20 km</li> <li>Pulse Rate: 12 pulses / minRange: 20 km</li> <li>Accuracy: +/- 6 m</li> <li>Resolution: +/- 2 m</li> </ul>		
53.17.	<p>The EO/IR must be equipped with a Wide Area Laser Illuminator (WALI) with the following specifications.</p> <ul style="list-style-type: none"> <li>Wide Divergence</li> <li>Wavelength: 860 nm</li> <li>Diode Class IV</li> <li>Power: 720, 360 mW3</li> <li>Modes: Continuous, Pulsed modes</li> <li>Beam Power: 350mW3 or 700mW3 selectable</li> <li>Provides coverage for low light spotter's field of view</li> </ul>		
53.18.	<p>The EO/IR must be equipped with Advanced Video Tracking (AVT) with the following specifications.</p> <ul style="list-style-type: none"> <li>Advanced Video Tracker (AVT)</li> <li>Functionality on all imaging sensors video stream</li> <li>Automatic target detection, Automated Video and Geo Tracking (AVGT) mode</li> </ul>		

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
53.19.	<p>The EO/IR must be equipped with the following to aid in pointing accuracy:</p> <ul style="list-style-type: none"> <li>• A built in inertial measurement unit (IMU) and internal GPS Receiver</li> <li>• Auto and Auto-aid steering modes</li> <li>• GeoPointing, GeoLocation, GeoFocus and GeoScan</li> <li>• Target Location Error (TLE) of less than 10 m at 5 km slant range and TLE of less than 20 m at 10 km slant range</li> </ul>		
53.20.	The EO/IR must be equipped with internal GPS		
53.21.	The EO/IR must enable Auto and Auto –Aid steering		
53.22.	The EO/IR must enable GeoPointing, GeoLocation and GeoFocus.		
53.23.	The EO/IR must include an embedded GPS receiver and antenna		
53.24.	The EO/IR must support single and dual band applications		
53.25.	The EO/IR must include a remote control subsystem (RCS) interface into the MCS.		
53.26.	The EO/IR remote control subsystem interface must control the turret using the MCS.		
53.27.	The EO/IR turret must have line of stabilization of < 5 μRadians		

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
53.28.	The EO/IR turret must have an azimuth and elevation slew rate of no less than 0 - 60° per second.		
53.29.	The EO/IR turret must have a continuous Line of Sight (LOS) Pan Range of 360°.		
53.30.	The EO/IR turret must have a LOS tilt range of +90° to - 120°.		
53.31.	The EO/IR system must use the H.264/MPEG-4, Advanced Video Compression standard for motion imagery.		
53.32.	The EO/IR must meet the Metadata Profile for STANAG 4609 compliant video as defined in Appendix F		
53.33.	The EO/IR must provide the operator with the real time status of the EO/IR. The command/status elements must include, but are not limited to: <ul style="list-style-type: none"><li>• System</li><li>• Turret</li><li>• Sensor(s)</li></ul>		
53.34.	The EI/IR must be equipped, at a minimum, with the following Data Interface types: <ul style="list-style-type: none"><li>• RS-232/422;</li><li>• Ethernet;</li><li>• MIL-STD-1553B; and</li><li>• ARINC 429.</li></ul>		



ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
53.35.	The EI/IR must be equipped, at a minimum, with the following Functional Interfaces: <ul style="list-style-type: none"> <li>• Aircraft GPS/INS</li> <li>• Remote Control</li> <li>• Moving Map</li> <li>• Microwave / Datalink</li> <li>• Surveillance Radar</li> <li>• Metadata / Status</li> </ul>		
53.36.	The EO/IR must be capable of operating within specifications within the following flight parameters: <ul style="list-style-type: none"> <li>• Ground speed: 70 kts to 350 kts (ground speed)</li> <li>• Altitude - level flight: 500 ft to 30,000 ft (above sea level)</li> </ul>		
54.	The payload must include an AIS.		
54.1.	The AIS must conform to IALA Standard (International Association of Marine Aids to Navigation & Lighthouse Authorities)		
54.2.	The AIS must receive Class A and Class B AIS data.		
54.3.	The AIS must be integrated with the maritime radar sub-system so that AIS targets and radar targets are merged together to identify radar targets with their corresponding AIS information. This information will be used to correlate ships and their AIS signals as well as to identify ships not transmitting an AIS signal. This integration must occur in the RPA.		
54.4.	All AIS information and information merged with radar data must be sent from the RPA to the MCS every 15 minutes.		

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
54.5.	The AIS must be integrated with the maritime radar and EO/IR. This must consist of multiple overlays of sensor information, moving map displays and the ability to auto-slew the EO/IR to a radar or AIS target in the MCS.		
55.	The payload must include a data recording system to record all payload data for subsequent download post mission.		
55.1.	All target information gathered from sensors must be stored onboard the RPA data recording system		
55.2.	The payload data recorder must have a storage capacity that, as a minimum, can store data at each sensor's maximum resolution, for the maximum endurance of the RPA.		
55.3.	The payload data recorder must include real time integrity monitoring and be capable of alerting the MCS if recorder malfunctions occur during the operation of the payload.		
55.4.	The payload Data Recorder must support data encryption.		
55.5.	The payload Data Recorder must be able to record preselected data items relating to the status and output of the payload sensors.		
56.	The payload must include an industrial grade high-resolution still image camera system as a configurable payload to be integrated in a manner which allows initialization and termination of the image sequence from the ground station.		
56.1.	The camera system must be integrated in a manner that allows installation and removal on an as needed basis.		

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
56.2.	The camera system must have at least 100MP resolution, with a minimum ground surface distance of 2.5" (5cm) and an image field of view of not less than 800 X 500 meters at 3,000 ft flight altitude.		
56.3.	Images captured by the camera system must be stored on-board the RPA for retrieval post mission.		
56.4.	Images captured by the camera system must be transmitted to the MCS.		
56.5.	Images captured by the camera system must be geo-referenced, or be capable of being georeferenced based on RPA or camera system positional data"		
57.	All payload (sensor) equipment must meet the minimum operational performance standards for Operational Shocks, Vibration, Waterproofness, Salt Fog and Radio Frequency Susceptibility as stated within RTCA DO-160G (or later), or equivalent standard.		
58.	Unless otherwise stated, all payload (sensor) equipment must be installed and integrated in a manner to ensure there is no degradation of the sensor performance specifications at the maximum operating altitude of each of the RPA's provided.		
<b>Data Link Requirements</b>			
59.	The RPAS Command and Control Data Link must conform to the requirements of STANAG 4671 Edition 1 subpart H (USAR.U1601 to USAR.U1617 inclusive).		

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
59.1.		The RPAS Command and Control Data Link should conform to the requirements AEP 4671 subpart H (USAR.U1601 to USAR.U1617 inclusive).	
60.	The RPAS command and control data link lost link strategy, STANAG 4671 Edition 1 USAR.U1613 or AEP-4671 USAR.U1613, must be operator definable.		
61.	The satellite data link antenna(s) in each RPA must be an automatic tilting and tracking antenna		
62.	The RPAS must be equipped with a radio-line-of-sight data link with a minimum range of 100 nautical miles		
63.	The radio-line-of-sight data link must provide unrestricted RPA and payload control.		
64.	The radio-line of sight data link must be sufficient to allow streaming of sensor data and imagery from the RPA to a ground receiver in near real time.		
65.	The RPAS must be equipped with an L-Band satellite communication system that is compatible with Iridium and Inmarsat data and voice communication services.		
66.	The L-Band satellite communication system must provide simultaneous two-way voice and data communication (full duplex) between the RPA and the ground station over all Canadian airspace up to 72 degrees north latitude.		
67.	The L-Band satellite communication system must support a minimum data rate of 200 kbps (up) and 400 kbps (down).		

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
68.	The RPAS must be equipped with a Ku-Band or Ka-Band satellite communication system that is compatible with commercially available aircraft broadband satellite services.		
69.	The Ku-Band or Ka-Band satellite communication system must provide simultaneous two-way voice and data communication (full duplex) between the RPA and the ground station over all Canadian airspace up to 72 degrees north latitude.		
70.	The Ku or Ka band communication system must support a minimum data rate of 500 kbps (up) and 4 Mbps (down).		
71.		The RPAS should be equipped with a dual Ka/Ku band satellite communication system that is capable of automatically switching (roaming) between Ka-band and Ku-band satellite beams to use the "best available service".	
<b>Mission Control Station Requirements</b>			
72.	The RPAS must include a fixed Mission Control Station (MCS), located in Ottawa, Canada, to provide full command and control of each RPA and payload provided		
72.1.	The fixed MCS must contain two (2) RPA operator control consoles and one (1) payload operator console for each RPA provided.		
72.2.	The fixed MCS must receive data during all flights regardless of which MCS is in control of the RPA (s)		
73.	The RPAS must include one Mobile MCS to provide full command and control of each RPA and payload provided.		

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
73.1.	The mobile MCS must be a van mounted unit, capable of travel on improved and unimproved surfaces.		
73.2.	The Mobile MCS must be capable of full operation equal to the Fixed MCS within 1 hour of arrival at destination.		
73.3.	The mobile MCS must contain two (2) RPA operator control consoles and one (1) payload operator console for the control of each RPA and payload provided.		
73.4.	The mobile MCS must contain all the capabilities of the fixed MCS necessary for the control of each RPA and payload provided.		
73.5.	The RPAS must include a Launch and Recovery Component (LRC) for each RPA provided.		
73.6.	The LRC must be capable of communicating with air traffic/ground traffic control during taxi operations to mitigate the risk of the RPA hitting another aircraft on the ground.		
73.7.	The LRC must allow for radio line of sight (RLOS) safety monitoring and manual intervention during automatic takeoff and landing (ATOL).		
74.	Each MCS must comply with all STANAG 4671 Edition 1 subpart I (USAR. 1701 to USAR. U1887 inclusive), (does not apply to LRC). A Voice Recorder and MCS Data Recorder must be provided.		

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
74.1.		Each MCS should comply with all AEP 4671 subpart I requirements. Specifically USAR.U1701 to USAR.U1887, (does not apply to LRC).	
75.	Each MCS must be designed to run on the North American power system of 120 / 240 V - 60 Hz)		
76.	The MCS must provide mechanisms to restrict access to mission and payload data to authorized personnel only.		
77.	Each MCS must include multi-function electronic displays at all crew stations for the presentation of flight or sensor information (does not apply to LRC).		
78.	Each MCS must include a moving map display to indicate the RPA's heading, track and geographic position over the earth (does not apply to LRC).		
79.	Each MCS moving map display must allow the overlay of electronic aircraft navigation charts and maps for Canada and the United States from a commercially available subscription service such as Foreflight or Jeppesen Jeppview (does not apply to LRC).		
80.	Each MCS electronic map overlay must include VNC charts, IFR enroute and IFR Approach Charts (does not apply to LRC).		
81.	Each MCS moving map display must allow the overlay of operator selected sensor data and imagery (does not apply to LRC).		
82.	Each MCS must include mission planning software to allow the operator to create a mission profile and flight plan (does not apply to LRC).		

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
83.	MCS mission planning software must allow the operator to file or export a flight plan for transmission to Air Traffic Services.		
84.	MCS mission planning software must allow the operator to remotely upload the flight plan to the RPA navigation system.		
85.		The flight path deviation warning required per USAR.U1827, should allow the operator to program the acceptable deviation.	
86.	Each MCS must allow the payload operator to select targets (does not apply to LRC).		
87.	Each MCS must allow the payload operator to slew sensors to scan a desired location or area (does not apply to LRC).		
88.	Each MCS must display near real-time data and imagery from all payload sensors (does not apply to LRC).		
89.		The data exploitation system should perform coherent change detection to compare sensor data from different flights over the same area.	
90.	The data exploitation system must automatically correlate AIS and sensor targets.		



ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
91.	The data exploitation system must support the tagging and cataloging of selected sensor data.		
92.		The data exploitation system should support the importing of external data and the fusion of external data with the payload sensor data using open standards and to include: <ul style="list-style-type: none"><li>• Imagery data including imagery and video from day/night cameras, radar data, AIS;</li><li>• Measurement data including data from hyperspectral imagery, seismic, magnetic, SAR;</li><li>• Technical information including environmental condition, weather, NOTAMS;</li><li>• Geospatial Intelligence Satellite data including aerial photography, mapping/terrain data</li><li>• Open source media, Internet, scientific data</li></ul>	
93.		The data exploitation system should allow stored data to be queried and searched.	

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
<b>Technical Data Requirements</b>			
94.	<p>The Contractor must provide a build sheet that is comprised of the following information:</p> <ul style="list-style-type: none"><li>• Aircraft modification lists;</li><li>• OEM service bulletins (or other similar documents) incorporated;</li><li>• Airworthiness directives complied and not complied with;</li><li>• Life remaining, for airframe, engines, propellers (hours, cycles / landings, calendar);</li><li>• Aircraft status/history report with the following fields:<ol style="list-style-type: none"><li>1. Date;</li><li>2. Aircraft model;</li><li>3. Aircraft serial number;</li><li>4. Aircraft registration (as applicable);</li><li>5. Total airframe hours;</li><li>6. Total airframe cycles / landings;</li><li>7. All inspections (last compliance and next due);</li><li>8. Engine part number(s);</li><li>9. Engine serial number(s);</li><li>10. Total engine hours (for each engine);</li><li>11. Total engine cycles (for each engine);</li><li>12. Total time since overhaul (for each engine);</li><li>13. Total time since hot section inspection (for each engine as applicable);</li><li>14. All engine inspections (last compliance and next due);</li><li>15. Propeller part number, serial number, time at installation, service life, TSN, TSO etc.(for each propeller as applicable);</li><li>16. Life remaining for airframe, engines and propellers (hours, cycles / landings, calendar).</li></ol></li></ul>		

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
95.	<p>The Contractor must provide a component list with the following fields for any components with maintenance requirements (RPA and MCS):</p> <ol style="list-style-type: none"> <li>1. Part Number Assembly;</li> <li>2. Serial Number Assembly;</li> <li>3. Part Description Assembly;</li> <li>4. Part Number Component;</li> <li>5. Serial Number Component;</li> <li>6. Part Description Component;</li> <li>7. Time Since New (TSN);</li> <li>8. Time Since Inspection (TSI);</li> <li>9. Time Since Overhaul (TSO);</li> <li>10. Time at Installation (hours, cycles/landings, calendar);</li> <li>11. Service life (hours, cycles/landings, calendar);</li> <li>12. Date Installed, Due at (Airframe hours, cycles/landings, calendar).</li> </ol>		
96.	The Contractor must provide Instructions for Continued Airworthiness (ICAs) for complete RPAS.		
96.1		ICAs should comply with AEP-4671 USAR. 1529.	
96.2.	ICA's provided must be up to date and include all interim or temporary changes not yet incorporated by formal revision.		
96.3.	Unless ICAs are provided via OEM websites, ICA's must be provided in electronic format.		
96.4.		ICA's should contain a Corrosion Prevention and Control Plan (CPCP) in accordance with AEP-4671 USAR.609 and AMC.609.	

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
97.		The Contractor should provide a Master Minimum Equipment List (MMEL) and a Configuration Deviation List (CDL) for the complete RPAS.	
98.	The Contractor must provide Avionics/Electrical Maintenance/Wiring Manual(s) that have been updated to reflect the final delivered configuration of the RPAS.		
99.	The Contractor must provide Avionics/Electrical Installation Drawings that have been updated to reflect the final delivered configuration for Installed Equipment on the RPAS.		
100.	The Contractor must provide Vendor Manuals that have been updated to reflect the final delivered configuration of the RPAS.		
101.	The Contractor must provide any available and required Service Bulletins for the RPAS that are revised to reflect the final delivered configuration of the RPAS.		
102.	The Contractor must provide any available and required Technical Bulletins for RPAS that are revised to reflect the final delivered configuration of the RPAS.		
103.	The Contractor must provide available and required Service Instructions for the RPAS that are revised to reflect the final delivered configuration of the RPAS.		

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
104.	<p>The Contractor must provide other publications that have been updated to reflect the final delivered configuration of the RPAS such as but not limited to:</p> <ol style="list-style-type: none"> <li>1. Operations Safety Notices;</li> <li>2. Information Letters;</li> <li>3. Standard Practices Manual;</li> <li>4. Electrical Standard Practices Manual;</li> <li>5. Corrosion Control Guide;</li> <li>6. Special Tools; and</li> <li>7. Any other technical data required to maintain the RPAS in an airworthy condition.</li> </ol>		
105.	<p>The Contractor must provide all RPAS flight manuals.</p> <p>If an OPA is being provided that will be used for both manned and unmanned flight, the Flight Manual must be approved or accepted by Transport Canada Civil Aviation for manned flight.</p>		
105.1.		RPAS flight manuals should conform to STANAG 4671 Edition 1 USAR. 1581 to USAR. U1591 inclusive or AEP-4671 USAR. 1581 to USAR. U1591 inclusive	
106.	The Contractor must provide a Structural Repair Manual that has been updated to reflect the final delivered configuration of the RPAS.		
107.	The Contractor must provide latest Firmware Level and part number(s) for installed equipment for the RPAS.		
108.	The Contractor must provide latest Software Level and part number(s) for installed equipment for the RPAS.		

ID	Mandatory Requirement	Desirable Requirement	Comment on Requirement
109.	The Contractor must provide Equipment Electronic Configuration Files that have been updated to reflect the final delivered configuration of the RPAS.		
110.	The Contractor must provide Technical Log Books with entries completed by the OEM, providing details of all work completed on the RPAS. At the completion of all work, the Contractor is to provide a Statement of Conformity indicating that the RPAS, including all modifications and repairs, is in conformity to the Type Certificate or Type Description as applicable and the RPAS is in a fit and safe state for flight.		
111.	The Contractor must provide TC sufficient Technical Data Packages (TDP) (including Level II Engineering Drawings) to enable Canada to conduct in-house Level 1,2,3 Maintenance activities.		
112.	The Contractor must provide TC with access to the latest revisions of operating and maintenance manuals, drawings and specifications, engineering and other related data (including but not limited to electrical / avionic drawings, custom configuration drawings, mechanical drawings, general arrangement drawings of installed avionics, aircraft modification lists, software specifications, etc.), that defines the configuration and supports the type description of the RPAS including the equipment of other third party vendors installed in the RPAS.		

Solicitation No. - N° de l'invitation T8493-150035/C Draft RFP	And. No. - N° de la modif.	Buyer ID - Id de l'acheteur 004CAG
Client Ref. No. - N° de réf. du client	File No. - N° du dossier	CCC No./N° CCC - FMS No./N° VME

## APPENDIX B – STANAG 4671 Edition 2 / AEP-4671 Edition A Version 1 Compliance Matrix

### Instructions:

1. This document is to be completed for the PDR. In order to validate compliance, details / explanations must be provided in the column labelled "Contractor Comments" for each requirement (eg. Flight Test Report #201605).
2. Compliance Codes:
 

F = *Fully complies* with the certification specification including referenced AMC. I = "*Intent*" of the certification specification is met.

N/A-C = Certification specification *Not Applicable* considering specific RPAS configuration. P = Certification specification is only *partially* met.

A = *Alternative* criteria have been applied.

Rationale must be presented and justified for each certification specification that is not fully compliant.
3. Substantiation Data Codes:
 

S = Statement      A = Analysis

D = Design        T = Testing

IE = In Service Experience (in the absence of dedicated substantiation data)
4. [NATO STANAG 4671 Edition 2 / AEP-4671 Edition A Version 1 link \(http://nso.nato.int/nso/nsdd/listpromulg.html\)](http://nso.nato.int/nso/nsdd/listpromulg.html)

AEP-4671 USAR Requirement	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
<b>Subpart A – GENERAL</b>					
USAR.1	Applicability				
USAR.U2	Assumptions				
USAR.U15	RPAS ancillary elements				
USAR.U17	Design Usage Spectrum	See AMC.17			
USAR.U19	Special military modes of operation	See AMC.19			
<b>Subpart B - RPAS FLIGHT: GENERAL</b>					
USAR.21	Proof of Compliance	See AMC.21			
USAR.23	Load Distribution Limits				
USAR.25	Weight Limits				
USAR.29	Basic Weight and Corresponding Center of Gravity				
USAR.31	Removable Ballast				
USAR.33	Propeller Speed and Pitch Limits				
<b>PERFORMANCE</b>					
USAR.45	General				
USAR.49	Stalling Speed				
USAR.U50	Minimum demonstration speed				
USAR.51	Take-off Speeds				



AEP-4671 USAR	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
Requirement					
USAR.53	Take-off Performance				
USAR.55	Accelerate-stop Distance or Critical Field Length	See AMC.55			
USAR.63	Climb: General				
USAR.65	Climb: All Engines Operating				
USAR.66	Take-off climb: One-engine-inoperative for multi-engine RPAS				
USAR.67	Climb: One-engine-inoperative for multi-engine RPAS				
USAR.69	Enroute Climb/Descent				
USAR.71	Glide	See AMC.71			
USAR.73	Reference Landing Approach Speed				
USAR.75	Landing Distance				
USAR.77	Balked Landing				
<b>FLIGHT CHARACTERISTICS</b>					
USAR.141	General	See AMC.141			
<b>CONTROLLABILITY AND MANOEUVRABILITY</b>					
USAR.143	General				
USAR.149	Minimum Control Speed	See AMC.149 (b)			
USAR.161	Trim				
<b>STABILITY</b>					
USAR.171	General	See AMC.171			

AEP-4671 USAR Requirement	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
<b>STALLS</b>					
USAR.201	Wings Level Stall				
USAR.203	Stall protection in wing level and turning flight				
<b>SPINNING</b>					
USAR.221	Spinning and tumbling				
<b>GROUND HANDLING CHARACTERISTICS</b>					
USAR.231	Longitudinal Stability and Control				
USAR.233	Directional Stability and Control				
USAR.235	Operation on Unpaved Surfaces	See AMC.235			
USAR.U240	Wet Runway Operations	See AMC.240			
USAR.U249	Transportation and storage				
<b>MISCELLANEOUS FLIGHT REQUIREMENTS</b>					
USAR.251	Vibration and Buffeting				
USAR.253	High Speed Characteristics				
<b>CATAPULT ASSISTED AND ROCKET ASSISTED TAKE-OFF RPAS</b>					
USAR.U280	Launch performance				
USAR.U281	Transition to normal flight attitude				
USAR.U282	RPAS active control				
USAR.U283	Launch safety trace	See AMC.283			

AEP-4671 USAR	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
Requirement			F, I, N/A-C, P, A	S, D, A, T, IE	
<b>PARACHUTE LANDING SYSTEM</b>					
USAR.U290	RPAS performance before parachute landing				
USAR.U291	Parachute landing characteristics				
USAR.U292	Parachute landing performance				
USAR.U293	Parachute landing safety trace	See AMC.293			
<b>Subpart C - RPAS STRUCTURE: GENERAL</b>					
USAR.301	Loads	See AMC.301			
USAR.302	Canard or Tandem Wing Configuration				
USAR.303	Factor of Safety				
USAR.304	Structural Performance	See AMC.304			
USAR.305	Strength and Deformation				
USAR.307	Proof of Structure	See AMC.307			
<b>FLIGHT LOADS</b>					
USAR.321	General	See AMC.321(c)			
USAR.331	Symmetrical Flight Conditions				
USAR.333	Flight Envelope	See AMC.333(c)			
USAR.U334	Flight envelope protection				
USAR.335	Design Airspeeds				
USAR.337	Limit Maneuvering Load Factors				
USAR.341	Gust Load Factors	See AMC.341(b)			

AEP-4671 USAR Requirement	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
			F, I, N/A-C, P, A	S, D, A, T, IE	
USAR.343	Design Fuel Loads	See AMC.343(b)			
USAR.345	High Lift Devices	See AMC.345(d)			
USAR.347	Asymmetrical Flight Conditions				
USAR.349	Rolling Conditions				
USAR.351	Yawing Conditions				
USAR.361	Engine Torque				
USAR.363	Side load On Engine Mount				
USAR.365	Pressurized Compartment Loads				
USAR.367	Asymmetrical Loads Due to Engine Failure				
USAR.369	Rear Lift Truss Loads				
USAR.371	Gyroscopic and Aerodynamic Loads	See AMC.371			
USAR.373	Speed Control Devices				
<b>CONTROL SURFACE AND SYSTEM LOADS</b>					
USAR.391	Control Surface Loads				
USAR.393	Loads Parallel to Hinge Line	See AMC.393(a) and AMC.393(b)			
USAR.395	Control System Loads				
USAR.397	Limit Control Forces and Torques				
USAR.405	Secondary Flight Control				
USAR.407	Trim Tab Effects				
USAR.409	Tabs				
USAR.415	Ground Gust Conditions				

AEP-4671 USAR Requirement	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
<b>HORIZONTAL TAIL SURFACES</b>					
USAR.421	Balancing Loads				
USAR.423	Maneuvering Loads				
USAR.425	Gust Loads				
USAR.427	Asymmetric Loads				
<b>VERTICAL SURFACES</b>					
USAR.441	Maneuvering loads	See AMC.441			
USAR.443	Gust Loads	See AMC.443			
USAR.445	Outboard fins or winglets				
<b>AILERONS AND SPECIAL DEVICES</b>					
USAR.455	Ailerons				
USAR.459	Special devices				
<b>GROUND LOADS</b>					
USAR.471	General	See AMC.471			
USAR.473	Ground load conditions and assumptions				
USAR.477	Landing gear arrangement				
USAR.479	Level landing conditions				
USAR.481	Tail down landing conditions	See AMC.481			
USAR.483	One-wheel landing conditions				
USAR.485	Side load conditions				
USAR.493	Braked roll conditions				

AEP-4671 USAR		AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
Requirement				F, I, N/A-C, P, A	S, D, A, T, IE	
USAR.497		Supplementary conditions for tail wheels				
USAR.499		Supplementary conditions for nose wheels				
USAR.507		Jacking and lifting loads				
USAR.509		Towing loads				
USAR.511		Ground load; asymmetrical loads on multiple-wheel units				
<b>FATIGUE EVALUATION</b>						
USAR. U570		General	See AMC.570, AMC.603(a) and AMC.603(b)			
USAR.572		Metallic fuselage, wing, empennage and associated structures	See AMC.572			
USAR.573		Damage tolerance and fatigue evaluation of structure	See AMC.573(a)(1)&(3)			
USAR.575		Inspections and other procedures	and AMC.573(b)			
<b>CATAPULT ASSISTED AND ROCKET ASSISTED TAKE-OFF RPAS</b>						
USAR.U585		Launch load factor				
USAR.U586		Use of trolley or shuttle				
USAR.U587		Rocket assisted take-off				
USAR.U590		Arresting System				

AEP-4671 USAR Requirement	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
<b>PARACHUTE LANDING SYSTEM</b>					
USAR.U595	Limit load factor	See AMC.595(a)			
USAR.U596	RPAS dragging on the ground				
USAR.U597	Sacrificial elements				
USAR.U598	Extracting devices	See AMC.598			
USAR.U599	Installation of the parachute in the airframe				
<b>Subpart D - RPAS DESIGN AND CONSTRUCTION</b>					
USAR.601	General	See AMC.601			
USAR.603	Materials and workmanship	See AMC.603(a) or AMC.603(b) as applicable to materials			
USAR.605	Fabrication methods				
USAR.607	Fasteners	See AMC.607(b)			
USAR.609	Protection of structure	Refer to Appendix A for CPCP requirements. See AMC.609			
USAR.611	Accessibility provisions	See AMC.611			
USAR.613	Material strength properties and design values	See AMC.613			
USAR.619	Special Factors				
USAR.621	Casting factors				

AEP-4671 USAR	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
Requirement			F, I, N/A-C, P, A	S, D, A, T, IE	
USAR.623	Bearing factors				
USAR.625	Fitting factors				
USAR.627	Fatigue strength				
USAR.629	Flutter	See AMC.629 and AMC.629(j)			
USAR.U631	Bird Strike	See AMC.631			
USAR.U635	Ground equipment affecting flight safety				
WINGS					
USAR.641	Proof of strength				
CONTROL SURFACES					
USAR.651	Proof of strength				
USAR.655	Installation				
USAR.657	Hinges				
USAR.659	Mass balance				
CONTROL SYSTEMS					
USAR.671	General	See AMC.671			
USAR.673	Primary and secondary flight controls				
USAR.675	Stops				
USAR.677	Trim systems				
USAR.679	Primary or secondary flight controls lock				



AEP-4671 USAR Requirement	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
USAR.681	Limit load static tests		F, I, N/A-C, P, A	S, D, A, T, IE	
USAR.683	Operation tests	See AMC.683			
USAR.685	Control system details				
USAR.687	Spring devices				
USAR.689	Cable systems				
USAR.693	Joints	See AMC.693			
USAR.697	Wing flap controls				
USAR.701	Flap interconnection	See AMC.701			
USAR.703	Take-off protection				
<b>LANDING GEAR</b>					
USAR.722	Landing gear - General				
USAR.723	Shock absorption tests				
USAR.725	Limit drop tests				
USAR.726	Ground load dynamic tests				
USAR.727	Reserve energy absorption drop tests				
USAR.729	Landing gear extension and retraction system	See AMC.729(g)			
USAR.731	Wheels				
USAR.733	Tires				
USAR.735	Brakes	See AMC.735(c)			
USAR.745	Nose/tail-wheel steering				

AEP-4671 USAR Requirement	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
<b>PAYLOAD AND EQUIPMENT COMPARTMENTS</b>					
USAR.775	Payload transparencies				
USAR.783	Doors, covers and hatches				
USAR.787	Payload compartments				
<b>PRESSURIZATION</b>					
USAR.841	Pressurized compartments				
USAR.843	Pressurization tests				
<b>FIRE PROTECTION</b>					
USAR.U850	Fire protection - General	See AMC.850			
USAR.863	Flammable fluid fire protection	See AMC.863			
USAR.865	Fire protection of flight control system components, engine mounts and other flight structure	See AMC.865			
<b>ELECTRICAL BONDING AND LIGHTNING PROTECTION</b>					
USAR.867	Electrical bonding and protection against lightning and static electricity	See AMC.867(a)			
<b>PARACHUTE LANDING SYSTEM</b>					
USAR.U881	Parachute design	See AMC.881(a)			
<b>Subpart E - RPAS POWERPLANT</b>					
USAR.901	Installation	See AMC.901			

AEP-4671 USAR Requirement	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
			F, I, N/A-C, P, A	S, D, A, T, IE	
USAR.903	Engines and auxiliary power units	Refer to Appendix A See AMC.903(a) and AMC.903(f)			
USAR.905	Propellers	Refer to Appendix A See AMC.905(d), AMC.905(e) and AMC.905(g)			
USAR.907	Propeller vibration	See AMC.907(a)			
USAR.909	Turbo charger systems	See AMC.909(a) and AMC.909(d)(1)			
USAR.925	Propeller clearance				
USAR.929	Engine installation ice protection	Refer to Appendix A			
USAR.933	Thrust reversing systems				
USAR.934	Turbojet and turbofan engine thrust reverser system test	See AMC.934			

AEP-4671 USAR Requirement	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
			F, I, N/A-C, P, A	S, D, A, T, IE	
USAR.937	Turbo propeller-drag limiting systems				
USAR.939	Power plant operating characteristics	See AMC.939(c)			
USAR.943	Negative acceleration				
<b>FUEL SYSTEM</b>					
USAR.951	Fuel systems - General				
USAR.953	Fuel system independence				
USAR.954	Fuel system lightning protection				
USAR.955	Fuel flow				
USAR.957	Flow between interconnected tanks				
USAR.959	Unusable fuel supply	See AMC.959(a)			
USAR.961	Fuel system hot weather operation	See AMC.961			
USAR.963	Fuel tanks: general				
USAR.965	Fuel tank tests				
USAR.967	Fuel tank installation	See AMC.967			
USAR.969	Fuel tank expansion space				
USAR.971	Fuel tank sump				
USAR.973	Fuel tank filler connection	See AMC.973			
USAR.975	Fuel tank vents and carburetor vapour vents	See AMC.975			
USAR.977	Fuel tank outlet				
USAR.979	Pressure fuelling systems				

AEP-4671 USAR	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
Requirement					
<b>FUEL SYSTEM COMPONENTS</b>					
USAR.991	Fuel pumps				
USAR.993	Fuel system lines and fittings	See AMC.993			
USAR.994	Fuel system components				
USAR.995	Fuel valves and controls	See AMC.995			
USAR.997	Fuel strainer or filter	See AMC.997			
USAR.999	Fuel system drains	See AMC.999			
USAR.1001	Fuel jettisoning system	See AMC.1001			
<b>OIL SYSTEM</b>					
USAR.1011	Oil system - General	See AMC.1011(b)			
USAR.1013	Oil tanks				
USAR.1015	Oil tank tests				
USAR.1017	Oil lines and fittings				
USAR.1019	Oil strainer or filter				
USAR.1021	Oil system drains				
USAR.1023	Oil radiators				
USAR.1027	Propeller feathering system				
<b>COOLING</b>					
USAR.1041	Cooling - General				
USAR.1043	Cooling tests				
USAR.1045	Cooling test procedures for turbine engine-powered RPAS	See AMC.1045 and AMC.1045(b)			

AEP-4671 USAR Requirement	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
USAR. 1047	Cooling test procedures for reciprocating engine-powered RPAS	See AMC.1047	F, I, N/A-C, P, A	S, D, A, T, IE	
<b>LIQUID COOLING</b>					
USAR. 1061	Installation				
USAR. 1063	Coolant tank tests				
<b>INDUCTION SYSTEM</b>					
USAR. 1091	Air induction system	See AMC.1091			
USAR. 1093	Induction system icing protection	Refer to Appendix A See AMC.1093 and AMC.1093(b)			
USAR. 1095	Carburetor de-icing fluid flow rate	See AMC.1095(a)			
USAR. 1097	Carburetor de-icing fluid system capacity				
USAR. 1099	Carburetor de-icing fluid system detail design				
USAR. 1101	Induction air preheater design				
USAR. 1103	Induction system ducts	See AMC.1103			
USAR. 1105	Induction system screens				
USAR. 1107	Induction system filters				
USAR. 1109	Turbocharger bleed air system				
USAR. 1111	Turbine engine bleed air system				

AEP-4671 USAR Requirement	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
<b>EXHAUST SYSTEM</b>					
USAR.1121	General				
USAR.1123	Exhaust system				
USAR.1125	Exhaust heat exchangers				
<b>POWERPLANT CONTROLS AND ACCESSORIES</b>					
USAR.1141	RPAS Power plant controls: general	See AMC.1141(e)			
USAR.1143	Engine controls	See AMC.1143			
USAR.1147	Mixture controls	See AMC.1147			
USAR.1163	Power plant accessories				
USAR.1165	Engine ignition systems				
<b>POWERPLANT FIRE PROTECTION</b>					
USAR.1181	Designated fire zones; regions included				
USAR.1183	Lines, fittings and components				
USAR.1189	Shut-off means	See AMC.1189(a)(5)			
USAR.1191	Firewalls	See AMC.1191(e)			
USAR.1192	Engine accessory compartment diaphragm				
USAR.1193	Cowling and nacelle	See AMC.1193			
USAR.1195	Fire extinguishing systems				
USAR.1197	Fire extinguishing agents	See USAR.1195			
USAR.1199	Extinguishing agent containers	See USAR.1195			
USAR.1201	Fire extinguishing system materials	See USAR.1195			

AEP-4671 USAR Requirement	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
USAR.1203	Fire detector system				
<b>Subpart F - EQUIPMENT: GENERAL</b>					
USAR.1301	Function and installation				
USAR.U1304	Navigation Architecture				
USAR.U1307	Environmental control system (ECS)	See AMC.1307			
USAR.1309	Equipment systems and installation	See AMC.1309(b)			
<b>MEASURING DEVICES INSTALLATION</b>					
USAR.1323	Airspeed measuring device	Refer to Appendix A.			
USAR.1325	Static pressure measuring device	Refer to Appendix A. See AMC.1325(e)			
USAR.1327	Magnetic heading measuring device				
USAR.U1330	Flight control performance	See AMC.1330(e), AMC.1330(i) and AMC.1330(j)			
USAR.1331	Measuring devices using a power source				



AEP-4671 USAR Requirement	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
USAR.1337	Power plant installation measuring device				
<b>ELECTRICAL SYSTEMS AND EQUIPMENT</b>					
USAR.1351	Electrical systems - General	See AMC.1351(a)(2)			
USAR.1353	Storage battery or emergency power supply design and installation				
USAR.1357	Circuit protective devices	See AMC.1357(a)			
USAR.1359	Electrical system fire protection				
USAR.1361	Master switch arrangement	See AMC.1361			
USAR.1365	Electric cables and equipment				
USAR.1367	Switches				
<b>LIGHTS - NOTE: USAR.1385 TO USAR.1401 ARE MANDATORY REFER TO APPENDIX A.</b>					
USAR.1383	Taxi and landing lights				
USAR.1385	Position light system installation				
USAR.1387	Position light system dihedral angles				
USAR.1389	Position light distribution and intensities				
USAR.1391	Minimum intensities in the horizontal plane of position lights				
USAR.1393	Minimum intensities in any vertical plane of position lights				

AEP-4671 USAR	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
Requirement			F, I, N/A-C, P, A	S, D, A, T, IE	
USAR.1395	Maximum intensities in overlapping beams of position lights				
USAR.1397	Colour specifications				
USAR.1401	Anti-collision light system				
SAFETY EQUIPMENT AND EMERGENCY CAPABILITY					
USAR.U1412	Emergency recovery capability	Refer to Appendix A. See AMC.1412(a)(2) and AMC.1412(e)			
USAR.U1413	Engine shut down procedure	Refer to Appendix A.			
USAR.1416	De-icer system	Refer to Appendix A. 3.6 and 3.7.			
USAR.1419	Ice protection	Refer to Appendix A.3.6 and 3.7.			
MISCELLANEOUS EQUIPMENT					
USAR.1431	Electronic equipment	See AMC.1431			
USAR.1435	Hydraulic systems				
USAR.1437	Accessories for multi-engine RPAS				

AEP-4671 USAR	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
Requirement			F, I, N/A-C, P, A	S, D, A, T, IE	
USAR.1438	Pressurization and pneumatic systems				
USAR.1459	RPAS onboard flight recorders	Refer to Appendix A. See AMC.1459			
USAR.1461	Equipment containing high energy rotors				
USAR.U1481	Payloads	Refer to Appendix A. See AMC.1481			
USAR.U1485	Environmental control system (ECS)	See AMC.1485			
<b>AUTOMATIC TAKE-OFF, TAXI, LANDING</b>					
USAR.U1490	Automatic take-off system, automatic landing system	Refer to Appendix A See AMC.1490(f)(2)			
USAR.U1492	Manual abort function	Refer to Appendix A.			
USAR.U1494	Automatic taxi system				

AEP-4671 USAR Requirement	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
Subpart G - OPERATING LIMITATIONS AND INFORMATION					
USAR. 1501	General				
USAR. 1505	Airspeed limitations				
USAR. 1507	Maneuvering speed				
USAR. 1511	Flap extended speed				
USAR. 1513	Minimum control speed				
USAR. 1519	Weight and centre of gravity				
USAR. 1521	Power plant limitations				
USAR. 1522	Auxiliary power unit limitations				
USAR. 1525	Kinds of operation	Refer to Appendix A			
USAR. 1527	Maximum operating altitude	Refer to Appendix A.			
USAR. 1529	Instructions for continued airworthiness	Refer to Appendix A			
INFORMATION, MARKINGS AND PLACARDS					
USAR. 1541	General				
USAR. 1543	Instrument markings: general				
USAR. 1551	Oil quantity indicator				
USAR. 1553	Fuel quantity indicator				

<b>AEP-4671 USAR Requirement</b>	<b>AEP-4671 USAR Title</b>	<b>Comments</b>	<b>Compliance Code</b>	<b>Substantiation Code</b>	<b>Contractor Comments</b> (eg. Reference Document / Compliance Statement / Tailoring Rational)
			F, I, N/A-C, P, A	S, D, A, T, IE	
USAR.1555	Control markings on the RPAS				
USAR.1557	Miscellaneous information markings and placards				
<b>RPAS FLIGHT MANUAL – NOTE: USAR.1581 TO USAR.U1591 ARE DESIREABLE; REFER TO APPENDIX A</b>					
USAR.1581	Flight Manual - General				
USAR.1583	Operating limitations				
USAR.1585	Operating procedures				
USAR.1587	Performance information	See AMC.1587 and AMC.1587(f)			
USAR.1589	Loading information				
USAR.U1591	Data link information				
<b>Subpart H - COMMAND AND CONTROL DATA LINK - NOTE: USAR.U1601 TO USAR.U1617 ARE MANDATORY, REFER TO APPENDIX A</b>					
USAR.U1601	General	See AMC.1601			
USAR.U1603	Command and control data link architecture	See AMC.1603. Requires an architecture for both Radio Line of Site and Beyond Radio Line of Sight operations. Refer to Appendix A.			
USAR.U1605	Electromagnetic interference and compatibility	See AMC.1605 and AMC.1605(b)			

AEP-4671 USAR Requirement	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
			F, I, N/A-C, P, A	S, D, A, T, IE	
USAR.U1607	Command and control data link performance and monitoring	See AMC.1607(a)			
USAR.U1611	Command and control data link latency	See AMC.1611 (a)			
USAR.U1613	Command and control data link loss strategy	Refer to Appendix A. See AMC.1613(a), AMC.1613(b) and AMC.1613(c)			
USAR.U1615	Command and control data link antenna maskings	. See AMC.1615			
USAR.U1617	Command and control data link switchover function	Multiple data links to be considered. Refer to Appendix A. See AMC.1617(a), AMC.1617(b) and AMC.1617(c)			

AEP-4671 USAR Requirement	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
<b>Subpart I - RPAS CONTROL STATION - NOTE: USAR.U1701 TO USAR.U1887 ARE MANDATORY, REFER TO APPENDIX A</b>					
USAR.U1701	General	Multiple (fixed, and mobile), control station requirements to be considered. Refer to Appendix A. See AMC.1701 and AMC.1701(e)	F, I, N/A-C, P, A	S, D, A, T, IE	
USAR.U1702	MCS Infrastructure				
USAR.U1703	RPAS crew work place				
USAR.U1704	Minimum RPAS crew	See AMC.1704			
USAR.U1705	RPAS crew work place lights				
USAR.U1707	Communications system	See AMC.1707(a) and AMC.1707(c)			
USAR.U1709	Voice recorder	Refer to Appendix A. See AMC.1709 and AMC.1709(e)			
USAR.U1711	MCS data recorder	Refer to Appendix A. See AMC.1711 and AMC.1711(a)			
USAR.U1717	MCS electrical systems				

AEP-4671 USAR	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
Requirement			F, I, N/A-C, P, A	S, D, A, T, IE	
USAR.U1719	MCS power supply				
USAR.U1720	Automated Mission Planning	See AMC.1720			
<b>DATA DISPLAYED IN THE RPAS CONTROL STATION</b>					
USAR.U1721	Arrangement and visibility	See AMC.1721			
USAR.U1722	Part-time data display	See AMC.1722			
USAR.U1723	Flight and navigation data				
USAR.U1725	Power plant data				
USAR.U1726	Data display of equipment required by Operations regulation				
USAR.U1727	Electronic data display	See AMC.1727 and AMC.1727(b)			
USAR.U1728	Data link data display, warnings and indicators				
USAR.U1729	Fuel quantity and oil quantity data				
USAR.U1730	Automatic take-off system or automatic landing system data				
<b>CONTROLS</b>					
USAR.U1731	General	See AMC.1731			
USAR.U1732	Safety critical controls				
USAR.U1733	Conventional controls and indicators				



AEP-4671 USAR Requirement	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
			F, I, N/A-C, P, A	S, D, A, T, IE	
USAR.U1735	Motion and representation of controls				
USAR.U1741	MCS flight controls				
USAR.U1742	Flight termination system control				
USAR.U1743	Fuel controls				
USAR.U1745	Fuel jettisoning control				
USAR.U1747	Air induction control				
USAR.U1751	Engine and APU controls				
USAR.U1753	Ignition switches	See AMC.1753(b)			
USAR.U1755	Mixture controls				
USAR.U1757	Propeller speed and pitch controls				
USAR.U1759	Propeller feathering controls				
USAR.U1761	Turbine engine reverse thrust and propeller pitch settings below the flight regime				
USAR.U1763	Carburetor air temperature controls				
USAR.U1765	Shut-off controls				
USAR.U1769	"Abort" control for automatic take-off system or automatic landing system	See AMC.1769			
<b>MCS INDICATORS AND WARNINGS</b>					
USAR.U1785	Warning, caution and advisory information colour code				

AEP-4671 USAR Requirement	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
			F, I, N/A-C, P, A	S, D, A, T, IE	
USAR.U1787	RPAS automatic diagnostic and monitoring	See AMC.1787(a)			
USAR.U1788	Degraded modes of operation warning				
USAR.U1789	Low speed warning				
USAR.U1790	RPAS mode of control indicator				
USAR.U1791	Wing flaps position indicator				
USAR.U1793	Landing gear position indicator and warning	See AMC.1793(b)			
USAR.U1795	Pressurized compartment indicator	See AMC.1795			
USAR.U1797	Fuel pumps warning				
USAR.U1799	Air induction indicator				
USAR.U1801	Battery discharge warning	See AMC.1801			
USAR.U1803	Indicators for power assisted valves in the power plant	See AMC.1803			
USAR.U1805	Shut off valves indicator				
USAR.U1809	RPAS electrical systems warning and indicator	See AMC.1809			
USAR.U1811	De-icer boot system indicator				
USAR.U1813	Hydraulic systems indicator				
USAR.U1817	Fire protection warning				
USAR.U1819	Pilot heat indicator				
USAR.U1821	MCS Power distribution indicator	See AMC.1821			

AEP-4671 USAR Requirement	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
			F, I, N/A-C, P, A	S, D, A, T, IE	
USAR.U1825	Flight control system lock warning				
USAR.U1827	Flight path deviation warning	Refer to Appendix A .			
USAR.U1829	RPA safety status indications				
<b>INFORMATION, MARKINGS AND PLACARDS</b>					
USAR.U1831	General				
USAR.U1835	Airspeed data				
USAR.U1837	Magnetic heading or track data	See AMC.1837			
USAR.U1839	Power plant and auxiliary power unit data				
USAR.U1841	Oil quantity data				
USAR.U1843	Fuel quantity data				
USAR.U1845	Control markings	See AMC.1845(e)(2)			
USAR.U1849	Operating limitations indications				
<b>MISCELLANEOUS</b>					
USAR.U1881	RPAS handover between two MCS	Multiple (fixed, mobile, and LRC) control station requirements to be considered. Refer to Appendix A. See AMC.1881(b), AMC.1881(c) and AMC.1881(d)			

AEP-4671 USAR Requirement	AEP-4671 USAR Title	Comments	Compliance Code	Substantiation Code	Contractor Comments (eg. Reference Document / Compliance Statement / Tailoring Rational)
			F, I, N/A-C, P, A	S, D, A, T, IE	
USAR.U1883	Command and control of multiple RPAS				
USAR.U1885	RPAS handover within the same RPAS control station	See AMC.1885(b) and AMC.1885(d)			
USAR.U1887	Multiple RPAS monitoring				

NOTE: A CERTIFICATE OF ATTESTATION SIGNED BY A SENIOR ENGINEER OF THE ORIGINAL EQUIPMENT MANUFACTURER (OEM) IS REQUIRED AS AN ATTESTATION THAT THE INFORMATION PROVIDED WITHIN APPENDIX B - STANAG 4671 EDITION 2 / AEP-4671 EDITION A VERSION 1 COMPLIANCE MATRIX, ACCURATELY DESCRIBES THE OEM DESIGN OF THE RPAS BEING PROPOSED TO CANADA.

## APPENDIX C – Evaluation of Operation and Maintenance Costs

### Operating Cost Evaluation

The hourly cost of operating the RPAS (expressed in C\$/Flight Hour) must be submitted at the PDR. The working assumption is an estimated 500 hours and 25 landings per year of flying time over the life cycle of 15 years.

The contractor must provide the calculated hourly operating cost along with supporting data to substantiate the calculated hourly costs provided. Unless stated otherwise within this document, all maintenance labor costs are to be based on \$110.00 CAD / hour. The labor required should be expressed as Labor Hours per Flight Hour (LH/FH) and the parts as a Cost per Flight Hour (C\$/FH).

The approach to be used is to sum the following cost elements, each expressed as a cost per flight hour:

1. Fuel consumption per hour based on Mission 1, Oil Spill Detection Scenario described in Appendix D Mission Scenarios.
2. Minor scheduled inspections and attendant unscheduled maintenance (based on supportable documentation such as reliability data) parts and labor per hour for the airframe, systems and avionics (including ground control stations), engines, propellers and sensors.

Added to this will be the cost per flight hour for major inspections as well as parts that have a fixed overhaul or replacement life. The cost per hour will be calculated by dividing the total cost by the major inspection interval or the TBO or life limit of the component/part:

3. Major scheduled inspection and attendant unscheduled maintenance (based on supportable documentation such as reliability data) parts and labor per hour for the airframe, systems and avionics (including ground control stations), engines, propellers and sensors.
4. Overhaul or replacement of airframe and system parts (including the MCS) that have a fixed overhaul or replacement interval.
5. Overhaul or replacement of engine parts that have a fixed overhaul or replacement interval.
6. Overhaul or replacement of propeller parts that have a fixed overhaul or replacement interval.
7. Overhaul or replacement of sensor parts that have a fixed overhaul or replacement interval
8. "on-condition" parts. In addition, the following costs for "on-condition" parts (based on supportable documentation such as reliability data) will be calculated by dividing the cost incurred with an unscheduled removal by the frequency of occurrence expressed in hours:
  - 8.1. Repair, overhaul or replacement of airframe and system parts (including the MCS) that are "on condition".
  - 8.2. Repair, overhaul or replacement of engine parts that are "on condition".
  - 8.3. Repair, overhaul or replacement of propeller parts that are "on condition".
  - 8.4. Repair, overhaul or replacement of major avionics parts that are "on condition".
  - 8.5. Repair, overhaul or replacement of sensor parts that are "on condition".
9. Ground Support Equipment (GSE)
10. Tooling and Equipment
11. Publication Revision Support
12. Manpower Requirements

Note that all costs shown for parts that are replaced must be list/catalogue price for delivery in Ottawa, Ontario, Canada without any discounts applied. Costs shown for major inspections and part overhauls must be an average cost based on the use of new parts at list/catalogue price without any discounts applied. In addition, the costs must be shown in Canadian dollars. One paper or electronic copy of the various parts price catalogues must be included with the proposal.

In addition, one paper or electronic copy of the documentation that contains all inspection, overhaul, life limited and replacement items with the applicable frequencies must be included with the proposal. Any inspections that are associated with an airworthiness limitation (AWL) should be identified as such in the documentation being presented.

Following is a detailed explanation of the data required.

## 1. Fuel consumption

For the purposes of this analysis, fuel consumption per hour will be based on the following:

1. The contractor must calculate the overall fuel consumption from engine start to engine shutdown, expressed in liters/hour
2. The operational scenario, Mission 1, Oil Spill Detection Scenario described in Appendix E Mission Scenarios; and;
3. The load composition for this operational scenario is based on MTOW; and,
4. If the RPA is not RVSM certified, then altitudes used in the calculation of fuel consumption must be outside of RVSM airspace (FL290 – FL 410).

## 2. Minor scheduled inspection and unscheduled maintenance, parts and labor per hour

Minor scheduled inspections includes all daily inspections, scheduled A / B checks (or equivalent) and calendar inspections with intervals of one year or less. Unscheduled maintenance includes all unscheduled maintenance that is required as a direct result of the scheduled inspections discussed above as well as any other unscheduled maintenance that occurs in between scheduled inspections based on supportable documentation such as reliability data.

Record the name of the inspection, its cost and its interval as shown in the approved maintenance documentation. If the interval has multiple requirements such as an hour limit and a calendar limit, record both.

## 3. Major scheduled inspection and attendant unscheduled maintenance, parts and labor hour

Major scheduled inspections include all scheduled C / D checks (or equivalent) and calendar inspections at intervals of greater than one year. Attendant unscheduled maintenance includes all unscheduled maintenance (based on supportable documentation such as reliability data) that is required as a direct result of the scheduled maintenance discussed above.

Record the name of the inspection, its cost and its interval as shown in the approved maintenance documentation. If the interval has multiple requirements such as an hour limit and a calendar limit, record both.

## 4. Overhaul or replacement of airframe and system parts (including MCS, Mobile MCS, and LRC) that have a fixed overhaul or replacement interval

The cost per flight hour for airframe and systems parts that have a fixed overhaul or replacement life will be calculated by dividing the total cost of the overhaul or replacement for the part (including required labor to replace the part) by the TBO or life limit of the part.

If the part requires overhaul, the cost shown should be the average cost and include both the parts and the labor required. For this evaluation, the labor cost should be calculated at \$110 CAD per hour. Supporting documentation must be provided to support quoted costs.

The cost of replacement parts should be the list or catalogue price as shown in the parts cost documentation submitted with this proposal.

Indicate the applicable overhaul or replacement interval. If the overhaul or replacement interval has an hour limit as well as a cycle and/or a calendar limit, record all.

## 5. Overhaul or replacement of engine parts that have a fixed overhaul or replacement interval

The cost per flight hour for engine parts that have a fixed overhaul/inspection or replacement life will be calculated by dividing the total cost of the overhaul/inspection or replacement for the part (including required labor to replace the part) by the TBO or life limit of the engine or component/part.

For engines that require overhaul, the cost shown should be the average cost and include both the parts and the labor required. For this evaluation, the labor cost should be calculated at \$110 CAD per hour. Supporting documentation must be provided to support quoted costs.

The cost of replacement parts should be the list or catalogue price as shown in the parts cost documentation submitted with this proposal.

Indicate the applicable overhaul or replacement interval. If the overhaul or replacement interval has an hour limit as well as a cycle and/or a calendar limit, record all.

**6. Overhaul or replacement of propeller parts that have a fixed overhaul or replacement interval**

The cost per flight hour for propeller parts that have a fixed overhaul/inspection or replacement life will be calculated by dividing the total cost of the overhaul/inspection or replacement for the part by the TBO or life limit of the propeller or part.

For propellers that require overhaul, the cost shown should be the average cost and include both the parts and the labor required. For this evaluation, the labor cost should be calculated at \$110 CAD per hour. Supporting documentation must be provided to support quoted costs.

The cost of replacement parts should be the list or catalogue price as shown in the parts cost documentation submitted with this proposal.

Indicate the applicable overhaul or replacement interval. If the overhaul or replacement interval has an hour limit as well as a cycle and/or a calendar limit, record all.

**7. Overhaul or replacement of sensor parts that have a fixed overhaul or replacement interval**

The cost per flight hour for sensor parts that have a fixed overhaul/inspection or replacement life will be calculated by dividing the total cost of the overhaul/inspection or replacement for the part by the TBO or life limit of the sensor part.

For sensors that require overhaul, the cost shown should be the average cost and include both the parts and the labor required. For this evaluation, the labor cost should be calculated at \$110 CAD per hour. Supporting documentation must be provided to support quoted costs.

The cost of replacement parts should be the list or catalogue price as shown in the parts cost documentation submitted with this proposal.

Indicate the applicable overhaul or replacement interval. If the overhaul or replacement interval has an hour limit as well as a cycle and/or a calendar limit, record all.

**8. "On-condition" parts**

The cost of repair of "on-condition" parts will be calculated by dividing the average cost incurred with an unscheduled removal by the frequency of occurrence expressed in hours. This approach will be used for:

- 8.1 Repair or replacement of airframe and system parts (including the MCS) that are "on condition".
- 8.2 Repair or replacement of engine parts that are "on condition".
- 8.3 Repair or replacement of propeller parts that are "on condition".
- 8.4 Repair or replacement of major avionics parts (including the MCS) that are "on condition".
- 8.5 Repair or replacement of sensor parts that are "on condition".

The frequency of occurrence (based on supportable documentation such as reliability data) will be expressed per 1,000 flight hours. For example if the average unscheduled removal rate for a component is once every 10,000 hours, it should be expressed as 0.1 per 1,000 Hours, or 0.1/1,000 Hours.

**9. Ground Support Equipment (GSE)**

The initial cost of ground support equipment based on the contractor's supplied list, is to be amortized over the 15 year life cycle and calculated as a cost per flight hour.

In accordance with the Statement of Work (SOW), the RPAS main operating base is located in Ottawa, Ontario with a forward operating base in Iqaluit. The contractor must consider the GSE requirements for the forward operating base in addition to the main base in Ottawa, Ontario.

**10. Tooling and Equipment**

The initial cost of tooling and equipment based on the contractor's supplied list, is to be amortized over the 15 year life cycle and calculated as cost per flight hour.

In accordance with the Statement of Work (SOW), RPAS maintenance activities are planned to be performed at the main base in Ottawa, Ontario. If forward operating bases

are required by the configuration of the RPAS being proposed to achieve the operational objectives, the contractor's must consider the tooling and equipment requirements for the forward operating bases to perform line maintenance and ground servicing procedures. In addition, the contractor must consider the tooling and equipment requirements for maintenance activities to be performed at the main base in Ottawa, Ontario.

#### **11. Publication Revision Support**

Publication subscription services costs over the 15 year life cycle are to be calculated as a cost per flight hour.

#### **12. Manpower Requirements**

Manpower requirements for the operation (fixed MCS), launch and recovery of the RPAS at the main base located in Ottawa, Ontario must be provided by the contractor.

In accordance with the Statement of Work (SOW), if the configuration of the RPAS being proposed requires operations from forward operating bases, and / or multiple aircraft to achieve the operational objectives, the manpower requirements in these locations for launch and recovery and the performance of servicing and line maintenance, must be included in addition to the manpower requirements at the main base located in Ottawa, Ontario.

The following hourly costs will be used to cost each of the following manpower requirements:

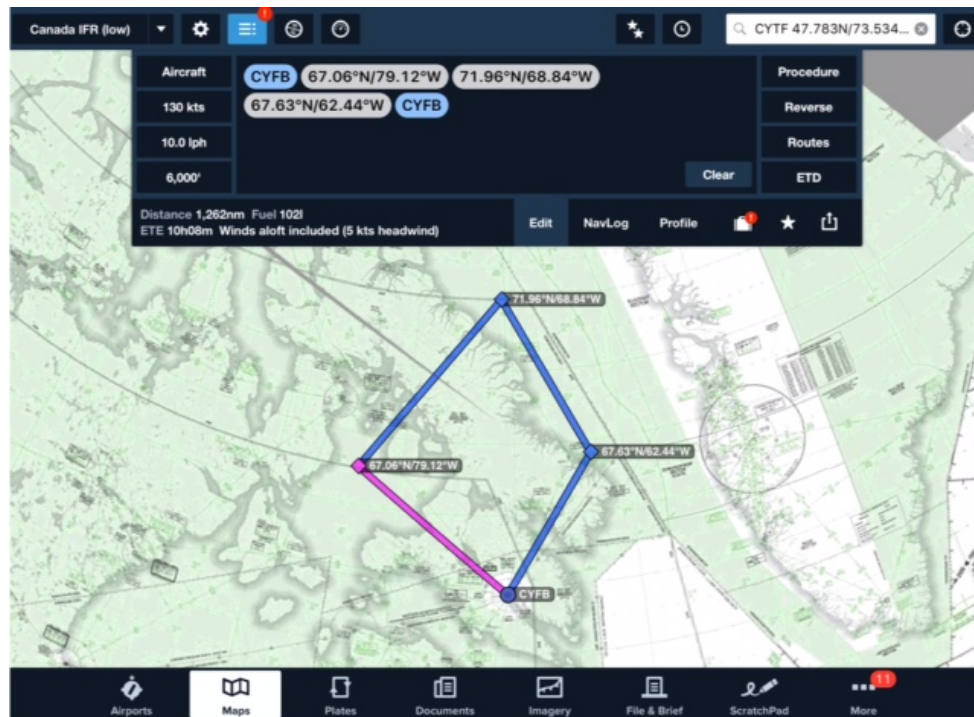
- Maintenance Personnel - \$110.00 CAD
- RPA operators (pilots) - \$151.00 CAD
- Payload operator - \$100.00 CAD
- Launch and Recovery personnel - \$100.00 CAD



## APPENDIX D – Northern Latitudes Acceptance Testing Routing

The enclosed routing will be used for acceptance testing in Northern Latitudes. It will be conducted from Iqaluit is approximately 1300 nautical miles, includes navigation in an area of magnetic unreliability, extends to N72 and involves flight over land and water.

From	To	Heading	
CYFB	67.06°N/79.12°W	338°T	329nm
67.06°N/79.12°W	71.96°N/68.84°W	56°T	693nm
71.96°N/68.84°W	67.63°N/62.44°W	185°T	985nm
67.63°N/62.44°W	CYFB	253°T	1,262nm



## APPENDIX E – Mission Scenarios

### Mission 1 – Oil Spill Detection Scenario

**Disclaimer:** The scenario described below is solely imaginary and integrates a NASP RPAS into a fictional Western Arctic marine safety/security operation. There is no intent to imply that the main operating base in this scenario will be selected to support NASP RPAS operations.

#### General Description

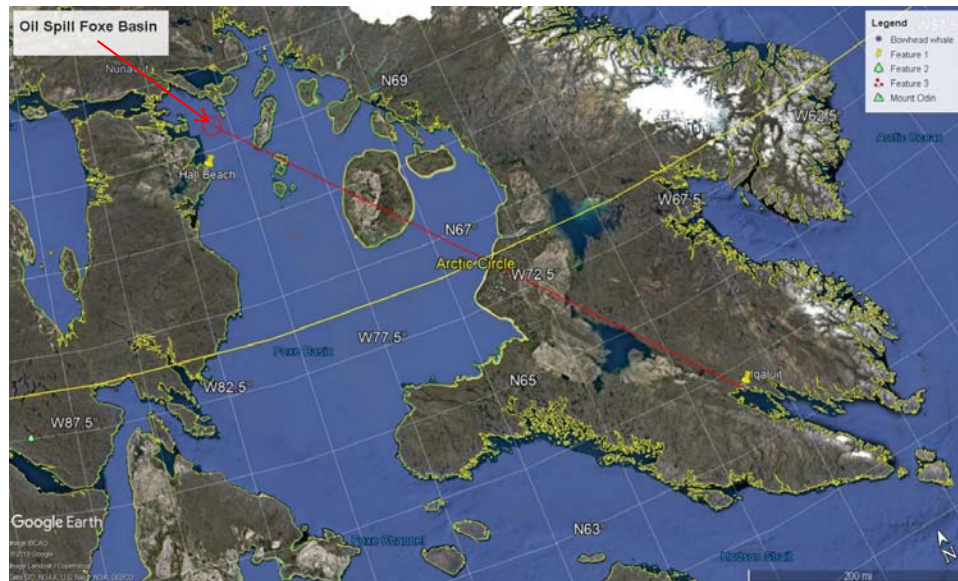


Figure A-1 Oil Spill – Foxe Basin 40nm North of Hall Beach

This scenario occurs during the Summer time period and one Remotely Piloted Aircraft System (RPAS) will be dispatched from an operating base at Iqaluit.

Environment Canada's participation in the Integrated Satellite Tracking of Pollution (ISTOP) program uses a variety of satellite imagery to monitor Canadian waters and improve the response to pollution. Marine oil pollution is measured in terms of areal extent and frequency of releases. The satellite technology used is called space-borne synthetic aperture radar (SAR) imagery and the satellite utilized is Radarsat-2.

The ISTOP program is an important tool in encouraging compliance with Canada's laws and International Conventions that seek to minimize oil pollution, and minimize impacts on the economic prosperity of Canadians as well as marine birds, mammals and the ecosystems on which they depend.

#### Scenario Details

A tug departed Hall Beach, NU, at 01:00 local time on 23<sup>rd</sup> June 2017, towing an oil barge containing 5,000 litres of diesel fuel, heading towards Taloyoak NU, to deliver its load. Weather conditions for the morning of 23<sup>rd</sup> June 2015 were reported as clear skies, a Westerly wind of 10 knots and a light chop.

At approximately 05:00 on June 24<sup>th</sup> 2017, the oil barge broke free of the tow line from the tug and flipped over, causing its full load of diesel to spill in to the Foxe Basin, 40nm north of Hall Beach NU.

The tug's crew radioed in their situation to the Canadian Coast Guard and at 06:00, Radarsat-2 recorded its morning snapshot of the Queen Maud Gulf southeast of Cambridge Bay NU. Radarsat-2 identified a long, linear anomaly and the on-duty ISTOP analyst in Ottawa commenced a tasking request with Transport Canada's Situation Centre for the NASP RPAS to overfly and verify what the observed anomaly actually was.

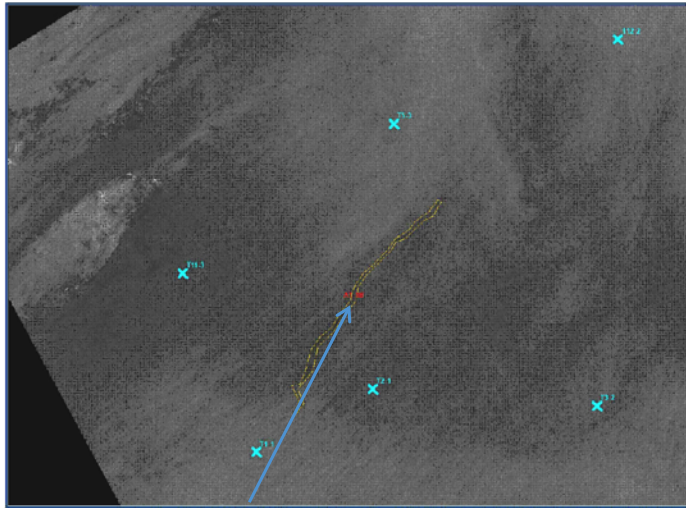


Figure A-2 – ISTOP Radarsat-2 Anomaly. Blue X's are vessels in the area.

The mission for the NASP RPAS is to detect and classify what the Radarsat-2 anomaly is. The intent is to perform an all sensor search (Radar, EO/IR, AIS,) along the entire length of the anomaly's position to identify the nature of the anomaly and to verify if it is, in fact, a hydrocarbon product. RPAS visual and aural covertness is not a requirement for this mission. Standard fuel reserve is 2 hours plus 5%.

#### General Scenario Information

**Configuration:** Reconnaissance (EO/IR, Radar, AIS,)

**Flight Duration:** 6 hours on station, plus distance from Iqaluit (450NM); scheduled take off at 07:30 Local.

**Weather Conditions:** Visibility is unrestricted, with clear skies.

Take off: Clear, 15°C, wind speed 6 kts from the West.

Area: Clear.

Landing: Clear, 12°C, wind speed 5 kts from the North West.

**Operating Area:** The mission is tasked to provide surveillance of the Foxe Basin, north of Hall Beach NU to visually identify a Radar Satellite generated anomaly on the sea's surface.

## Mission Sequence of Events

Table A-1 provides a chronology of sample mission events, referenced to target vessel departure from Inuvik.

Local Time	Event
01:00 June 23, 2017	Tug and Fuel barge depart Hall Beach
05:00 June 24, 2017	Fuel barge breaks free from tug and overturns in the Foxe Basin, 40nm north of Hall Beach NU, spilling up to 5,000 litres of diesel fuel in to the water.
06:00	Morning ISTOP Radarsat-2 satellite image is taken for the area covering the southern portion of the Queen Maud Gulf. An anomaly is identified in the Foxe Basin.
06:30	ISTOP analyst in Ottawa identifies the anomaly and commences a tasking request for the NASP RPAS (through TC SitCen) to verify the nature of the anomaly.
06:45	Tasking request received at NASP MOB Ottawa. RPAS Flight plan filed.
07:30	RPA departs Iqaluit .
Arrival on Station	<ul style="list-style-type: none"> <li>RPA arrives overhead the coordinates in Foxe Basin north of Hall Beach, provided by ISTOP in the tasking request.</li> <li>Utilizing the EO/IR camera, the Payload Operator is able to visually verify that the anomaly is, in fact, a hydrocarbon spill.</li> <li>The Payload Operator advises Canadian Coast Guard of this information. The RPA remains on station, providing live streaming video to the Operations Centre at the MOB in Ottawa.</li> <li>The Payload Operator uses the Spectral Imaging Sensor to create two dimensional maps or images to analyze the oil identify the areas where the thickest oil is located.</li> <li>The RPA must utilize these sensors to map the full extent of the spill and to aid in initiation of containment and cleanup activities.</li> <li>The RPA remains on station for 6 hours.</li> </ul>
+6 hours	RPA released from scene.
+6 hours + transit time back Departure location	RPA lands at departure airport. Payload data downloaded and further analyzed/disseminated to relevant clients. RPA is returned to maintenance hangar for post flight inspections.
This tasking of the RPA continues until the Canadian Coast Guard is satisfied that they have contained the full extent of the spill.	

Table A-1 ISTOP Oil Spill Scenario

## Mission 2 – Ice Reconnaissance Scenario

**Disclaimer:** The scenario described below is solely imaginary and integrates RPAS into a fictional Arctic Icebreaking/Sealift/Science operation.

### General Description

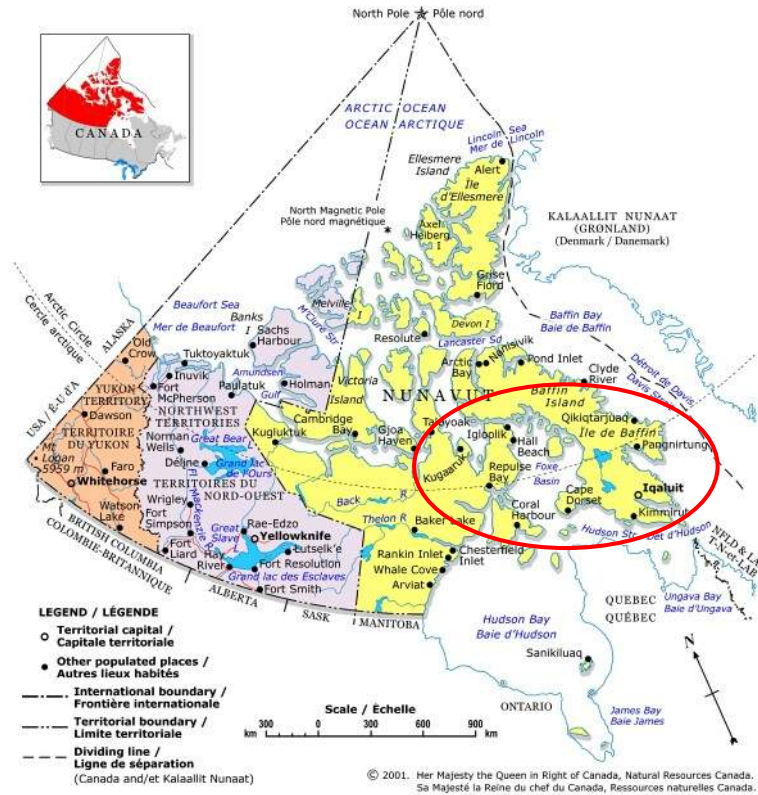


Figure B-1 Canadian Arctic

The RPAS is tasked to support an Arctic Icebreaking/Arctic Sealift operation coordinated by Canadian Ice Service of Environment Canada. The scenario occurs during the shipping season in the Arctic (July to October). The RPAS will be deployed from the Iqaluit airport (main runway length of 6,001 ft). For illustration purposes and only for this scenario, Iqaluit is assumed to be a suitable Arctic base.

### Scenario Details

The CCGS Sir Wilfred Laurier will be transiting along the NU Territory Coast Line in the Eastern Arctic up to Taloyoak. The vessel will be hugging the shoreline for the most part to avoid the majority of the heavier ice. (Fig B-2) There will be no need for 24/7 coverage, but there will be a need for a minimum of one overflight every 2 days until the transit is complete.



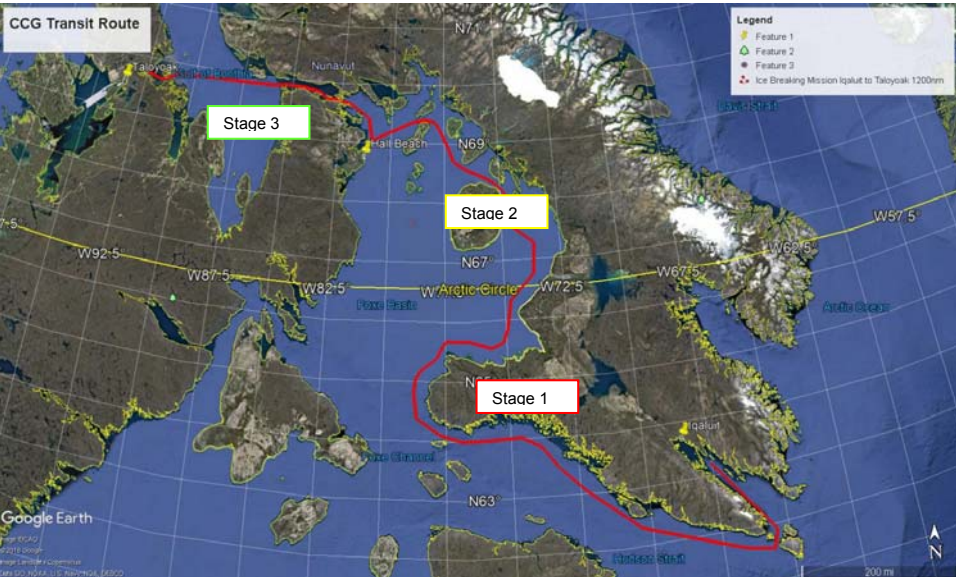


Figure B-2 Transit route CCGS Laurier

The RPAS mission is to detect and classify all ice types and concentrations in the Area of Interest (AOI), and to locate and identify all vessels travelling along the route. The intent is to perform an all sensor search (Radar, EO/IR, AIS). It is the responsibility of this unit to provide strategic ice information as well as overall ice coverage to the vessel to aid in the safe navigation of vessel and crew, as well as to aid in the conducting of a successful resupply and science program in the western Arctic.

General Scenario Information

- Configuration:** Standard Remote Sensing Suite (EO/IR, Radar, AIS).
- Flight Duration:** 980 Nm Stage 1, 970 Nm Stage 2 and 1375 Nm Stage 3.
- Weather Conditions:** The relative humidity is 72% and rainfall is not forecast. Visibility is unrestricted.
- Take off: Clear, 17°C, density altitude approximately 300 ft, wind speed 3 kts.
  - Area: Clear.
  - Landing: Clear, 26°C, wind speed 2 kts.

**Operating Area:** The mission is tasked to provide surveillance for a Canadian Coast Guard Icebreaker moving from Iqaluit to Taloyoak in the Eastern Arctic.

Mission Sequence of Events

Table B-1 provides a chronology of sample mission events in hours, referenced to Local Time. The assumption is that the vessel will maintain 12 Kts at all times and vessel's route along main track is 900 Nm. Transit should complete in 4 days and 22 hours (July 6<sup>th</sup> at 0600Z) therefore 3 missions will be required.

Local Time	Event
06:00	RPA launches to reconnoitre Stage 1. (Fig D-3)
06:00 (+1day)	CCGS Sir Wilfred Laurier traverses Stage 1 route. RPA launches to reconnoitre Stage 2 (Fig D-4)
06:00 (+2days)	CCGS Sir Wilfred Laurier traverses Stage 2 route. RPA launches to reconnoitre Stage 3. (Fig D-5)
06:00 (+3days)	CCGS Sir Wilfred Laurier traverses Stage 3 route and arrives at destination.
	All support requested has been provided upon arrival at destination.

Table B-1 Arctic Scenario

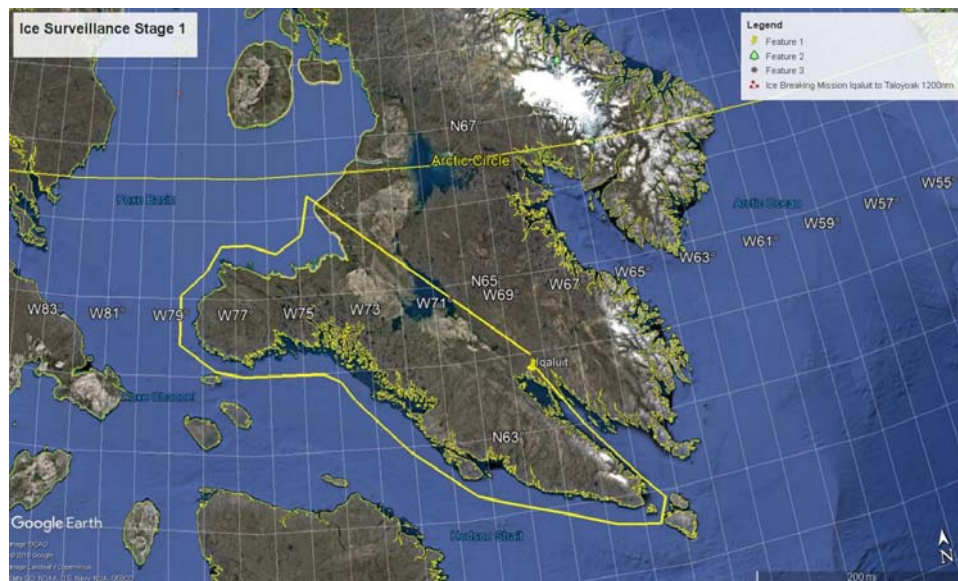


Fig. B-3 – Stage 1



Fig. B-4 – Stage 2

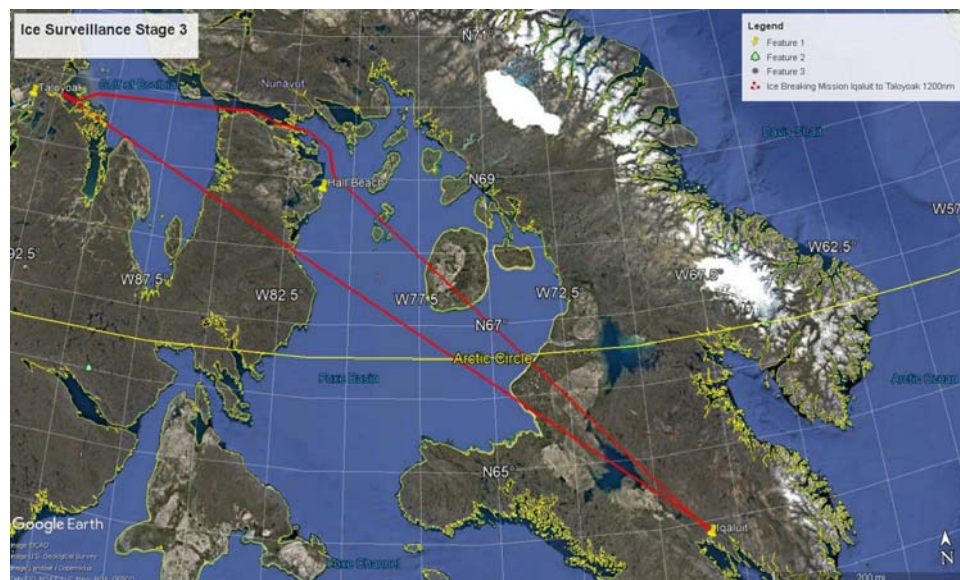


Fig. B-5 Stage 3



### Mission 3 – Department of Fisheries and Oceans Illegal Fishing Patrol Scenario

*The scenario described below is based on a Department of Fisheries (DFO) patrol.*

#### General Description

The RPAS is tasked to support a fisheries patrol on behalf of the Department of Fisheries and Oceans (DFO). The scenario occurs in early October in the Eastern Arctic.

A DFO officer will advise and provide direction to the payload operator during the mission.

This scenario assumes that the available satellite communications systems provide adequate, high-resolution streaming video to allow the DFO officer to see minute detail such as fishing gear.

#### Scenario Details

Turbot fishing is an important activity in the Eastern Arctic, especially in Baffin Bay and Davis Strait. Fishing vessels, mostly from Canada and Greenland, fish along the Exclusive Economic Zone line (EEZ) where turbot are found.

In this scenario, only a few days remain before the closing of the fishing season and fishing vessels and their crew are under pressure to get their quotas filled. Thus foreign ships without Canadian fishing license could potentially cross the EEZ line and fish illegally in Canadian waters.

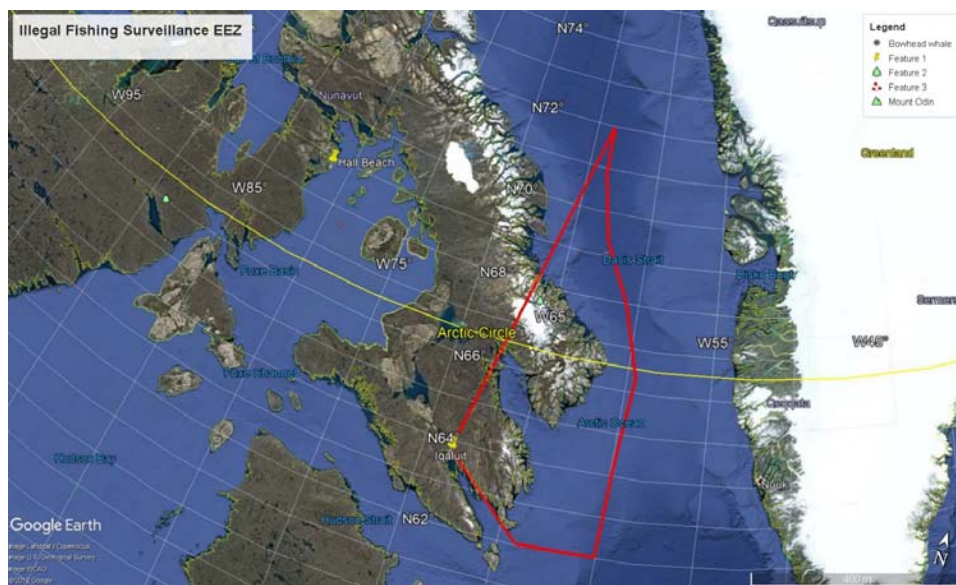


Figure C-1: Northern NAFO area and EEZ.

The purpose of this flight is to help DFO detect any illegal fishing activities along the EEZ line up to 72 degrees latitude. The mission consists of:

- Verifying fishing vessel AIS and/or VMS information,
- Conducting a visual inspection of fishing vessels (for instance: fishing gear, activities on the deck)
- Detecting any foreign vessels fishing illegally in the Canadian waters (without AIS)

AIS, EO/IR and Radar should be the primary sensors during this mission. The mission will be covert although visual contact must be maintained in order to inspect vessels and to determine the type of targets detected on Radar. Other vessel types and/or icebergs can often have similar radar signatures to fishing vessels, thus constant situational awareness must be maintained.

The DFO Officer as the sole enforcement authority will assist the RPAS crew during the mission. If the DFO officer determines there is an infraction, the options are to:

- Stay on scene and gather additional information pertaining to the fishing vessel in question,
- Hail the fishing vessel
- Request a second flight within 24 hours to verify if the fishing vessel is still continuing its illegal activities.

#### General Scenario information

**Configuration:** EO/IR, Radar, AIS & VMS.

**Flight duration:** Time on Station 10 hours, total route distance 1400nm; scheduled take-off 0800L.

**Daylight:** 08:20 to 16:15 local (approx.: 8 hours)

**Weather conditions:** Low humidity, convective activity over water giving local snow showers, visibility variable in snow showers.

Take off: Clear, 2°C, wind 320° @ 5 knots

Area: Isolated snow showers giving one mile visibility, ceiling from 1000' to 3500'

Landing: Night time, -8°C, overcast 2000', wind 340° @ 5 knots

**Operating area:** The mission is tasked to provide surveillance of fishing activities along the EEZ line (Baffin Bay and Davis Strait), Eastern Arctic.

**Mission Sequence of Events**

Local Time	Event
07:00	VMS and AIS verification and establishing flight track
08:00	RPA launch from Iqaluit (FOB)
	RPA arrives at the EEZ line, proceed northbound, fishing vessel detection begins.
	First AIS detected, inspection using all sensors.
	Detection and inspection continue
+ 10 hours on station	End of patrol, returning to FOB or MOB

Table C-1

## Mission 4 – North Atlantic Right Whale Monitoring Scenario

*The scenario described below is based on a Transport Canada NASP mission.*

### General Description

The RPAS is tasked to monitor the North Atlantic Right Whale (NARW) population in sensitive locations in the Gulf of St. Lawrence. The scenario occurs from May through November.

This scenario assumes that the available satellite communications systems provide adequate, high-resolution streaming video to allow identification of NARW within the monitoring locations.

### Scenario Details

The North Atlantic Right Whale is an endangered species which is susceptible to physical impact from shipping traffic when near the ocean surface, resulting in injury or death. Monitoring of the location of NARW in areas where they are particularly susceptible allows for management of vessel speeds. In this scenario, areas of possible NARW populations have been identified and routine RPAS patrols are required to provide confirmation of, or absence of, the presence of NARW.

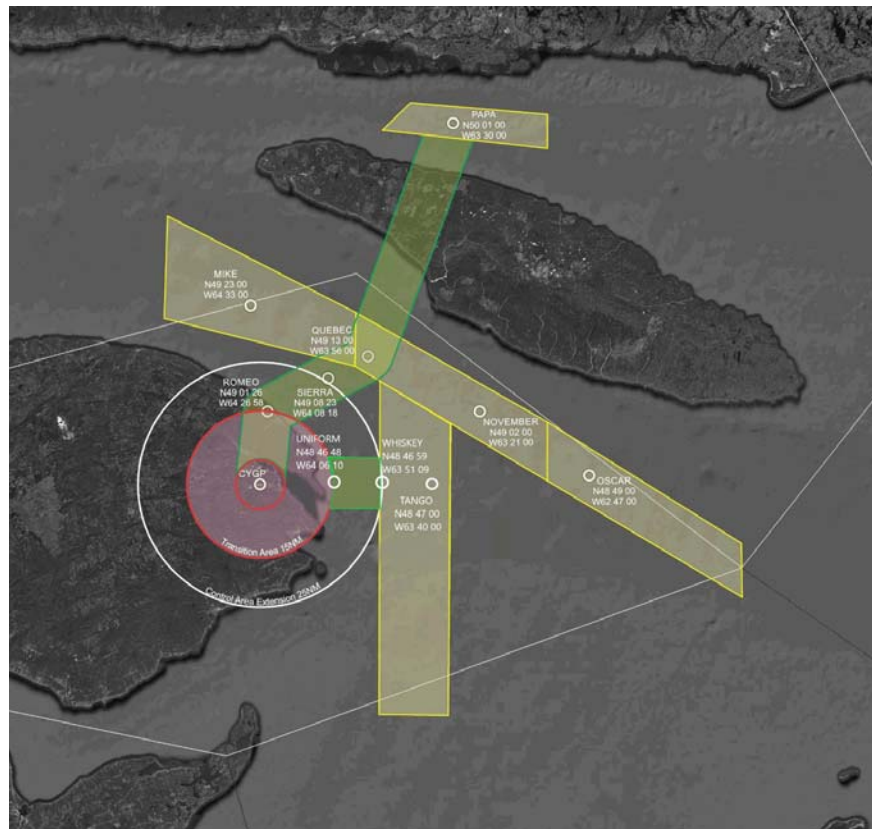


Figure D-1: NARW Monitoring Areas-Launch and Recovery of RPAS from CYGP

The purpose of this flight is to determine whether NARW are present in the designated and approved monitoring areas. The mission consists of:

- Conducting a visual inspection of the designated monitoring areas to determine if NARW are present

EO/IR is the primary sensor during this mission. The mission will be coordinated with manned assets operating in or near the RPAS operating zones. RPAS will be visible on air traffic radar above 4,000 MSL. RPAS will utilize available on-board sense and avoid technology to ensure safe airspace clearance with participating/non-participating aircraft.

If NARW are detected and confirmed by the Marine Mammal Observer (MMO) based on the live data-feed from the RPAS, the MMO may:

- Request the RPAS capture additional imagery of the NARW for future analysis.

- Request a change in the mission profile based on available NARW location information and location of any nearby shipping traffic.

### General Scenario information

**Configuration:** EO/IR

**Flight duration:** Time on Station 10 hours, total route distance 1400nm; scheduled take-off 0800L.

**Daylight:** 04:37 to 20:15 local (approx.: 16 hours)

**Weather conditions:** High humidity, low convective activity, broken clouds at 3,000, no current or anticipated precipitation.

Take off (CYGP): 14°C, wind 250° @ 5 knots

Monitoring Area: Same as CYGP

Landing (CYGP): 17°C, wind 310° @ 7 knots

**Operating area:** The mission is tasked to provide NARW monitoring in the Gulf of St. Lawrence.

#### Mission Sequence of Events

Local Time	Event
05:00	RPA launch from CYGP
05:25	RPA arrives waypoint Quebec, via Romeo and Sierra. Proceeds waypoint Mike.
05:42	RPA arrives waypoint Mike and initiates NARW monitoring transects for all zones
13:47	NARW (designated NARW013007) detected 24 nautical miles south of waypoint Tango. MMO requests detailed image collection and extended monitoring of NARW013007.
15:05	Breakoff from target NARW and continued monitoring in zones
18:27	End of patrol, land at CYGP

Table C-1

## APPENDIX F – Canadian Metadata Profile for STANAG 4609 Compliant Video

### 1. Scope

This document provides guidance for the acquisition and management of ISR systems that produce STANAG 4609 compliant video. This document provides direction on what Motion Imagery Standards Board (MISB) STD 0601.4 Metadata elements are to be included in STANAG 4609 compliant video generated from Canadian platforms.

### 2. Caveat

This metadata set was not developed to replace existing STANAG or MISB engineering guidance policy. These existing interoperability documents provide guidance intended to facilitate interoperability between national systems. They do not constrain or dictate unique national requirements. This document provides specific guidance that augments these documents while including specific requirements. This profile does not require any compliance test above and beyond the STANAG 4609 compliance test in order to certify that proposed platforms are interoperable with international platforms.

### 3. References

STANAG 4609, NATO Digital Motion Imagery Format, Ed 3, 13 Oct 2009

AEDP-8, NATO Digital Motion Imagery Format - Implementation Guide, Ed 2, 2007

SMPTE 336M-2007, *Data Encoding Protocol Using Key-Length-Value*

MISB Standard 0601.4, *UAS Datalink Local Metadata Set*, 4 Mar 2010.

MISB Standard 0102.9, *Security Metadata Universal and Local Sets for Digital Motion Imagery*, 1 Sep 2010.

MISB EG 0902.1, *Motion Imagery Sensor Minimum Metadata Set*, 9 Jun 2010

SMPTE RP 210.11, *Data Element Dictionary*

MISB STD 0807.1, *MISB KLV Metadata Dictionary*

### Introduction

The aim of STANAG 4609 is to promote interoperability of present and future motion imagery systems in a NATO Combined/Joint Service Environment. Interoperability is required because it will significantly enhance capability and increase flexibility and efficiency to meet mission objectives through common utilization of information generated from motion imagery systems.

STANAG 4609 compliancy requires the inclusion of metadata that is compliant with the SMPTE 336M-2007 Key-Length-Value (KLV) protocol. Further guidance provides a refined recommendation to use KLV data formatted as a local data set in accordance with MISB Standard 0601.4<sup>1</sup> Local Data Set (LDS). This Standard includes a requirement for security elements that comply with the MISB STD 0102.9 Security elements. The LDS provides a list of 80 KLV elements that are intended to provide coverage of the main requirements of ISR platforms. Many of the KLV elements in these two standards are optional, however it was recognized that a specific subset of these elements should be considered mandatory. Consequently the MISB EG 0902.1 MISB Minimum Metadata Set (MMS) was developed to standardize the minimum mandatory elements required for MISB compliancy. It consists of metadata elements taken from MISB *Standard 0601.X* intended to enable the minimum functionality required for both Discovery & Retrieval of source imagery..

Individual National project requirements are expected to differ from NATO or MISB requirements. The intent of this document, the Canadian Profile for STANAG 4609 Metadata, is to define the Minimum Metadata Set (MMS) required for STANAG 4609 video to be considered compliant with systems requirements. This profile maintains compliance with NATO and MISB, while addressing specific Canadian requirements.

### Clarification of Terms and Conventions

Universal Label (UL): This is synonymous with Universal Key as may be found in a key dictionary such as SMPTE RP 210.X or MISB STD 0807.X MISB KLV Metadata Dictionary.

Universal Data Set (UDS): A UDS is a KLV data set where each element is identified by a full length 16 byte Universal Label. EG104 is one instance of a UDS. However the term UDS often means EG104 specifically.

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<sup>1</sup> In cases where the version number of an MISB document is not important then the version suffix will be written as .X. For example STD 601.X

**Local Data Set (LDS):** A LDS is a KLV dataset where smaller keys called tags are used to identify each element embedded within the set. The set itself is identified by a UL. Standard 0601 is an instance of LDS. However the term LDS often means STD 0601 specifically.

For bandwidth efficiency, some elements in a LDS are formatted differently than their equivalent in a UDS. This is particularly apparent with the Local and Universal elements of the MISB STD 0102.9 *Security Metadata Universal and Local Sets for Digital Motion Imagery*.

**Tag:** Metadata elements used in the EG 0601 Local Data Set are referenced by tags.

There are many documents discussing metadata, which use a slight variation or completely different name for what is the same metadata element. For example "Image Source Device" is used in one case where the STD 0601 name is "Image Source Sensor." The only way to unambiguously identify a KLV element is through the element's Universal Label. All metadata elements relevant to this guide are defined in the SMPTE RP210.11 dictionary/registry or the MISB private dictionary/registry (MISB STD 0807.X)

The use of the terms SENSOR, PLATFORM, and DEVICE are often used interchangeably. When referred to with respect to a geo-location they refer to the geo-location of the platform that is carrying the sensor or device.

By convention the Target is considered to be at Frame centre unless specifically stated as being otherwise.

#### Canadian Metadata Profile

The Minimum Metadata Set consists of subset of the metadata elements taken from MISB *Standard 0601.4*. The purpose of the MMS is to ensure sensor video is always accompanied by the minimum metadata elements required to enable Discovery & Retrieval, Situational Awareness, and release to coalition partners.

This document defines a minimum set of elements; it is expected that individual platforms will provide additional metadata that is required for their unique requirements. This document places no constraints or restrictions on such 'additional' metadata.

The 601 standard includes a mandatory requirement to embed a *Standard 0102.9* Local Security Metadata Set within the 0601 metadata set. Consequently this EG also includes metadata elements taken from MISB *Standard 0102.9*. This enables releasability of classified and unclassified data to NATO partners. The absence of a security metadata set, even if the video is unclassified, will render the video non-compliant with MISB STD 601.X and prevent the sharing of the video with a coalition partner.

As a subset of the *Standard 0601.X* LDS, the CA MMS is encoded within the same 16 byte SMPTE UL key, which is 06.0E.2B.34.02.0B.01.01.0E.01.03.01.01.00.00.00

Table 1 lists the elements from *Standard 0601.4* and *Standard 0102.9* that comprise the CA MMS Profile. Note that Tag 48 of Standard 0601.4 contains a nested Security Metadata Local Data Set as defined in MISB *Standard 0102.9*. Tag 48 therefore contains sub-tags, indicating specific elements drawn from the Security LDS. When referenced as a member of the 0601 LDS the Security LDS will be represented as 48/X where X is the tag from the security LDS. The Security Metadata Set standard defines a Universal Metadata set and a Local Metadata set. The value fields for the two sets are different. For example the Security Classification element in the Universal version is a string of maximum length 14 bytes with instances such as 'UNCLASSIFIED//'. In the Local Data Set version the type is unsigned integer of length 1 byte. In this case the unsigned integer contains a code where for example a classification of 'UNCLASSIFIED//' is stored as 0x01. When embedded under Tag 48 of a 0601 LDS the Security LDS, not the UDS, must be used.

Tag #	In 0902	MISB STD 0601.3 Name	Units (Info only - see 0601.3 for authoritative definition)	CAN Profile
1	X	Checksum	none	1
2	X	UNIX Time Stamp	microseconds	1
3	X	Mission ID	string	1
4		Platform Tail Number	string	2
Plat for 5	X	Platform Heading Angle	degrees	1

	6	X	Platform Pitch Angle	degrees	1
	7	X	Platform Roll Angle	degrees	1
	10	X	Platform Designation	string	1
	11	X	Image Source Sensor	string	1
	12	X	Image Coordinate System	string	1
	13	X	Sensor Latitude	degrees	1
	14	X	Sensor Longitude	degrees	1
Sensor/ Platform	15	X	Sensor True Altitude	metres	1
	16	X	Sensor Horizontal Field of View	degrees	1
Sensor Pointing	17	X	Sensor Vertical Field of View	degrees	2
	18	X	Sensor Relative Azimuth Angle	degrees	1
	19	X	Sensor Relative Elevation Angle	degrees	1
	20	X	Sensor Relative Roll Angle	degrees	1
	21	X	Slant Range	metres	1
Frame Centre	22	X	Target Width	metres	2
	23	X	Frame Center Latitude	degrees	1
	24	X	Frame Center Longitude	degrees	1
Frame Corners - Offsets from Frame Centre	25	X	Frame Center Elevation	meters	2
	26		Offset Corner Latitude Point 1	degrees	1
	27		Offset Corner Longitude Point 1	degrees	1
	28		Offset Corner Latitude Point 2	degrees	1
	29		Offset Corner Longitude Point 2	degrees	1
	30		Offset Corner Latitude Point 3	degrees	1
	31		Offset Corner Longitude Point 3	degrees	1
	32		Offset Corner Latitude Point 4	degrees	1
	33		Offset Corner Longitude Point 4	degrees	1
	48	X	Security Local Metadata set	embedded KLV set	1
	56		Platform Ground Speed	metres/second	2
	65		UAS LDS Version Number	number	1

72	Event Start Time - UTC	microseconds	2
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MISB STD 102.7 Security Metadata Universal and Local Set.				
Tag #	MISB STD 0102.7 Name	In 0902	Units/type	CAN Profile
48/1	Security Classification	X	Integer	1
48/2	Classifying Country & Releasing Instructions Country Coding Method	X	Integer	1
48/3	Classifying Country	X	enumerated text	1
48/4	Security - SCI/SHI Information	X	string	1
48/5	Caveats	X	string	1
48/6	Release Instructions	X	string	1
48/22	Version	X	Integer	1

**Note 1:** 48/2 allows several options for Country Coding. Guidance is to use the STANAG 1059 Three Letter system for Canadian sensors.

1	Required by CAN Profile
2	Desired by CAN Profile(Nice to have)

#### Rationale for Element Inclusion

Metadata considerations were viewed from the level of an overall architecture, rather than at the level of platform requirements. For example the use of cross domain solutions such as high speed guards will require metadata (security markings) that may not be required or considered from the platform point of view. Other elements are required for Situation Awareness (SA) and Geospatial Intelligence [GEOINT] tools.

Specific considerations for metadata element inclusion included the following:

1. Interoperability with NATO through NATO standards.
  - a. Specifically STANAG 4609 requirements
 

Security: Security is not mandated by NATO because it would drive CONOPS. However security is mandated by Canada because Canadian security policy requires it.

Searches:

    - b. Basic searching by
      - i. Mission ID which is required to search by "WHO" conducted a mission.
      - ii. Frame Corners which are required for searching by geo location.
    - c. Advanced searching by having richer parameters that allow narrowing the search:
      - i. Mission date
      - ii. Platform type
      - iii. Sensor type (EO, IR, etc)

Geo-rectification which requires frame corners

Presentation of Situational Awareness

    - d. Ability to show location of platform on moving map
    - e. Ability to show sensor footprint on moving map

Requirements and constraints imposed by SA and GEOINT tools that process the imagery.



## APPENDIX G – Relevant Information


### List of Acronyms

ACRONYM	TERM
ADS-B	Automatic Dependant Surveillance-Broadcast
AEP	Allied Engineering Procedures
AHRS	Attitude, Heading Reference System
AIS	Automatic Identification System
AMC	Acceptable Means of Compliance
AMO	Approved Maintenance Organization
APU	Auxiliary Power Unit
ASD	Aircraft Services Directorate
ATOL	Automatic Takeoff and Landing
ATP	Acceptance Test Plan
BVLOS	Beyond Visual Line of Sight
BRLOS	Beyond Radio Line of Sight
CAR	Canadian Aviation Regulations
CBSA	Canada Border Services Agency
CCG	Canadian Coast Guard
CCMP	Configuration and Change Management Plan
CDL	Configuration Deviation List
CDR	Critical Design Review
CRFI	Canadian Runway Friction Index
DFO	Department of Fisheries and Oceans
DND	Department of National Defense
EEZ	Exclusive Economic Zone
EO/IR	Electro-optical Infrared camera system
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
FPV	First Person View
FSR	Field Service Representative
FOB	Forward Operating Base
FMS	Foreign Military Sales
GDT	Ground Data Terminals
GFE	Government Furnished Equipment
GNSS	Global Navigation Satellite System
HRP	Human Resources Plan
IMC	Instrument Meteorological Conditions
ICA	Instructions for Continued Airworthiness
IFR	Instrument Flight Rules
IR/UV	Infrared / Ultraviolet
ISA	International Standard Atmosphere
ISAR	Inverse Synthetic Aperture Radar
ITAR	International Traffic in Arms Regulations

KIAS	Knots Indicated Air Speed
LDA	Landing Distance Available
LIDAR	Light Detection and Ranging Sensor
LRC	Launch and Recover Component
MDA	Marine Domain Awareness
MLW	Maximum Landing Weight
MMEL	Master Minimum Equipment List
MPPR	Monthly Project Progress Reports
MPS	Master Project Schedule
MSL	Mean Sea Level
MTCR	Missile Technology Control Regime
MTI	Moving Target Indication
MTOW	Maximum Take-Off Weight
NASP	National Aerial Surveillance Program
NIIRS	National Imagery Interpretability Rating Scale
OEM	Original Equipment Manufacturer
OPA	Optionally Piloted Aircraft
PDR	Preliminary Design Review Meeting
PMBOK	Project Management Body of Knowledge
PMP	Project Management Plan
PRM	Progress Review Meetings
PRR	Project Risk Register
QAP	Quality Assurance Program
QMP	Quality Management Plan
RCMP	Royal Canadian Mounted Police
RLOS	Radio Line of Sight
RMP	Risk Management Plan
RSO	Remote Split Operations
S-AIS	Satellite based – Automatic Identification System
SAR	Synthetic Aperture Radar
SLAR	Side Looking Airborne Radar
SMP	Security Management Plan
SOW	Statement of Work
STANAG	NATO Standardization Agreement
TAWS	Terrain Awareness and Warning System
TC AIM	Transport Canada Aeronautical Information Manual
TCAS	Traffic Alert and Collision Avoidance System
TC-ASD	Transport Canada Aircraft Services Directorate
TC	Transport Canada
TCCA	Transport Canada Civil Aviation
TODA	Takeoff Distance Available
TOP	Take-off Power
TORA	Take Off Run Available
TSI	Time Since Inspection
TSN	Time Since New
TSO	Time Since Overhaul

RPAS	Unmanned Aerial System
UA	Unmanned Aircraft
RPA	Unmanned Aerial Vehicles (RPA)
MCS	RPA Control Station
USAR	RPAS Airworthiness Requirements as defined in STANAG 4671 Edition 1 and / or AEP-4671 Edition A Version 1 as stipulated within Appendix A
VFR	Visual Flight Rules
VLOS	Visual Line of Sight
VMC	Visual Meteorological Conditions
VNC Chart	VFR Navigation Chart

## Definitions and Terminology

Aircraft on Ground Spare Parts Procurement	A spare parts availability requirement indicating that a problem is serious enough to prevent an aircraft from flying and there is a rush to acquire the parts to put the aircraft back into service and prevent further delays. The parts are expected to be delivered to its destination within North America within 24 hours.
Airworthy	In a fit and safe state for flight. Reference Transport Canada Staff Instruction SI 623-001
Azimuth	The relative along-track position of an object within the antenna's field of view following the radar's line of sight. Direction perpendicular to the range direction
Beaufort Sea Scale	An empirical measure for describing wind intensity based on observed sea conditions. <a href="https://www.tc.gc.ca/eng/marinesafety/tp-tp10038-80-wi-beaufort-scale-324.htm">https://www.tc.gc.ca/eng/marinesafety/tp-tp10038-80-wi-beaufort-scale-324.htm</a>
Beyond Visual Line of Sight	RPA operations in which the RPA operator is unable to see the RPA or the surrounding airspace with the unaided eye.
Beyond Radio Line of Sight	RPA operations being conducted beyond the line of sight range of VHF/UHF radio systems. For example, beyond 200km for C-Band RF links.
Canadian Arctic Region	<p>The Canadian Arctic Region (Canadian Arctic Archipelago) extends some 2,400 km longitudinally and 1,900 km from the mainland to Cape Columbia, the northernmost point on Ellesmere Island. It is bounded on the west by the Beaufort Sea; on the northwest by the Arctic Ocean; on the east by Greenland, Baffin Bay and Davis Strait; and on the south by Hudson Bay and the Canadian mainland.</p>  <p>Collectively the Canadian Arctic Region A – High Arctic; B – Western Arctic; C – Mid-Central Arctic; D – Mid-Eastern Arctic; E – Central Arctic; F- Eastern Arctic.</p>

Canada's EEZ	Canada's EEZ is the exclusive economic zone of Canada which is an area of the sea adjacent to and beyond the territorial sea, extending out to 200 nautical miles from the baselines. Within this zone, Canada has sovereign and jurisdictional rights over exploration and management (e.g. scientific research and protection of the marine environment), and economic exploitation of living and non-living resources in the waters above the seabed, in the seabed and beneath the seabed.
Canadian Northern Domestic Airspace	As defined within the Designated Airspace Handbook.
Canadian Southern Domestic Airspace	As defined within the Designated Airspace Handbook.
Command and Control (C2) Link	The data link between the RPA and the control station for the purposes of managing the flight.
Covert	Not openly shown – Unseen and unheard
Detect	<i>Detect</i> is the capability to find or discover the presence or existence of an installation, object, activity, or item of interest, based on its general shape (configuration) and on other contextual information in the scene. Some level of identification is implied in detection, so that the feature detected can be properly named.
Engineering Data/ Approval Package	Consists of Contractor operating and maintenance manuals, drawings and specifications, engineering reports and other related data that defines the configuration and supports the type design features of the RPAS including those of other third party vendors installed in the RPAS. Contractor
Field of View	The extent of the observable world that is seen at any given moment
First Person View Device	A device that generates and transmits a streaming video image to a ground station display or monitor giving the RPA operator who is viewing this video, the illusion of actually flying the RPA from an onboard pilot's perspective.
Fixed RPA Control Station	The primary MCS, located in a fixed facility at Ottawa Canada. This MCS is used to control RPA and payloads in flight via satellite and RLOS communication links.
Flight Termination System	The system that, upon initiation, terminates the flight of a RPA.
Fly-away	An interruption or loss of the command and control link where the RPA operator is unable to affect control of the aircraft and the aircraft is no longer following its preprogrammed procedures resulting in the RPA not operating in a predictable or planned manner.
Forward Operating Base	An airfield used to support RPAS operations, but which does not provide full-support facilities. Typically used for short-term storage, line maintenance, and launch and recovery of the RPA.
Gimbal	A device which allows an object to remain horizontal while the object to which it is fastened tilts freely in any direction

Handover	The act of passing RPA operator-in-command responsibilities from one control station or RPA operator to another.
Icing Conditions	<p>Light: The rate of accumulation may create a problem if flight is prolonged in the environment (over 1 hour).</p> <p>Moderate: The rate of accumulation is such that even short encounters become potentially hazardous, and use of de-icing or anti-icing equipment or diversion is necessary.</p> <p>Reference: Transport Canada Aeronautical Information Manual (TC AIM) section MET 2.4.</p>
Identify	<p><i>Identify</i> is the capability to name an object by type or class, based primarily on its configuration and detailed components. Identification depends on physical observation of detail in the image and not through information from non-imagery sources.</p> <p>Reference: National Imagery Interpretability Rating Scale (NIIRS)</p>
IR Midwave	Electromagnetic radiation emitted in the infrared spectrum at wavelengths of 3-8µm
Launch and Recovery Component	A subset of the MCS that can be used for visual launch and recovery of the RPA and includes the antennas and equipment necessary to control the RPA via RLOS communications.
Line Maintenance	As defined in CAR standard 573 and includes pre-flight, daily and weekly checks and includes the rectification of aircraft defects but does not include scheduled checks i.e. 100 hr.
Lost Link	The loss of command and control link contact with the unmanned air vehicle such that the RPA operator can no longer manage the aircraft's flight.
Man-portable	Capable of being carried by one person
Main Operating Base	A primary operating location of the RPAS, to include full maintenance facilities/capabilities, a fixed base MCS, and long-term storage facilities for the RPA.
Maritime Objects of Interest	Include but are not limited to maritime vessels, oil pollution, ice bergs, sea ice and Arctic mammals.
Maritime Search Radar	An airborne radar system used for searching the surface of the ocean to identify targets of interest for safety and security applications. It is primarily used to detect small targets on the ocean surface in adverse sea conditions at long ranges.
Maritime Surveillance Program	Maritime Surveillance Program is a program tasked with the active patrol and monitoring of areas of water by aircraft, aimed at identifying human and natural activities using a sophisticated suite of electronic sensors that may include high definition cameras, radars, thermal imaging sensors, optical sensors and hyper spectral or multi spectral imagers.
Maximum Take-off Weight (MTOW)	The weight of the aircraft at the time of the operation, including the weight of any payload (e.g. a camera) and fuel.

Mission Control Station	A facility or device from which the RPA and payload is controlled and/or monitored for all phases of flight
Mobile Mission Control Station	The mobile MCS, resides in a suitable vehicle and is normally located in Ottawa Canada. The mobile MCS is used as a backup facility for the fixed MCS and is used to control RPA and payloads in flight via satellite and RLOS communication links.
Near Real Time	Refers to the time delay introduced by automated data processing or network transmission, between the occurrence of an event and the use of the processed data, such as for display or feedback and control purposes.
Open Architecture	Open architecture means a type of computer architecture or software architecture that is designed to make adding, upgrading and swapping components easy.
Operator	The person that has possession of the aircraft or the RPA system, as owner, lessee or otherwise.
Optionally Piloted Aircraft	An aircraft that is integrated with RPA technology and still retains the capability of being flown by an onboard pilot using conventional control methods.
Payload	All elements of the aircraft that are not necessary for flight but are carried for the purpose of fulfilling specific mission objectives. This may include such sub- systems as intelligence and surveillance assets, communication relay equipment, sensors, cargo and cameras.
Payload Operator	The person (s) trained to operate the payload system.
Portable RPA Control Station	The portable MCS is used for deployed operations when satellite control from the fixed or mobile MCS is not practical. For example, when colocation of the MCS with a deployed command center is considered necessary. The portable MCS is man-portable (see definition above) in its broken-down configuration, air transportable in one or more hardened cases and includes antennas and communication equipment suitable to control the RPA and payloads via satellite and RLOS communication links. The portable MCS could also be used for simulation and training of RPA operators and payload operators.
Radio Line-of-Sight	The limit of direct point-to-point contact between a transmitter and a receiver given the equipment being used and the prevailing conditions.
Range	Line of sight distance between the radar and each illuminated target
Real-time	A process or activity occurring in real-time if it responds within a specified time variant from an external source, typically a fraction of a second.
Reconnaissance	A mission undertaken to obtain, by visual observation or other detection methods, information about the activities and resources of a target of interest; or to secure data concerning the meteorological, hydrographic characteristics of a particular area.

Remotely Piloted Aircraft System	A system that includes one or more RPAs, one or more RPA Control Stations and any other RPA system elements necessary to enable flight such as a command and control data link, a communication system and take-off and landing element. There may be multiple RPA, MCS, data links and take-off and landing elements with a RPA system.
Remotely Piloted Aircraft	An aircraft that is designed to operate with no human crew on board and which does not carry personnel, and: <ul style="list-style-type: none"> <li>- Is capable of sustained flight by aerodynamic means;</li> <li>- Is remotely piloted or automatically flies a pre-programmed flight profile;</li> <li>- Is reusable</li> </ul>
Routine Spare Parts Procurement	A spare parts availability requirement indicating that supply of the spare part is required at the destination within North America within 30 days.
Service Life	Any component that has some type of service life requirement such as overhaul, major inspection or life limit expressed in calendar time, flight time, cycles, landings or any combination.
SI Units	All physical units and their abbreviations are, unless otherwise stated, as defined in the International System of Units (SI Units).
Slant Range	The distance measured along a line between the radar antenna and the target (between two points which are not at the same level relative to a specific datum)
Spotlight SAR:	Obtains a higher resolution image as the antenna is fixed looking in one direction to keep the target within the beam as the platform moves
Squint Angle	The angle that the transmission is offset from the normal of the plane of the antenna.
STANAG	NATO Standardization Agreement
Stripmap:	Antenna beam is pointed to a fixed azimuth angle and the ground swath is illuminated tracing a strip on the ground as the platform moves.
Substantial Damage	Damage or failure which adversely affects the structural strength, performance, or flight characteristics of the aircraft and which would normally require major repair or replacement of the affected component. Engine failure or damage limited to an engine if only one engine fails or is damaged, bent fairings or cowlings, dented skin, small punctured holes in the skin or fabric, ground damage to rotor or propeller blades, and damage to landing gear, wheels, tires, flaps, engine accessories, brakes, or wingtips are not considered "substantial damage" for the purposes of this part.
Surveillance	The systematic observation of aerospace, surface or subsurface areas, places, persons, or things, by visual, aural, electronic, photographic, or other means
Switchover	The operation that consists of performing the transfer of the RPA command and control from one data link channel to another channel within the same MCS. Reference USAR.U1617.



Tightly-Coupled (Integrated) Airborne GNSS/INS Navigation System	A system that “processes and monitors pseudoranges individually based on inertial information in order to prevent pseudorange errors from causing system integrity violations.
Track	A Track is an object of interest’s current location and motion based on measurement, or the prediction of the future location based on estimates.
Turnover	Turnover means the hand off or transfer of a particular surveillance mission or patrol, and its activities and responsibilities, from one aviation asset to another. A turnover involves the digital transfer of all track files and other information necessary for the incoming platform to assume mission duties without a break in coverage.
Visual line of sight	Unaided (corrective lenses and/or sunglasses exempted) visual contact with the aircraft sufficient to be able to maintain operational control of the aircraft, know its location, and be able to scan the airspace in which it is operating to decisively see and avoid other air traffic or objects.
Video Imagery	Images, with metadata collected as a timed sequence in standard motion imagery format, which is managed as a discrete object and displayed in sequence.
Work Stoppage Spare Parts Procurement	A spare parts availability requirement indicating that supply of the spare part is required at the destination within North America within 5 days.

Throughout this SOW, the word “must” is directive (mandatory), “should” is permissive and “will” is explanatory. The term Canada refers to the Government of Canada.

## Reference Documents

The following documents provide further guidance to this Statement of Work:

- Canadian Aviation Regulations. <https://www.tc.gc.ca/eng/acts-regulations/regulations-sor96-433.htm>
- Designated Airspace Handbook: [http://www.navcanada.ca/EN/products-and-services/Documents/DAH\\_Current\\_EN.pdf](http://www.navcanada.ca/EN/products-and-services/Documents/DAH_Current_EN.pdf)
- FAA Regulations [https://www.faa.gov/regulations\\_policies/faa\\_regulations/](https://www.faa.gov/regulations_policies/faa_regulations/)
- Transport Canada Aeronautical Information Manual (TC AIM) <https://www.tc.gc.ca/eng/civilaviation/publications/tp14371-menu-3092.htm>
- CAN-TSO Standards <http://www.tc.gc.ca/eng/civilaviation/regserv/cars/part5-standards-537-menu-3244.htm>
- List of Common CAN-TSO and ETSO. <https://www.tc.gc.ca/eng/civilaviation/standards/int-3970.htm>
- NATO Standardization Agreement (STANAG) 4671 Edition 2 / AEP-4671 Edition A Version 1 – Unmanned Aircraft Vehicles Systems Airworthiness Requirements.. <http://nso.nato.int/nso/nsdd/listpromulg.html>
- US Performance Standards for Light Emitting Products. <https://www.ecfr.gov/cgi-bin/text-idx?SID=f1fdee43f5e7d5cc53188d43d13f6fb6&mc=true&node=pt21.8.1040&rgn=div5>

Sollicitation No. - N° de l'invitation T8493-150035/C Draft RFP	And. No. - N° de la modif. File No. - N° du dossier	Buyer ID - Id de l'acheteur 004C/AG CCC No./N° CCC - FMS No./N° VME
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## ATTACHMENT 1 TO PART 4 – Mandatory Technical Criteria

In their bid, the Bidder must comply with the following mandatory technical criteria and provide the necessary documentation to support compliance. Any bid which fails to meet the following mandatory technical criteria will be declared non-responsive. Each criterion must be addressed separately. By submitting a bid, the Bidder certifies it meets all the mandatory requirements of the RFP, Contract Clauses, and Statement of Work at Annex A, including those that are not part of this mandatory technical criteria bid evaluation.

Definition of Other Substantiating Documentation includes Engineering reports, flight test reports/data, engineering attestations, other Operational/Technical substantiating documentation, but does not include sales / marketing information

ID	Mandatory Requirement	Proof of Compliance from Bidder	Bidder's Response (How requirement is met)	Bid Reference Page/Para #	Comments
<b>Operational Suitability Requirements</b>					
1.	The RPAS must have received an airworthiness certification from a Civil Aviation Authority or a National Military Airworthiness Authority.	An unaltered copy of the airworthiness certification from the applicable civil or military airworthiness authority.			
2.	The RPAS must have received an operational approval (eg. SFOC, Certificate of Airworthiness) from a Civil Aviation Authority or a National Military Airworthiness Authority	An unaltered copy of an operational approval eg. SFOC, C of A, etc.			
5.	Bidders must provide a Status Report showing for all life limited and calendar, time, cycle or landing controlled components, the part number and serial number and the applicable TSN / TSO calendar, cycles, landings and time in service for each component / structure for the airframe, engine and propeller (for used aircraft only)	Copy of Status Report.			This item will be point rated in ID# 5 of Attachment 2 of Part 4 below.

ID	Mandatory Requirement	Proof of Compliance from Bidder	Bidder's Response (How requirement is met)	Bid Reference Page/Para #	Comments
8.	The overall RPAS availability must be no less than 20 hours per mission, 40 hours per week and 500 hours per year for each RPA..	Statement of RPAS reliability from supplier, supported by historical maintenance data or engineering analysis.  Must include at minimum all requested information in the Comments Column of Item number SOW Section 12.8.8 of Attachment 2 to Part 4 of the Bid Solicitation.			
9.	The RPAS must be equipped with a minimum duplicate redundant navigation system including instruments at the MCS to allow the RPAS to operate up to 72 degrees north latitude, during all phases of flight (eg. take-off, enroute, approach and landing) under Instrument Flight Rules (IFR).	Provide certificate, Technical Specifications or other substantiating documentation illustrating that the RPAS is equipped with the specified equipment to safely operate under day and night IFR			
<b>Remotely Piloted Aircraft Requirements</b>					
11.	Each RPA must be capable of flying at least 500 nautical miles, loiter on station for 5 hours and then return to the point of departure (round trip distance 1000 nm plus loiter distance) with full payload and a two hour fuel reserve (assume zero wind).  If the aircraft is not Reduced Vertical Separation Minimum (RVSM) certified, then endurance and range calculations must be based on altitudes outside of RVSM airspace.	Provide a scenario substantiated by extract from Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that the single RPA is capable of flying at least 500 nautical miles, loiter on station for 5 hours and then return to the point of departure (round trip distance 1000 nm plus loiter distance) with full payload and a two hour fuel reserve.			This should go into a performance document that is generated from either a model or by calculation.  Full payload includes items 52-55.5 in the Statement of Requirements of Appendix A.

ID	Mandatory Requirement	Proof of Compliance from Bidder	Bidder's Response (How requirement is met)	Bid Reference Page/Para #	Comments
12.	Each RPA must have a minimum total flying range of 1400 nautical miles with full payload and a two hour fuel reserve (assume zero wind).  If the aircraft is not Reduced Vertical Separation Minimum (RVSM) certified, then endurance and range calculations must be based on altitudes outside of RVSM airspace.	Provide a scenario substantiated by extract from Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that each RPA has a minimum flying range of 1400 nautical miles with full payload and a two hour fuel reserve.			This should go into a performance document that is generated from either a model or by calculation.  Full payload includes items 52-55.5 in the Statement of Requirements of Appendix A.
13.	Each RPA must be capable of takeoff and landing from a paved runway with a minimum TODA/LDA of 5000 feet and a minimum Canadian Runway Friction Index (CRFI) of 0.5, at maximum takeoff weight.	Provide certificate, Technical Specifications, Operating Handbook or manual, or other substantiating documentation illustrating that each RPA is capable of takeoff and landing from a paved runway with a minimum TODA/LDA of 5000' and a minimum Canadian Runway Friction Index (CRFI) of 0.5, at maximum takeoff weight.			
15.	Each RPA must have an operational ceiling of at least 15,000' above MSL.	Provide certificate, extract from RPA Operating Handbook or manual, Technical Specifications, applicable manual or other substantiating documentation illustrating that each RPA has an operational ceiling of at least 15,000' above MSL.			

ID	Mandatory Requirement	Proof of Compliance from Bidder	Bidder's Response (How requirement is met)	Bid Reference Page/Para #	Comments
18.	Each RPA must be equipped with position and anti-collision lights that meet the requirements of AEP-4671 USAR.1385 to USAR1401 inclusive.	Provide certificate, Technical Specifications, or other substantiating documentation illustrating that the position and anti-collision lights on each RPA meet the requirements of AEP-4671 USAR.1385 to USAR1401 inclusive.			
19.	Each RPA must be capable of flight in ambient outside air temperatures between -55°C and +30°C.	Provide Hardware Environmental test certificates, specification excerpts, operating handbook or manual, or other substantiating documentation illustrating that each RPA is capable of flight in ambient outside air temperatures between -55°C and +30°C			
20.	Each RPA must be able to sustain storage temperatures between -30°C and +30°C for up to 12 hours and then be successfully started and deployed.	Provide Hardware Environmental test certificates, specification excerpts, operating handbook or manual, or other substantiating documentation illustrating that each RPA is able to sustain storage temperatures between -30°C and +30°C for up to 12 hours and then be successfully started and deployed.			

ID	Mandatory Requirement	Proof of Compliance from Bidder	Bidder's Response (How requirement is met)	Bid Reference Page/Para #	Comments
27.	Each RPA must include an emergency recovery system that is operator definable and complies with AEP-4671 USAR.U1412 (a)(1) and (2), and (b) through (f) inclusive.	Provide certificate, Technical Specifications, applicable manual or other substantiating documentation illustrating that the operator definable emergency recovery system in each RPA complies with AEP-4671 USAR.U1412 (a)(1) and (2), and (b) through (f) inclusive.			
28.	Each RPA must be equipped with an onboard flight recorder complying with STANAG 4671 Edition 1 USAR.1459 or AEP-4671 USAR.1459.	Provide certificate, Technical Specifications, or other substantiating documentation illustrating the onboard flight recorder in each RPA complies with STANAG 4671 Edition 1 USAR.1459 or AEP-4671 USAR.1459.			
31.	The heading system in each RPA must be capable of operating with no operational limitations or performance degradation up to 72 degrees north latitude and from a ground or in flight power up condition.	Provide extract from Operating Handbook or manual. Technical Specifications, or other substantiating documentation illustrating that the heading system in each RPA is capable of operating with no operational limitations or performance degradation up to 72 degrees north latitude and from a ground or in flight power up condition.			



ID	Mandatory Requirement	Proof of Compliance from Bidder	Bidder's Response (How requirement is met)	Bid Reference Page/Para #	Comments
35.	<p>The avionics in each RPA must include Automatic Dependent Surveillance - Broadcast (ADS-B In and Out) using 1090 MHz extended squitter (1090ES) with antenna diversity, that meets the Aireon space-based ADS-B system technical requirements.</p> <p>The Pressure altitude reported for ADS-B out and the Mode C/S transponders must be derived from the same source.</p>	<p>Provide extract from Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that:</p> <ul style="list-style-type: none"> <li>the Automatic Dependent Surveillance - Broadcast (ADS-B In and Out) uses 1090 MHz extended squitter (1090ES) with antenna diversity.</li> <li>the ADS-B out meets the Aireon space-based system technical requirements.</li> <li>the Pressure altitude reported for ADS-B out and the Mode C/S transponders is derived from the same source.</li> </ul>			
43.	Each RPA must have an engine shut down procedure that complies with AEP-4671 USAR.U1413.	Provide extract from Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that the RPA engine shut down procedure complies with AEP-4671 USAR.U1413			
47.	<p>Each RPA must have a surplus internal payload capacity of 25 litres volume, 25 kilograms mass and 500 watts power.</p> <p>Surplus means surplus to the proposed system inclusive of all mandatory equipment and payload</p>	Provide Technical Specifications, or other substantiating documentation illustrating that system meets identified specifications.			

ID	Mandatory Requirement	Proof of Compliance from Bidder	Bidder's Response (How requirement is met)	Bid Reference Page/Para #	Comments
<b>Payload and Sensor Requirements</b>					
52.14	The synthetic aperture radar (SAR) must produce high resolution strip-map images with a resolution of 3 m or better from a range of 30 km or more at operating altitude of the RPA.	Provide extract from radar Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that system meets identified specifications.			
52.15	The synthetic aperture radar (SAR) must produce low resolution strip-map images for wide-area coverage with a resolution of 10 m or lower and a range swath of 28 km or more from a range of 35 km or more at operating altitude of the RPA.	Provide extract from radar Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that system meets identified specifications.			
52.16	The synthetic aperture radar (SAR) must produce SAR images with a squint angle between ±30 degrees.	Provide extract from radar Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that system meets identified specifications.			
52.17	The synthetic aperture radar (SAR) must produce high resolution spotlight SAR images with a resolution of 0.6 m or better from a range of 20 km or more.	Provide extract from radar Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that system meets identified specifications.			
52.20	The ISAR must produce ISAR images with a resolution of 1 m or better from a distance of 15 km or more.	Provide extract from radar Operating Handbook, Technical Specifications, applicable manual, or other substantiating documentation illustrating that system meets identified specifications.			

ID	Mandatory Requirement	Proof of Compliance from Bidder	Bidder's Response (How requirement is met)	Bid Reference Page/Para #	Comments
53.3	The EO/IR must have a field of view of 360 degree azimuth, >= + 90 to - 120 degree elevation (reference zero degrees forward)	Provide extract from EO/IR Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that system meets identified specifications.			
53.4	The EO/IR must report the target location in geographical coordinates (latitude, longitude, and altitude) with a geo-pointing error of less than 10 metres at 5 kilometres slant range	Provide extract from EO/IR Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that system meets identified specifications.			
53.5	The EO/IR must have a ground resolved distance (GRD) value of 30 meters or better at a distance of 10 kilometers.	Provide extract from EO/IR Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that system meets identified specifications.			
53.11	The EO/IR must be equipped with a Daylight Colour Camera with the following specifications: <ul style="list-style-type: none"> <li>• High definition (1920 X 1080 pixel)</li> <li>• Focal lengths 8.6 – 154 mm</li> <li>• Continuous zoom</li> <li>• Fields of View: 31.2° to 1.8° - 1080p</li> </ul>	Provide extract from EO/IR Operating Handbook, Technical Specifications, applicable manual, or other substantiating documentation illustrating that system meets identified specifications.			

ID	Mandatory Requirement	Proof of Compliance from Bidder	Bidder's Response (How requirement is met)	Bid Reference Page/Para #	Comments
53.12	The EO/IR must be equipped with a High Definition Infrared (HD IR) Thermal imager camera with the following specifications. <ul style="list-style-type: none"> <li>Cooled Midwave Infrared</li> <li>High Definition (1280x1024 pixel)</li> <li>6 field of view step-zoom 35.5° to 1.2°</li> <li>Pixel Pitch of 15 µm</li> </ul>	Provide extract from EO/IR Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that system meets identified specifications.			
53.13	The EO/IR must be equipped with a Dual channel spotter, colour and short-wave infrared (SWIR) camera with the following specifications. <ul style="list-style-type: none"> <li>Colour imager High Definition (1920x1080 pixel)</li> <li>Visible (VIS) / SWIR imager (640x480 pixel)</li> <li>600, 1000, 1500 mm focal length (step)</li> </ul>	Provide extract from EO/IR Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that system meets identified specifications.			
53.14	The EO/IR must be equipped with a Daylight Colour Spotter with the following specifications: <ul style="list-style-type: none"> <li>Type: CMOS</li> <li>Resolution: 1920 x 1080 Pixels</li> <li>Focal Length: 600/100/1500 mm (step)</li> <li>Fields of View: 1.1° to 0.43° – 1080 Pixel</li> </ul>	Provide extract from EO/IR Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that system meets identified specifications.			

ID	Mandatory Requirement	Proof of Compliance from Bidder	Bidder's Response (How requirement is met)	Bid Reference Page/Para #	Comments
53.15	The EO/IR must be equipped with a Low Light Zoom camera with the following specifications: <ul style="list-style-type: none"> <li>Type: EMCCD</li> <li>Resolution: 640 x 480 Pixels</li> <li>Field of View: 40.8° to 2.4°</li> </ul>	Provide extract from EO/IR Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that system meets identified specifications.			
53.16	The EO/IR must include a Laser Range Finder with the following specifications <ul style="list-style-type: none"> <li>ANSI Class 1, eyesafe</li> <li>Wavelength: 1540 nm</li> <li>Range: 20 km</li> <li>Pulse Rate: 12 pulses / min</li> <li>Range: 20 km</li> <li>Accuracy: +/- 6 m</li> <li>Resolution: +/- 2 m</li> </ul>	Provide extract from EO/IR Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that system meets identified specifications.			
53.17	The EO/IR must be equipped with a Wide Area Laser Illuminator (WALI) with the following specifications. <ul style="list-style-type: none"> <li>Wide Divergence</li> <li>Wavelength: 860 nm</li> <li>Diode Class IV</li> <li>Power: 720, 360 mW3</li> <li>Modes: Continuous, Pulsed modes</li> <li>Beam Power: 350mW3 or 700mW3 selectable</li> <li>Provides coverage for low light spotter's field of view</li> </ul>	Provide extract from EO/IR Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that system meets identified specifications.			

ID	Mandatory Requirement	Proof of Compliance from Bidder	Bidder's Response (How requirement is met)	Bid Reference Page/Para #	Comments
53.18	The EO/IR must be equipped with Advanced Video Tracking (AVT) with the following specifications. <ul style="list-style-type: none"> <li>Advanced Video Tracker (AVT)</li> <li>Functionality on all imaging sensors video stream</li> <li>Automatic target detection, Automated Video and Geo Tracking (AVGT) mode</li> </ul>	Provide extract from EO/IR Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that system meets identified specifications.			
53.19	The EO/IR must be equipped with the following to aid in pointing accuracy: <ul style="list-style-type: none"> <li>A built in inertial measurement unit (IMU) and internal GPS Receiver</li> <li>Auto and Auto-aid steering modes</li> <li>GeoPointing, GeoLocation, GeoFocus and GeoScan</li> <li>Target Location Error (TLE) of less than 10 m at 5 km slant range and TLE of less than 20 m at 10 km slant range</li> </ul>	Provide extract from EO/IR Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that system meets identified specifications.			
53.27	The EO/IR turret must have line of stabilization of < 5 µRadians	Provide extract from EO/IR Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that system meets identified specifications.			
53.28	The EO/IR turret must have an azimuth and elevation slew rate of no less than 0 - 60° per second.	Provide extract from EO/IR Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that system meets identified specifications.			

ID	Mandatory Requirement	Proof of Compliance from Bidder	Bidder's Response (How requirement is met)	Bid Reference Page/Para #	Comments
53.29	The EO/IR turret must have a continuous Line of Sight (LOS) Pan Range of 360°.	Provide extract from EO/IR Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that system meets identified specifications.			
53.30	The EO/IR turret must have a LOS tilt range of +90° to -120°.	Provide extract from EO/IR Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that system meets identified specifications.			
53.36	The EO/IR must be capable of operating within specifications within the following flight parameters: <ul style="list-style-type: none"> <li>Ground speed: 70 kts to 350 kts (ground speed)</li> <li>Altitude - level flight; 500 ft to 30,000 ft (above sea level)</li> </ul>	Provide extract from EO/IR Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that system meets identified specifications.			
54.1	The AIS must conform to IALA Standard (International Association of Marine Aids to Navigation & Lighthouse Authorities)	Provide extract from AIS Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that AIS conforms to IALA Standard (International Association of Marine Aids to Navigation & Lighthouse Authorities)			

ID	Mandatory Requirement	Proof of Compliance from Bidder	Bidder's Response (How requirement is met)	Bid Reference Page/Para #	Comments
56.2	The camera system must have at least 100MP resolution, with a minimum ground surface distance of 2.5" (5cm) and an image field of view of not less than 800 X 500 meters at 3,000 ft flight altitude.	<p>Provide extract from camera system Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that at 3,000 ft flight altitude:</p> <ul style="list-style-type: none"> <li>the camera system has at least 100MP of resolution and</li> <li>a minimum ground surface distance of 2.5" (5cm) and</li> <li>an image field of view of not less than 800 X 500 meters</li> </ul>			
<b>Data Link Requirements</b>					
66	The L-Band satellite communication system must provide simultaneous two-way voice and data communication (full duplex) between the RPA and the ground station over all Canadian airspace up to 72 degrees north latitude.	Provide extract from Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that the L-Band satellite communication system meets identified specifications.			
67.	The The L-Band satellite communication system must support a minimum data rate of 200 kbps (up) and 400 kbps (down).	Provide extract from Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that the L-Band satellite communication system meets identified specifications.			



ID	Mandatory Requirement	Proof of Compliance from Bidder	Bidder's Response (How requirement is met)	Bid Reference Page/Para #	Comments
69.	The Ku-Band or Ka-Band satellite communication system must provide simultaneous two-way voice and data communication (full duplex) between the RPA and the ground station over all Canadian airspace up to 72 degrees north latitude.	Provide extract from Operating Handbook, Technical Specifications, applicable manual or other substantiating documentation illustrating that the Ku-Band or Ka-Band satellite communication system meets identified specifications.			
70.	The Ku or Ka band communication system must support a minimum data rate of 500 kbps (up) and 4 Mbps (down).	Provide extract from Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that the Ku-Band or Ka-Band satellite communication system meets identified specifications.			
<b>Mission Control Station (MCS) Requirements</b>					
74.	Each MCS must comply with all STANAG 4671 Edition 1 subpart I (USAR.1701 to USAR. U1887 inclusive), (does not apply to LRC)  A Voice Recorder and MCS Data Recorder must be provided.	Provide extract from proposed RPAS Operating Handbook, Technical Specifications, applicable manual or other substantiating documentation illustrating that: <ul style="list-style-type: none"> <li>each MCS complies with all STANAG 4671 Edition 1 subpart I (USAR.1701 to USAR. U1887 inclusive)</li> <li>A voice recorder and MCS data recorder is provided</li> </ul>			

ID	Mandatory Requirement	Proof of Compliance from Bidder	Bidder's Response (How requirement is met)	Bid Reference Page/Para #	Comments
<b>The following items are identified in the SOW</b>					
<b>Quality Management Plan (Section 7.4 of SOW)</b>					
7.4	The Bidder must provide with their proposals objective evidence that they have in place a Quality Management System complying with ISO 9001:2015, or later, or have formal acceptance by a Civil Aviation Authority or a National Military Airworthiness Authority	Provide objective evidence that they have in place a Quality Management System complying with ISO 9001:2015, or later, or have formal acceptance by a Civil Aviation Authority or a National Military Airworthiness Authority			
<b>Maintenance and Product Support (Section 12 of SOW)</b>					
12.1	The Bidder must submit a Maintenance Plan (MP) which includes a detailed maintenance program and schedule.	MP included			
12.2	The MP must include a "Long Term Maintenance" section that describes how it will support Canada in maintaining the RPAS for the projected lifespan of the RPAS	MP includes a "Long Term Maintenance" section that describes how it will support Canada in maintaining the RPAS for the projected lifespan of the RPAS.			
12.8	The Bidder must provide a RPAS System Safety Case (SSC) and suitability assessment as described in the SOW	SSC includes items 1-4 in section 12.8 of SOW			See System Safety Case and Suitability section at the end of Attachment 2 of Part 4. This information will be point rated as part of item #12.8 in Attachment 2 of Part 4

## ATTACHMENT 2 TO PART 4 – Point Rated Technical Criteria

The Technical Bid will be evaluated and scored in accordance with the following evaluation criteria.

### Maximum Points Available: 1565

For the rated evaluation, for each criterion, points will be awarded as opposed to deducted. That is, evaluators will determine a score for each Bidder based on whether the information provided in the bid merits the award of points.

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
<b>Operational Suitability Requirements</b>							
3.	RPAS engine (s) should have a type certificate issued by a Civilian Aviation Authority.	20	An unaltered copy of the certification from the applicable Civilian Aviation Authority provided = 20 points.  An unaltered copy of the certification from the applicable Civilian Aviation Authority not provided = 0 points.	An unaltered copy of the certification from the applicable Civilian Aviation Authority.			
4.	RPAS propeller (s) should have a type certificate issued by a Civilian Aviation Authority.	20	An unaltered copy of the certification from the applicable Civilian Aviation Authority provided = 20 points.  An unaltered copy of the certification from the applicable Civilian Aviation Authority not provided = 0 points.	An unaltered copy of the certification from the applicable Civilian Aviation Authority.			

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
5	The RPA airframe and components should have a minimum amount of operating time since new (TSN) at time of delivery to Canada.  Refer to status report submitted by the bidder per mandatory technical criteria 5 at attachment 1 to part 4 of the SOR.	10	Less than 50 hrs TSN = 10 pts Between 51 hrs and 500 hrs TSN = 8 pts Between 501 hrs and 1000 hrs TSN = 6 pts Over 1001 hrs TSN = 2 pts	Proof of times from Technical records / logbooks. Status Report as identified in SOR per mandatory technical criteria 5 at attachment 1 to part 4			New aircraft receives maximum points for sections 5-5.i inclusive = 150 points
5.a	Engine #1	10	Less than 50 hrs TSN = 10 pts Between 51 hrs and 500 hrs TSN = 8 pts Between 501 hrs and 1000 hrs TSN = 6 pts Over 1001 hrs TSN = 2 pts	Proof of times from Technical records / logbooks. Status Report as identified in SOR per mandatory technical criteria 5 at attachment 1 to part 4			Maximin total of 10 points for all engines. More than 1 engine, score = total for engines / number of engines.
5.b	Engine #2 (if applicable)		Less than 50 hrs TSN = 10 pts Between 51 hrs and 500 hrs TSN = 8 pts Between 501 hrs and 1000 hrs TSN = 6 pts Over 1001 hrs TSN = 2 pts	Proof of times from Technical records / logbooks. Status Report as identified in SOR per mandatory technical criteria 5 at attachment 1 to part 4			Maximin total of 10 points for all engines. More than 1 engine, score = total for engines / number of engines.

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
5.c	Propeller #1 (if applicable)	10	Less than 50 hrs TSN = 10 pts Between 51 hrs and 500 hrs TSN = 8 pts Between 501 hrs and 1000 hrs TSN = 6 pts Over 1001 hrs TSN = 2 pts	Proof of times from Technical records / logbooks. Status Report as identified in SOR per mandatory technical criteria 5 at attachment 1 to part 4			Maximum total of 10 points for all propellers. More than 1 propeller, score = total for propellers / number propellers.
5.d	Propeller #2 (if applicable)		Less than 50 hrs TSN = 10 pts Between 51 hrs and 500 hrs TSN = 8 pts Between 501 hrs and 1000 hrs TSN = 6 pts Over 1001 hrs TSN = 2 pts	Proof of times from Technical records / logbooks. Status Report as identified in SOR per mandatory technical criteria 5 at attachment 1 to part 4			Maximum total of 10 points for all propellers. More than 1 propeller, score = total propellers / number of propellers.
5.e	Airframe and all service life controlled components.	40	Percentage of service life remaining >75% = 6 pts. >80% = 10 pts. >90% = 20 pts. 100% = 40 pts	Proof of times from Technical records / logbooks. Status Report as identified in SOR per mandatory technical criteria 5 at attachment 1 to part 4			

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
5.f	Engine #1 including all life limited internal components and external accessories.	40	Percentage of service life remaining >75% = 6 pts. >80% = 10 pts. >90% = 20 pts. 100% = 40 pts	Proof of times from Technical records / logbooks. Status Report as identified in SOR per mandatory technical criteria 5 at attachment 1 to part 4			More than 1 engine, score = total for engines / number of engines. Maximum of 40 points.
5.g	Engine #2 (if applicable) including all life limited internal components and external accessories.		Percentage of service life remaining >75% = 6 pts. >80% = 10 pts. >90% = 20 pts. 100% = 40 pts	Proof of times from Technical records / logbooks. Status Report as identified in SOR per mandatory technical criteria 5 at attachment 1 to part 4			More than 1 engine, score = total for engines / number of engines.. Maximum of 40 points.

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
5.h	Propeller #1 (if applicable) including all internal life limited components.	40	Percentage of service life remaining >75% = 6 pts. >80% = 10 pts. >90% = 20 pts. 100% = 40 pts	Proof of times from Technical records / logbooks. Status Report as identified in SOR per mandatory technical criteria 5 at attachment 1 to part 4			More than 1 propeller, score = total for propellers / number of propellers. Maximum of 40 points.
5.i	Propeller #2 (if applicable) including all internal life limited components		Percentage of service life remaining >75% = 6 pts. >80% = 10 pts. >90% = 20 pts. 100% = 40 pts	Proof of times from Technical records / logbooks. Status Report as identified in SOR per mandatory technical criteria 5 at attachment 1 to part 4			More than 1 propeller, score = total for propellers / number of propellers. Maximum of 40 points.
6.	The RPAS, and the RPAS operation of an OPA should be designed and certified to comply with STANAG 4671, Edition 1 Unmanned Aerial Vehicles Systems Airworthiness Requirements or STANAG 4671 Edition 2 / AEP-4671 Edition A Version 1, (preferred design standard)	90	Designed and certified to STANAG 4671, Edition 1 Unmanned Aerial Vehicles Systems Airworthiness Requirements or STANAG 4671 Edition 2 / AEP-4671 Edition A Version 1, = 180 points	An unaltered copy of the airworthiness certification showing compliance with STANAG 4671 from a civil or military airworthiness authority.			

10.	The RPAS should be equipped with a minimum duplicate redundant navigation system consisting of a tightly coupled Inertial Navigation System (INS) and Global Navigation Satellite System utilizing the Satellite-Based Augmentation System, including instruments at the MCS to allow the RPAS to operate up to 72 degrees north latitude, during all phases of flight (eg. take-off, enroute, approach and landing) under Instrument Flight Rules (IFR).	40	RPAS includes duplicate navigation system that consists of a tightly coupled Inertial Navigation System (INS) and Global Navigation Satellite System utilizing the Satellite-Based Augmentation System, including instruments at the MCS to allow the RPAS to operate up to 72 degrees north latitude, during all phases of flight (eg. take-off, enroute, approach and landing) under Instrument Flight Rules (IFR).  RPAS does not include duplicate navigation system that consists of a tightly coupled Inertial Navigation System (INS) and Global Navigation Satellite System utilizing the Satellite-Based Augmentation System, including instruments at the MCS to allow the RPAS to operate up to 72 degrees north latitude, during all phases of flight (eg. take-off, enroute, approach and landing) under Instrument Flight Rules (IFR).  = 0 points	Provide certificate, Technical Specifications or other substantiating documentation illustrating that the RPAS is equipped with the specified navigation equipment		
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ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
<b>Remotely Piloted Aircraft Requirements</b>							
11.1.	Each RPA should be capable of flying more than 500 nautical miles, loiter on station for 5 hours and then return to the point of departure (round trip distance more than 1000 nm plus loiter distance) with full payload and a two hour fuel reserve. (assume zero wind)  If the RPA is not Reduced Vertical Separation Minimum (RVSM) certified, then endurance and range calculations must be based on altitudes outside of RVSM airspace.	30	Distance : <ul style="list-style-type: none"> <li>1000-1200nm plus loiter distance = 5 points</li> <li>1201-1400nm plus loiter distance = 10 points</li> <li>1401-1600nm plus loiter distance = 15 points</li> <li>1601-1800nm plus loiter distance = 20 points</li> <li>1801-2000 = 25 points</li> <li>More than 2000nm plus loiter distance = 30 points</li> </ul>	Provide a scenario substantiated by extract from proposed RPA Operating Handbook, RPA Technical Specifications, applicable manual, or other substantiating documentation illustrating that each RPA is capable of flying more than 500 nautical miles, loiter on station for 5 hours and then return to the point of departure (round trip distance more than 1000 nm plus loiter distance) with full standard payload and a two hour fuel reserve. (assume zero wind)			Full payload includes items 52-55.5 in the Statement of Requirements of Appendix A.

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
12.1.	Each RPA should have a minimum total flying range of more than 1400 nautical miles with full payload and a two hour fuel reserve (assume zero wind).  If the RPA is not Reduced Vertical Separation Minimum (RVSM) certified, then endurance and range calculations must be based on altitudes outside of RVSM airspace.	30	Distance : <ul style="list-style-type: none"> <li>1400-1600nm = 5 points</li> <li>1601-1800nm = 10 points</li> <li>1801-2000nm = 15 points</li> <li>2001-2200nm = 20 points</li> <li>2201-2400nm = 25 points</li> <li>More than 2400nm = 30 points</li> </ul>	Provide a scenario substantiated by extract from proposed RPA Operating Handbook, RPA Technical Specifications, applicable manual, or other substantiating documentation illustrating that each RPA has a minimum flying range of more than 1400 nautical miles with full standard payload and a two hour fuel reserve.			Full payload includes items 52-55.5 in the Statement of Requirements of Appendix A.
14.	Each RPA should have Induction System Icing Protection meeting the requirements of AEP-4671 USAR.1093	40	Each RPA has Induction System Icing Protection meeting the requirements of AEP-4671 USAR.1093. = 40 points  Each RPA does not have Induction System Icing Protection meeting the requirements of AEP-4671 USAR.1093. = 0 points	Provide Technical Specifications or other substantiating documentation that describe Induction Icing System and illustrate that the Induction System Icing Protection meets the requirements of AEP-4671 USAR.1093.			

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
16.	Each RPA should have ice protection systems to allow for operations in continuous light icing conditions	40	Each RPA has ice protection systems that allow for operations in continuous light icing conditions. = 40 points  Each RPA does not have ice protection systems that allow for operations in continuous light icing conditions. = 0 points	Provide Technical Specifications or other substantiating documentation that describe capabilities of ice protection systems and illustrate that the ice protection systems allow for operations in continuous light icing conditions.			Refer to USAR.U1416 and USAR.U1419 requirements.
17.	Each RPA should have a system capable of detecting airframe icing in flight and alerting the RPA operator to the presence of airframe icing.	20	System capable of detecting airframe icing in flight and alerting the RPA operator to the presence of airframe icing. = 20 points  No system capable of detecting airframe icing in flight and alerting the RPA operator to the presence of airframe icing. = 0 points	Provide Technical Specifications or other substantiating documentation illustrating that each RPA has a system capable of detecting airframe icing in flight and alerting the RPA operator to the presence of airframe icing.			
25.1	The Autopilot system should meet the requirements of AEP-4671 USAR.U1490 and U1492.	10	The Autopilot system meets the requirements of AEP-4671 USAR.U1490 and U1492 = 10 points  The Autopilot system does not meet the requirements of AEP-4671 USAR.U1490 and U1492 = 0 points	Provide Technical Specifications, or other substantiating documentation illustrating that the Autopilot system meets the requirements of AEP-4671 USAR.U1490 and U1492.			

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
29.1	Each RPA should be equipped with an onboard flight recorder complying with AEP 4671 and USAR.1459	15	Each RPA equipped with an onboard flight recorder complying with AEP 4671 USAR.1459 = 15 points  Each RPA not equipped with an onboard flight recorder complying with AEP 4671 USAR.1459 = 0 points	Provide Technical Specifications, or other substantiating documentation illustrating that the onboard flight recorder in each RPA complies with AEP 4671 USAR.1459			
29.2	The onboard flight recorder should be equipped with an underwater location device complying with AEP-4671 and USAR.1459(d)(3)	10	Onboard flight recorder equipped with an underwater location device complying with AEP-4671 USAR.1459(d)(3) = 10 points  Onboard flight recorder not equipped with an underwater location device complying with AEP-4671 USAR.1459(d)(3) = 0 points	Provide Technical Specifications, or other substantiating documentation illustrating that flight recorder on each RPA is equipped with an underwater location device that complies with USAR.1459(d)(3)			

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
32.	The heading system in each RPA should be capable of operating with no operational limitations or performance degradation up to 90 degrees north latitude and from a ground or in flight power up condition	20	<p>The heading system in each RPA is capable of operating with no operational limitations or performance degradation up to 90 degrees north latitude and from a ground or in flight power up condition = 20 points.</p> <p>The heading system in each RPA not capable of operating with no operational limitations or performance degradation up to 90 degrees north latitude and from a ground or in flight power up condition = 0 points</p>	Provide extract from Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that the heading system in each RPA is capable of operating with no operational limitations or performance degradation up to 90 degrees north latitude and from a ground or in flight power up condition.			
37.	Each RPA should be equipped with a Traffic Collision Avoidance System-II (TCAS-II). TCAS information should be transmitted to, and displayed in the MCS.	35	<p>Each RPA is equipped with a Traffic Collision Avoidance System (TCAS II) and TCAS information is transmitted to, and displayed in the MCS = 35 points</p> <p>Each RPA not equipped with a Traffic Collision Avoidance System (TCAS II) and TCAS information not transmitted to, and displayed in the MCS = 0 points</p>	<p>Provide extract from Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that each RPA:</p> <ul style="list-style-type: none"> <li>Is equipped with a Traffic Collision Avoidance System (TCAS II) and</li> <li>TCAS information is transmitted to, and displayed in the MCS.</li> </ul>			

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
38.	Each RPA should be equipped with a Terrain Awareness Warning System (TAWS-B) and has a terrain and airport database compatible with the area of operation, and TAWS information should be transmitted to, and displayed in the MCS.	35	<p>Each RPA is equipped with a Terrain Awareness Warning System (TAWS-B) and has a terrain and airport database compatible with the area of operation, and TAWS information is transmitted to, and displayed in the MCS. = 35 points</p> <p>Each RPA is not equipped with a Terrain Awareness Warning System (TAWS-B) and has a terrain and airport database compatible with the area of operation, and TAWS information is not transmitted to, and displayed in the MCS. = 0 points</p>	<p>Provide from Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that each RPA:</p> <ul style="list-style-type: none"> <li>• is equipped with a Terrain Awareness Warning System (TAWS-B), and</li> <li>• has a terrain and airport database compatible with the area of operation, and</li> <li>• TAWS information is transmitted to, and displayed in the MCS.</li> </ul>			

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
39.	Each RPA should be equipped with an Altitude Alerting System and all alerts and warning signals should be transmitted to and displayed in the MCS.	30	<p>Each RPA is equipped with an Altitude Alerting System and all alerts and warning signals transmitted to and displayed in the MCS. = 30 points</p> <p>Each RPA is not equipped with an Altitude Alerting System and all alerts and warning signals not transmitted to and displayed in the MCS. = 0 points</p>	<p>Provide certificate or extract from proposed RPAS Operating Handbook or manual, Technical Specifications, or other substantiating documentation illustrating that:</p> <ul style="list-style-type: none"> <li>each RPA is equipped with an Altitude Alerting System, and</li> <li>all alerts and warning signals are transmitted to and displayed in the MCS.</li> </ul>			

48.	Each RPA should have a surplus internal payload capacity of more than 25 litres volume, 25 kilograms mass and 500 watts power.  Surplus means surplus to the proposed system inclusive of all mandatory equipment and payload	42	<ul style="list-style-type: none"> <li>Between 25 and 50 litres surplus capacity = 2 points</li> <li>Between 51 and 100 litres surplus capacity = 4 points</li> <li>Between 101 and 150 litres surplus capacity = 6 points</li> <li>Between 151 and 200 litres surplus capacity = 8 points</li> <li>Between 201 and 250 litres surplus capacity = 10 points</li> <li>Between 251 and 300 litres surplus capacity = 12 points</li> <li>More than 300 litres surplus capacity = 14 points</li> </ul> <p>And</p> <ul style="list-style-type: none"> <li>Between 25-50 kilograms surplus mass = 2 points</li> <li>Between 51-100 kilograms surplus mass = 4 points</li> <li>Between 101-150 kilograms surplus mass = 6 points</li> <li>Between 151-200 kilograms surplus mass = 8 points</li> <li>Between 201-250 kilograms surplus mass = 10 points</li> <li>Between 251-300 kilograms surplus mass = 12 points</li> <li>More than 300 kilograms surplus mass = 14 points</li> </ul> <p>And</p> <ul style="list-style-type: none"> <li>Between 500 and 750 watts surplus power = 2 points</li> <li>Between 751 and 1000 watts surplus power = 4 points</li> <li>Between 1001 and 1250 watts surplus power = 6 points</li> <li>Between 1251 and 1500 watts surplus power = 8 points</li> <li>Between 1501 and 1750 watts surplus power = 10 points</li> <li>Between 1751 and 2000 watts surplus power = 12 points</li> <li>More than 2000 watts surplus power = 14 points</li> </ul>	Provide extract from proposed RPA Operating Handbook, Technical Specifications, applicable manual, or other substantiating documentation illustrating that each RPA has a surplus internal payload capacity of more than 25 litres volume, 25 kilograms mass and 500 watts power.  Surplus means surplus to the proposed system inclusive of all mandatory equipment and payload		
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ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
50.	The maximum speed of each RPA should be in excess of 100 knots.	33	<p>Max Speed:</p> <ul style="list-style-type: none"> <li>• 100-110 knots = 3 points</li> <li>• 111-120 knots = 6 points</li> <li>• 121-130 knots = 9 points</li> <li>• 131-140 knots = 12 points</li> <li>• 141-150 knots = 15 points</li> <li>• 151-160 knots =18 points</li> <li>• 161-170 knots =21 points</li> <li>• 171-180 knots =24 points</li> <li>• 181-190 knots =27 points</li> <li>• 191-200 knots =30 points</li> </ul> <p>More than 200 knots = 33 points</p>	Provide extract from proposed RPA Operating Handbook, Technical Specifications, applicable manual, or other substantiating documentation illustrating the maximum speed of each RPA .			
<b>Payload and Sensor Requirements</b>							
52.2	The Maritime Search Radar should be capable of simultaneous Air to Air surveillance and tracking.	25	<p>The Maritime Search Radar radar capable of simultaneous Air to Air surveillance and tracking. = 25 points</p> <p>The Maritime Search Radar radar not capable of simultaneous Air to Air surveillance and tracking. = 0 points</p>	Provide, Technical Specifications, applicable manual, or other substantiating documentation illustrating that The Maritime Search Radar radar capable of simultaneous Air to Air surveillance and tracking.			

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
52.5	The MTI tracking should have a 125 km or more stand-off detection range at operating altitude of the RPA.	10	<p>The MTI tracking has a 250 km or more stand-off detection range. = 10 points</p> <p>The MTI tracking has a 125-250 km stand-off detection range. = 5 points</p> <p>The MTI tracking has less than 125km stand-off detection range. = 0 points</p>	Provide Technical Specifications, applicable manual, or other substantiating documentation illustrating that MTI tracking has a 125 km or more stand-off detection range			
52.6	The MTI tracking should be able to detect a 3 m2 target from a range of 14 km or more in Beaufort Sea Scale 3, at operating altitude of the RPA.	10	<p>The MTI tracking detects a 3 m2 target from a range of 28km or more in Beaufort Sea Scale 3, at operating altitude of the RPA.. = 10 points</p> <p>The MTI tracking detects a 3 m2 target from a range of 14-28km in Beaufort Sea Scale 3, at operating altitude of the RPA. = 5 points</p> <p>The MTI tracking detects a 3 m2 target from a range of less than 14km in Beaufort Sea Scale 3, at operating altitude of the RPA. = 0 points</p>	Provide extract from proposed radar Operating Handbook, Technical Specifications, applicable manual, or other substantiating documentation illustrating that MTI tracking is able to detect a 3 m2 target from a range of 14 km or more in Beaufort Sea Scale 3, operating altitude of the RPA;			

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
52.7	The MTI tracking should be able to detect a 1000 m2 target from a range of 55 km or more in Beaufort Sea Scale 3, at operating altitude of the RPA.	10	<p>The MTI tracking detects a 1000 m2 target from a range of 110 km or more in Beaufort Sea Scale 3, at operating altitude of the RPA. = 10 points</p> <p>The MTI tracking detects a 1000 m2 target from a range of 55-110 km in Beaufort Sea Scale 3, at operating altitude of the RPA.. = 5 points</p> <p>The MTI tracking detects a 1000 m2 target from a range of less than 55 km in Beaufort Sea Scale 3, at operating altitude of the RPA = 0 points</p>	Provide extract from proposed radar Operating Handbook, Technical Specifications, applicable manual, or other substantiating documentation illustrating that MTI tracking is able to detect a 1000 m2 target from a range of 55 km or more in Beaufort Sea Scale 3, at operating altitude of the RPA			
52.8	The MTI tracking should be able to perform ground and air-to-air moving target indication;	10	<p>The MTI tracking performs ground and air-to-air moving target indication = 10 points</p> <p>The MTI tracking does not perform ground and air-to-air moving target indication. = 0 points</p>	Provide extract from proposed radar Operating Handbook, Technical Specifications, applicable manual, or other substantiating documentation illustrating that MTI tracking is able to perform ground and air-to-air moving target indication			

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
52.11	The maritime radar should be able to track 75 or more targets simultaneously.	10	<p>The maritime radar tracks 150 or more targets simultaneously. = 10 points</p> <p>The maritime radar tracks 75-150 targets simultaneously. = 5 points</p> <p>The maritime radar tracks less than 75 targets simultaneously. = 0 points</p>	Provide extract from proposed radar Operating Handbook, Technical Specifications, applicable manual, or other substantiating documentation illustrating that maritime radar is able to track 75 or more targets simultaneously.			
<b>Data Link Requirements</b>							
59.1.	The RPAS Command and Control Data Link should conform to the requirements of AEP 4671 subpart H (USAR.U1601 to USAR.U1617 inclusive).	30	<p>The RPAS Command and Control Data Link conforms to the requirements of AEP 4671 subpart H (USAR.U1601 to USAR.U1617 inclusive). = 30 points.</p> <p>The RPAS Command and Control Data Link does not conform to the requirements of AEP 4671 subpart H (USAR.U1601 to USAR.U1617 inclusive). = 0 points.</p>	Provide extract from proposed RPAS Operating Handbook, Technical Specifications, applicable manual, or other substantiating documentation illustrating that The RPAS Command and Control Data Link conforms to the requirements of AEP 4671 subpart H (USAR.U1601 to USAR.U1617 inclusive).			

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
71.	The RPAS should be equipped with a dual Ka/Ku band satellite communication system that is capable of automatically switching (roaming) between Ka-band and Ku-band satellite beams to use the "best available service".	25	<p>RPAS equipped with a dual Ka/Ku band satellite communication system that is capable of automatically switching (roaming) between Ka-band and Ku-band satellite beams to use the "best available service". = 25 points</p> <p>RPAS not equipped with a dual Ka/Ku band satellite communication system that is capable of automatically switching (roaming) between Ka-band and Ku-band satellite beams to use the "best available service". = 0 points</p>	<p>Provide certificate and/or extract from proposed RPAS Operating Handbook or RPAS Technical Specifications or applicable manual or other substantiating documentation illustrating that the RPAS is equipped with a dual Ka/Ku band satellite communication system that is capable of automatically switching (roaming) between Ka-band and Ku-band satellite beams to use the "best available service".</p>			

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
<b>Mission Control Station (MCS) Requirements</b>							
74.1.	Each MCS should comply with all AEP 4671 subpart I requirements. Specifically USAR.U1701 to USAR.U1887, (does not apply to LRC).	30	<p>Each MCS complies with the requirements of AEP 4671 subpart I USAR.U1701 to USAR.U1887 inclusive). = 30 points.</p> <p>Each MCS does not comply with the requirements of AEP 4671 subpart I (USAR.U1701 to USAR.U1887 inclusive). = 0 points.</p>	Provide extract from proposed RPAS Operating Handbook, Technical Specifications, applicable manual, or other substantiating documentation illustrating that each MCS complies with the requirements of AEP 4671 subpart I (USAR.U1701 to USAR.U1887 inclusive).			
85.	The flight path deviation warning required per USAR.U1827, should allow the operator to program the acceptable deviation.	15	<p>The flight path deviation warning required per USAR.U1827, allows the operator to program the acceptable deviation. = 15 points.</p> <p>The flight path deviation warning required per USAR.U1827, does not allow the operator to program the acceptable deviation. = 0 points</p>	Provide certificate and/or extract from proposed RPAS Operating Handbook or RPAS Technical Specifications or applicable manual or other substantiating documentation illustrating that The flight path deviation warning required per USAR.U1827, allows the operator to program the acceptable deviation.			

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
89.	The data exploitation system should perform coherent change detection to compare sensor data from different flights over the same area.	20	<p>Data exploitation performs coherent change detection to compare sensor data from different flights over the same area. = 20 points</p> <p>Data exploitation does not perform coherent change detection to compare sensor data from different flights over the same area. = 0 points</p>	<p>Provide extract from Operating Handbook or Technical Specifications or applicable manual or other substantiating documentation illustrating that the data exploitation performs coherent change detection to compare sensor data from different flights over the same area.</p>			

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
92.	<p>The data exploitation should support the importing of external data and the fusion of external data with the payload sensor data using open standards and to include the following types of data:</p> <ul style="list-style-type: none"> <li>Imagery data including imagery and video from day/night cameras, radar data, AIS;</li> <li>Measurement data including data from hyperspectral imagery, seismic, magnetic, SAR;</li> <li>Technical information including environmental condition, weather, NOTAMS;</li> <li>Geospatial Intelligence Satellite data including aerial photography, mapping/terrain data</li> <li>Open source media, Internet, scientific data</li> </ul>	50	<p>Data exploitation supports the importing of external data and the fusion of external data with the payload sensor data using open standards and includes all identified data types. = 50 points</p> <p>Data exploitation supports the importing of external data and the fusion of external data with the payload sensor data using open standards but includes at least 3 identified data types. = 25 points</p> <p>Data exploitation does not support the importing of external data and the fusion of external data with the payload sensor data using open standards = 0 points</p>	<p>Provide extract from Operating Handbook or Technical Specifications or applicable manual or other substantiating documentation illustrating that the data exploitation supports the importing of external data and the fusion of external data with the payload sensor data using open standards and includes the identified data types.</p>			



ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
93.	The data exploitation should allow stored data to be queried and searched.	20	Data exploitation allows stored data to be queried and searched = 20 points  Data exploitation does not allow stored data to be queried and searched = 0 points	Provide extract from Operating Handbook or Technical Specifications or applicable manual or other substantiating documentation illustrating that the Data exploitation allows stored data to be queried and searched.			
<b>Technical Data Requirements</b>							
96.1	ICAs should comply with AEP-4671 USAR.1529.	30	ICAs comply with AEP-4671 USAR.1529. = 30 points  ICAs do not comply with AEP-4671 USAR.1529. = 0 points	Provide extract from Operating Handbook or Technical Specifications or applicable manual or other substantiating documentation illustrating that ICAs comply with AEP-4671 USAR.1529			

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
96.4	ICA's should contain a Corrosion Prevention and Control Plan (CPCP) in accordance with AEP-4671 USAR.609 and AMC.609.	15	ICA's contain a Corrosion Prevention and Control Plan (CPCP) in accordance with AEP-4671 USAR.609 and AMC.609. = 15 points  ICA's contain a Corrosion Prevention and Control Plan (CPCP) in accordance with AEP-4671 USAR.609 and AMC.609 = 0 points	Provide extract from Operating Handbook or Technical Specifications or applicable manual or other substantiating documentation illustrating that ICA's contain a Corrosion Prevention and Control Plan (CPCP) in accordance with AEP-4671 USAR.609 and AMC.609.			
97.	The Bidder should provide a Master Minimum Equipment List (MMEL) and a Configuration Deviation List (CDL) for the complete RPAS.	20	MMEL and CDL for the complete RPAS provided = 20 points  Either MMEL or CDL for the complete RPAS provided = 10 points  MMEL and/or CDL for the complete RPAS not provided = 0 points.	MMEL and/or CDL provided			

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
105.1	RPAS flight manuals should conform to STANAG 4671 Edition 1 USAR.1581 to USAR.U1591 inclusive or AEP-4671 USAR.1581 to USAR. U1591 inclusive = 20 points	20	RPAS flight manuals conform to STANAG 4671 Edition 1 USAR.1581 to USAR.U1591 inclusive or AEP-4671 USAR.1581 to USAR. U1591 inclusive = 20 points  RPAS flight manuals do not conform to STANAG 4671 Edition 1 USAR.1581 to USAR.U1591 inclusive or AEP-4671 USAR.1581 to USAR.U1591 inclusive = 0 points	Provide RPAS flight manuals that conform to STANAG 4671 Edition 1 USAR.1581 to USAR.U1591 inclusive or AEP-4671 USAR.1581 to USAR.U1591 inclusive.			
<b>Support and Training Requirements Section 11 and 12 of SOW</b>							
SOW Section 11	The Bidder should provide with their proposals a sample of a training program from a previous RPAS supply contract	16	Supplier has a complete training program that covers applicable pilot, maintenance, Ground Control Systems maintainers, and payload operator training and includes scheduling and complete course outlines. The training program has been delivered to previous customer with satisfactory reviews (reviews must be provided) =16 Points  Program is complete as above but has yet to be delivered and reviewed = 8 Points  Incomplete training program (not as above) = 2 Points	Provide training plan sample			

Sollicitation No. - N° de l'invitation  
T8493-150035/C Draft RFP  
Client Ref. No. - N° de réf. du client

And. No. - N° de la modif.  
File No. - N° du dossier

Buyer ID - Id de l'acheteur  
004C/AG  
CCC No./N° CCC - FMS No./N° VME

SOW Section 12.1.a	The MP should provide for maximum operating time between scheduled maintenance inspections of the airframe, power plant,propeller(s) and MCS.	50	<ul style="list-style-type: none"><li>• Scheduled maintenance program allows 100-125 flight hours = 5 points</li><li>• Scheduled maintenance program allows 126-150 flight hours = 10 points.</li><li>• Scheduled maintenance program allows 151-175 flight hours = 15 points.</li><li>• Scheduled maintenance program allows 176-200 flight hours = 20 points.</li><li>• Scheduled maintenance program allows more than 200 flight hours = 25 points.</li></ul> and <ul style="list-style-type: none"><li>• Scheduled maintenance program allows 12-15 months between scheduled maintenance inspections = 5 points</li><li>• Scheduled maintenance program allows 16-18 months between scheduled maintenance inspections = 10 points.</li><li>• Scheduled maintenance program allows 19-21 months between scheduled maintenance inspections = 15 points.</li><li>• Scheduled maintenance program allows 22-24 months between scheduled maintenance inspections = 20 points.</li><li>• Scheduled maintenance program allows more than 24 months between scheduled maintenance inspections = 25points</li></ul>	Provide MP illustrating time between scheduled maintenance inspections of the airframe, power plant,propeller(s) and MCS.		
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ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
SOW Section 12.1.b	The MP should provide for a maximum operating time between engine overhauls.	50	<ul style="list-style-type: none"> <li>Reciprocating engine TBO 1200-1500 hours = 10 points</li> <li>Reciprocating engine TBO 1501-1800 hours = 20 points</li> <li>Reciprocating engine TBO 1801-2100 hours = 30 points</li> <li>Reciprocating engine TBO 2101-2400 hours = 40 points</li> <li>Reciprocating engine TBO more than 2400 hours = 50 points</li> </ul> <p>Or</p> <ul style="list-style-type: none"> <li>Turbine engine TBO of 3500-3800 hours = 10 points</li> <li>Turbine engine TBO of 3801-4100 hours = 20 points</li> <li>Turbine engine TBO of 4101-4400 hours = 30 points</li> <li>Turbine engine TBO of 4401-4700 hours = 40 points</li> <li>Turbine engine TBO of more than 4700 hours = 50 points</li> </ul> <p>Or</p> <ul style="list-style-type: none"> <li>Turbine engine of modular design with any module TBO 3000-3300 hours = 10</li> <li>Turbine engine of modular design with any module TBO 3301-3600 hours = 20</li> <li>Turbine engine of modular design with any module TBO 3601-3900 hours = 30</li> <li>Turbine engine of modular design with any module TBO 3901-4200 hours = 40</li> <li>Turbine engine TBO of modular design with any module TBO more than 4200 hours = 50</li> </ul>	Provide MP illustrating time between illustrating time between engine overhauls			

<p>SOW Section 12.2</p>	<p>The "Long Term Maintenance" section of the MP provided by the Bidder should describe how it will support Canada to maintain the RPAS for the projected lifespan of the RPAS. Full service support includes:</p> <ol style="list-style-type: none"> <li>1. Ability to supply and ship parts to locations within North America within the time frames defined in the SOW/SOR for AOG, Work Stoppage and Routine part procurement.;</li> <li>2. A Product Support and Field Service Representative (FSR) is available 24 hours per day, 7 days per week, 365 days per year, through a toll free telephone service;</li> <li>3. On-site qualified Field Service Representative (FSR) on an as required basis, on-site to the location of the RPAS within 72 hours of request for support;</li> <li>4. Spare part inventory (based on bidders recommended spares list) to support the RPAS operation as defined within the SOW;</li> </ol>	<p>39</p>	<p>Supplier has a full service support system = 39 Points  Supplier has partial service support = 3 points for each of 1-13</p>	<p>Provide MP outlining how Bidder will support Canada to maintain the RPAS for the projected lifespan of the RPAS.</p>			
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SOW Section 12.2 (cont'd)	5. (R&O) of components and to minimize shipping expenses; 6. Availability of exchange components; 7. Availability of rental components; 8. Release of Service Bulletins and Advisory Materials to address fleet in-service issues or modifications/improvements; 9. Revision support of all technical and operational publications eg. Flight manual, maintenance manuals, component manuals etc.; 10. Software support and upgrades and a system for the management and operational implementation; 11. As required engineering support for repairs; 12. As required engineering support for support for modifications; 13. Ground support equipment and special tooling support based on bidders supplied lists;						
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ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
SOW Section 12.8	Utilizing the CONOPS stated within the SOW (SOW Item 5.1) along with the RPAS requirements of the SOR provide an RPAS System Safety Case (SSC) and suitability assessment detailing items 12.8.1-12.8.9 inclusive		Items 12.8.1-12.8.9 = total of 300 points				
12.8.1	Total RPAS operating hours	40	<ul style="list-style-type: none"> <li>• Less than 50,000 hours = 0 points</li> <li>• 51,000 to 100,000 hours = 10 points</li> <li>• 101,000 to 150,000 hours = 20 points</li> <li>• 151,000 to 200,000 hours = 30 points</li> <li>• Over 201,000 hours = 40 points</li> </ul>				
12.8.2	Hull Losses	20	<ul style="list-style-type: none"> <li>• Mean time between losses &lt; 15,000 hours = 0 points</li> <li>• Mean time between losses &gt; 20,000 hours = 10 points</li> <li>• Mean time between losses &gt; 50,000 hours = 20 points</li> </ul>				



ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
12.8.3	Accident Rate	10	<ul style="list-style-type: none"> <li>More than 6.73 / 100,000 flight hours = 0 points</li> <li>Equal to or less than 6.73 / 100,000 flight hours = 10 points</li> </ul>				Accident means – an occurrence associated with the operation of any unmanned aircraft system that takes place between the time that the system is activated with the purpose of flight and the time that the system is deactivated at the conclusion of its mission, in which: (1) any person suffers death or serious injury; or (2) the aircraft has a maximum gross takeoff weight of 300 pounds or greater and sustains substantial damage, in non combat operations.
12.8.4	Incident Rate	10	<ul style="list-style-type: none"> <li>Bidder does not provide any data or has no system to capture incident reporting and analysis = 0 points.</li> <li>Bidder provides incident data and has a system to capture reporting and analysis = 10 points</li> </ul>				Incident means – an occurrence, other than an accident, associated with the operation of an unmanned aircraft system which affects or could affect the safety of operation in non combat operations.

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
12.8.5	Airworthiness Certification	25	<ul style="list-style-type: none"> <li>• Certification from two Civil Aviation Authority or National Military Airworthiness Authority = 10 points</li> <li>• Certification from more than two or more Civil Aviation Authorities or National Military Airworthiness Authorities = 25 points</li> </ul>				
12.8.6	Safety of Flight Issues	10	<ul style="list-style-type: none"> <li>• Any unresolved = 0 points</li> <li>• All resolved = 10 points</li> </ul>				Include definitions
12.8.7.	System Safety Case	50	<ul style="list-style-type: none"> <li>• Any scenarios with a risk reference exceeding those acceptable in AEP-4671 USAR: 1309 = 0 points</li> <li>• All scenarios with a risk reference equal or better than those acceptable in AEP-4671 USAR: 1309 = 50 points</li> </ul>				

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
12.8.8.	Suitability Assessment	85	<p>Mission Profiles in Appendix E to the SOW</p> <ul style="list-style-type: none"> <li>Any identified mission profile where the RPAS has been found to be not totally suitable = 0 points</li> <li>RPAS is suitable for all mission profiles = 25 points</li> </ul> <p>Availability data must support a minimum RPAS availability of 20 hrs / mission, 40 hrs / week, 500 hours per year:</p> <ul style="list-style-type: none"> <li>More availability than 20 hrs / mission, 40 hrs / week, 500 hours per year = 20 points</li> </ul> <p>Reliability data must support RPAS reliability to fly a minimum of 20 hrs / mission, 40 hrs / week and 500 hours per year:</p> <ul style="list-style-type: none"> <li>Equal to stated requirements = 0 points</li> <li>15 % better = 15 points</li> <li>25% better = 20 points</li> <li>35% better = 25 points</li> <li>45% better = 30 points</li> <li>&gt;60% better = 40 points</li> </ul>				<p>Suitability Assessment must include reliability data based on:</p> <ul style="list-style-type: none"> <li>Operator Reports of Unserviceability per 1000 hours</li> <li>Mechanical Interruptions/delays per 100 departures</li> <li>Unscheduled removals per 1000 hours</li> <li>Engine in Flight Shutdowns</li> <li>Meantime Between Unscheduled Removals (MTBUR)</li> <li>Meantime Between Failure (MTBF)</li> <li>Meantime Between Removal (MTBR)</li> <li>Meantime to Failure (MTTF)</li> <li>Meantime to Removal (MTTR)</li> </ul>

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
12.8.9.	Sense and Avoid System	50	<ul style="list-style-type: none"> <li>No sense and avoid systems = 0 pts</li> <li>Sense and avoid capabilities for cooperative aircraft only = 25 pts</li> <li>Sense and avoid capabilities for cooperative and non-cooperative aircraft = 50 pts.</li> </ul>				
<b>Additional Desirable Requirements</b>							
16	The Bidder should provide documentation illustrating that it has successfully delivered projects of the same scope up to a maximum of 5 in the last ten (10) years from bid closing on RPAS of similar size and with similar system complexity.	10	2 points per project up to a maximum of 5 projects	Provide proof of successful completion of similar projects in the last 10 years. Include name of customer, start and end date of project, name of project, customer reference name, description of project, dollar value, and reference letter from client.			

17	<p>The Bidder should provide with their proposals a preliminary planning and scheduling document which will include: work and work phases scheduling; time estimates; reporting arrangements; a management control system; and, indicate in working days the duration of each activity with links associated to their respective predecessors and successors.</p>	20	<p>Fully developed schedule addressing all identified requirements, contains the required logic and schedule slack. Includes consideration to anticipate and avoid delays and optimize flexibility to provide high confidence that the schedule would lead to a fully delivered system ahead of the required contractual delivery date =20 Points</p> <p>Fully developed schedule addressing all of identified requirements, contains the required logic and schedule slack. Includes consideration to anticipate and avoid delays and optimize flexibility to provide high confidence that the schedule if followed would lead to a fully delivered system within the required contractual delivery date =15 Points</p> <p>Schedule contains all the required points but does not include consideration to anticipate and avoid delays and optimize flexibility in identified critical path =10 points</p>	<p>Provide preliminary project plan that illustrates how bidder will achieve project milestones as identified in the list of deliverables and milestones in section 15 of the SOW</p>			
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ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
17 cont'd			<p>Schedule contains all the required points but lacks slack, clarity and an identified critical path =5 points</p> <p>Schedule misses required schedule points and a description of the schedule logic. Weak work plan or incomplete plan with unrealistic scheduling or lack of consideration for unforeseen delays =0 Points</p>				

ID	Rated Requirement	Max. Rating	Point Rating	Proof of Compliance from Bidder	Bidder's Response	Bid Reference Page/Para #	Comments
18	<p>The Bidder should provide with their proposals objective evidence that they have in place a Quality Management System registered to ISO 9001:2015, or later, or a Quality Management System modeled on ISO 9001:2015, or later, which should include:</p> <ul style="list-style-type: none"> <li>• Its valid ISO 9001:2015 certification, and:</li> <li>• Formal acceptance by a Civil Aviation Authority or a National Military Airworthiness Authority</li> <li>• An example of its Quality Control Plan (QCP) as applied on previous projects of the same nature and complexity of this RFP, and;</li> <li>• A sample of an Inspection and Test Plan (ITP) developed in accordance with the QCP above.</li> </ul>	20	<ul style="list-style-type: none"> <li>• Valid ISO 9001:2015, or later, certification =5 points</li> <li>• Formal acceptance by a Civil Aviation Authority or a National Military Airworthiness Authority =5 points</li> <li>and</li> <li>• An example Quality Control Plan (QCP) as applied on previous projects of the same nature and complexity of this RFP =5 points</li> <li>and</li> <li>• A sample of an Inspection and Test Plan (ITP) developed in accordance with the QCP in (b) above =5 points</li> </ul>	Provide verification that Quality Management System meets ISO 9001:2015, or later, or a Quality Management System modeled on ISO 9001:2015, or later, and includes required information.			

