

TRACKING AND MESSAGING AND RELATED SATELLITE AIRTIME SERVICES & TERMINAL EQUIPMENT

ANNEX A2 – STREAM 2 STATEMENT OF WORK

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1 PART 1 - INTRODUCTION

1.1.1 Tracking and Messaging and Related Satellite Airtime Services & Terminal Equipment

- 1.1.1.1 Shared Services Canada (SSC) has a requirement for the provision, maintenance and operation of Tracking and Messaging and Related Satellite Airtime Services as well as related services for use by its clients.

1.1.2 Division of Document into Parts

- 1.1.2.1 This Statement of Work is divided into the following 5 Parts:

- a) Part 1 – Introduction
- b) Part 2 – Operational Requirements;
- c) Part 3 – Tracking and Messaging Services;
- d) Part 4 – Satellite airtime services;
- e) Part 5 – Terminal Requirements; and
- f) Part 6 – Glossary and Definitions.

2 PART 2 – OPERATIONAL REQUIREMENTS

2.1 GENERAL

- 2.1.1.1 The Contractor must provide the operational services defined in Part 2 on an on-going basis in support of the services delivered on an as and when requested basis in Part 3 and 4.
- 2.1.1.2 The Contractor must ensure that all verbal, written and electronic communications that are required to be provided directly to Clients (e.g. client support, recorded greetings and prompts, email and Voice Mail) are available at all times in both official languages of Canada (English and French), offering users a choice of either language depending on their individual preference.
- 2.1.1.3 The Contractor must designate a representative who will serve as primary point-of-contact for both management and technical matters.

2.2 CLIENT SUPPORT

2.2.1 Help Desk

- 2.2.1.1 The Contractor must provide the Client with technical support through a help desk accessible using a toll-free number available within North America.
- 2.2.1.2 The Contractor's help desk support representatives must respond to Client user questions and, to the extent possible, resolve user problems and provide advice regarding configuration problems relating to all the terminals, accessories and services supplied under this Contract.
- 2.2.1.3 The Contractor must log and track all reported calls to the help desk from the time of initial report until the resolution of the problem. This must be done through a computerized logging system.
- 2.2.1.4 The Contractor's help desk must be staffed and available to the Client using the toll-free number 24 hours a day, every day of the year.
- 2.2.1.5 As and when requested from the Technical Authority, the Contractor must send the log of reported calls, for the requested date range, via email within 2 business days of the request. The report must show the following:
 - a) Help desk summary (for the given date range) including the following:
 - i) Number of calls logged and resolved;
 - ii) Average time taken to answer the telephone;
 - iii) Total number of calls; and
 - iv) Total number of emails.
 - b) Detail Listing (for the given date range) including the following:
 - i) Ticket number;
 - ii) Date ticket was logged;
 - iii) Time ticket was logged;
 - iv) Contact information of who reported the problem:
 - (A) Name;
 - (B) Phone number;
 - (C) Email address; and
 - (D) Government Department.
 - v) Description of the problem;

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- vi) Resolution of the problem; and
- vii) Status (open or closed).

2.2.2 Engineering Assistance

2.2.2.1 The Contractor must provide engineering assistance to the Technical Authority accessible using a North American phone number separate from the help desk toll-free number.

2.2.2.2 The Contractor must assist with issues requiring technical expertise at a level greater than the help desk. This could include, but not be limited to:

- a) Compatibility issues;
- b) Supported encryption protocols; and
- c) Intermittent or chronic performance issues.

2.2.2.3 The Contractor's Engineering Assistance must be available Monday to Friday from 9:00 AM to 5:00 PM Eastern Time to receive and respond to calls.

2.3 PROBLEM MANAGEMENT

2.3.1 General

2.3.1.1 The Contractor must manage all problems affecting the delivery of services under this Contract. These problems must be managed 24 hours a day, every day of the year, by the Contractor by diagnosing, tracking, recording and reporting on all problems that affect any Client user's ability to use the Iridium Narrowband (Voice, Data and Pager) and Broadband (Voice and Data) Satellite Service(s). This includes all hardware, network and service problems. The Contractor must document all problems, including a description of the problem and all details on how the problem was resolved.

2.3.1.2 If the Contractor determines that a problem is a terminal equipment issue; the Contractor must refer the Client to the Contractor's repair centre.

2.3.1.3 The Contractor must perform remote network monitoring, preventative diagnostics and co-ordinate problem isolation and resolution.

2.3.1.4 The Contractor must perform the following activities on an on-going basis when handling network or service-related problems:

- a) identify each reported problem by a unique problem record number (ticket number);
- b) perform an analysis of the problem reported;
- c) maintain an audit trail that includes all actions taken until the problem is resolved; and
- d) provide reports as listed in the Section named "Reports".

2.3.1.5 The Contractor must be the single point of contact and have full responsibility for leading and coordinating all activities with any terrestrial provider, Internet Service Provider (ISP), local exchange carrier (LEC), or interexchange carrier (IXC) for the resolution of any problem that affects the performance of the Iridium Narrowband (Voice, Data and Pager) and Broadband (Voice and Data) Satellite Service.

2.3.1.6 The Contractor must provide a "problem record" number to the reporting Client that permits the Client and any other representative of Canada to quote the problem record number for any reason.

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2.3.2 Escalation Procedures

2.3.2.1 Depending on the severity of the problem where it affects the usage of the services, the Contractor must be ready to address SSC reporting requirements based on escalation timelines below. The Contractor must provide regular updates (intervals defined by the next escalation level) for which the incident has been identified and categorized and as defined below. The Contractor must provide the names and titles of the Contractor's Management escalation levels within their organization at contract award.

2.3.2.2 Escalation time lines (which are in effect 24 hours/day, 7 days/week):

SSC Management Escalation Levels	Contractor's Management Escalation Levels	Low Severity	Medium Severity	High Severity
SSC Manager Operations	Level 1	8 hours	4 hours	30 minutes
SSC Director Operations	Level 2	12 hours	8 hours	1 hour
SSC Director General Operations	Level 3	24 hours	12 hours	2 hours

Note: All escalation times listed in table above start running when the initial request is made.

- a) **Low Severity:** Diminished capacity (including repeated intermittent availability) of the network affecting any single, or group of, satellite terminal(s) for, or during, a continuous period exceeding 8 hours (excluding scheduled maintenance as defined in Section 2.7).
- b) **Medium Severity:** Diminished capacity (including repeated intermittent availability) of the network affecting any Iridium Satellite Service for, or during, a continuous period exceeding 4 hours (excluding scheduled maintenance as defined in Section 2.7).
- c) **High Severity:** Complete unavailability of the network affecting any Iridium Satellite Service, including the complete failure of a satellite for a period exceeding 30 minutes (excluding scheduled maintenance as defined in Section 2.7).

2.3.2.3 The Contractor must continue to provide an updated list via email of the Contractor's Management Escalation Levels to the Technical Authority as changes in personnel occur in the management positions listed above.

2.3.2.4 The Contractor must meet with the Technical Authority on a regular basis, if requested, to review outage reports, and any other information related to service availability, to ensure availability requirements are being met.

2.4 SERVICE PERFORMANCE MONITORING

2.4.1 Minimum Availability of Tracking and Messaging and Related Satellite Airtime Services

2.4.1.1 The Contractor must provide the Tracking and Messaging and Related Satellite Airtime Services and maintain any related terrestrial facilities to ensure that the connectivity from the Tracking and Messaging platform as well as the satellite link (from the satellite terminal to the

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Contractor's terrestrial hand-off point) provides a Minimum Availability Level of at least **99.8%** in each calendar month.

- 2.4.1.2 The Actual Availability Level that is reported by the Contractor in the monthly Service Performance Level report must be calculated using the following formula:

$$[(TNT - TOT) / TNT] \times 100$$

where "**TNT**" is defined as the total network time, which is the total available number of minutes in the reported month and is calculated by multiplying by the number of calendar days in the month, times 24 hours, times 60 minutes (i.e., in January the TNT would be $31 \times 24 \times 60 = 44640$); and

where "**TOT**" is defined as the total outage time, which is the total number of outage minutes as tracked by the Contractor's problem record system affecting that Iridium Service. The service outage problem records logged by the Contractor will be used to calculate outage minutes. The outage minutes will be calculated from the time the problem is first recorded until the problem is resolved (ticket close) for each problem record. The sum of all these outage minutes will be the TOT. This number does not include scheduled maintenance or sun transit downtime where the Contractor properly advised SSC in accordance with Section 2.7.

- 2.4.1.3 An Iridium Satellite Service outage is defined as a failure of any network facilities that completely prevent successful processing of any of the Iridium Satellite Service's functionalities. The network facilities include the satellite network (satellite and communications paths), Land Earth Station (LES), and terrestrial backhaul networks.

2.5 SCHEDULED SERVICE-AFFECTING AND MAINTENANCE ADVISORY

- 2.5.1.1 The Contractor must provide the Technical Authority with written notice of any planned scheduled maintenance that may affect service at least 5 business days before performing any scheduled maintenance.
- 2.5.1.2 Except in cases of emergency, the Contractor must notify the Technical Authority before proceeding with any unscheduled service-affecting maintenance activities. When possible, the Contractor agrees to coordinate unscheduled service-affecting maintenance activities with the Technical Authority. In cases of emergency, the Contractor must notify the Technical Authority as soon as possible after beginning the emergency unscheduled service-affecting maintenance activity, together with the reason for the unscheduled service and information about how long service will be affected.

2.6 ACCOUNT MANAGEMENT

2.6.1 Account Representative

- 2.6.1.1 The Contractor must assign an Account Representative (AR) to SSC, to address any technical and administrative issues and must have the following minimum level of experience:
- a) A minimum of 4 years of experience in the delivery, sales or support of telecommunications services to government organizations experience within the last 10 years; and
 - b) At least 1 year of experience in the delivery, sales or support of Iridium Satellite services to government organizations within the last 4 years.
- 2.6.1.2 During the Contract Period, the Contractor must provide the résumé for each new AR to the Technical Authority for approval within 10 business days of the date the Contractor notifies the Technical Authority that a new AR is being assigned.

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2.6.2 Meetings

- 2.6.2.1 When requested, the AR must meet with the Technical Authority at a location agreed upon by Canada and the Contractor. Except in case of emergencies, Canada will provide the AR with at least 5 days of notice before a meeting.
- 2.6.2.2 When requested, the Contractor must provide sales and marketing support to Canada when Canada is communicating with existing and prospective Clients. This support may consist of attending meetings, participating in a telephone teleconference, providing literature (either electronic or paper) explaining Tracking and Messaging and SBD Iridium Satellite services and/or terminals, or otherwise assisting SSC in communicating with Clients about the Satellite Services available under this Contract.
- 2.6.2.3 Attendance at all meetings is at the Contractor's own expense, including any travel and living expenses that may be incurred.

2.7 REPORTING

2.7.1 General

- 2.7.1.1 The Contractor must provide the monthly reports in an electronic format (in comma or tab delimited file format, MS Excel) by way of email. All reports must be sent to the Technical Authority, the Contracting Authority at the email addresses identified in Article 1.6 of the Contract.

2.7.2 Monthly Service Order Report

- 2.7.2.1 The Contractor must provide the Monthly Service Order Reporting Form (Annex F) that provides a listing of all the Service Orders that have been issued against the contract on a monthly basis within 20 calendar days from the end of the billing period. The report must provide the following information:
- a) Service Order number;
 - b) Date issued;
 - c) Description of service;
 - d) Client Name (Government Department);
 - e) Service Order Amount;
 - i) Total Committed Value (\$); and
 - ii) Spent/Billed amount;
 - f) Applicable taxes;
 - g) Total Value of Service Order amount including applicable taxes; and
 - h) Status (Approved, Completed or Cancelled).

2.7.3 Contract Summary Report

- 2.7.3.1 The Contractor must provide a quarterly Contract Summary Report to the Technical Authority, and Contracting Authority in order to track the total expenditures of the Contract to date. This report must include the following information:
- a) Government department;
 - b) Monthly value of goods delivered, where applicable;
 - c) Government Fiscal Year-to-date value of goods delivered, where applicable;
 - d) Monthly value of services rendered;
 - e) Government Fiscal Year-to-date value of services rendered;
 - f) Contract-to-date value of goods delivered, where applicable; and

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g) Contract-to-date value of services delivered, where applicable.

2.7.3.2 The Contractor must provide the Contract Summary Report no later than the 21st day of the month following each quarter (i.e., January-March, April-June, July-September, October-December).

2.7.4 Outage Notifications

2.7.4.1 The Contractor must provide the Technical Authority with an outage notification by email within the same timeframes indicated in the escalation procedures in section 2.3.2 for the Manager Operations. The report must contain:

- a) Reference number;
- b) Date;
- c) Outage start date and time;
- d) Name of the person and department reporting the incident;
- e) Description of the problem;
- f) Description of the proposed resolution; and
- g) Estimated time to restore.

2.7.4.2 The Contractor must send updates to the Technical Authority by email on regular basis as updates are available.

2.7.4.3 Once the Iridium Narrowband (Voice, Data and Pager) and Broadband (Voice and Data) Satellite Service(s) has been restored, the Contractor must notify the Technical Authority by email immediately.

2.8 INVOICING

2.8.1 General

2.8.1.1 The Contractor must establish a federal government master account with at least one sub-levels to identify the SSC Clients. The account number must be 15 characters or less not including any special characters.

2.8.1.2 The Contractor must invoice Canada on a monthly basis for all one-time and recurring charges accounted for in that month based on a billing period of the first of the month until the last day of that month. Services that start part way during a calendar month will be prorated using the formula of: Total cost / number of days in billing month * number of days the item is being charged for. Equipment must be invoiced separately from services. All services and equipment must be delivered before it can be invoiced.

2.8.1.3 The Contractor must cooperate with the Technical Authority for the resolution of any billing issues to the satisfaction of the Technical Authority.

2.8.2 Invoices

2.8.2.1 In addition to the information required by General Conditions 2035, the Contractor must provide a printable and non-modifiable monthly summary invoice and a copy of Annex "B1" (if applicable) to the Contracting and Technical Authorities listed on the contract in Portable Document Format (PDF), which includes the Contractor's official letterhead or logo via email.

2.8.2.2 The Contractor must ensure that the summary invoice and Annex "B1" are received by the Contracting and Technical Authorities within 10 working days after the end of each billing period.

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2.8.3 Billing Detail File

- 2.8.3.1 The Contractor must provide the Technical Authority with the Billing Detail File containing all billing details for the monthly billing period. The Billing Detail File is the data that supports the monthly summary invoice.
- 2.8.3.2 The Billing Detail File must be provided via email.
- 2.8.3.3 The Contractor must provide the Billing Detail File in a flat-file format. The flat-file format must be an industry-standard Open Data Base Connectivity (ODBC) compliant fixed-length file of 341 characters. Each file must be related to an invoicing period and contain the details to reconcile the invoice electronically. The flat file must contain 3 separate record layouts and the data must be formatted into specific record fields and each field must include a pre-specified element format. The specific formatting is provided in Appendix A to Annex A – Billing Detail File Layout. Canada reserves the right to make minor adjustments to the format to meet technical requirements once the Contract has been awarded to ensure accurate and timely processing.
- 2.8.3.4 The Billing Detail File must contain all charges for that invoicing period (including any charges resubmitted in accordance with the Contract). The amount on the monthly summary invoice for any usage and/or detailed charges at the item/service level must equal the total on the Billing Detail File and, in case of a discrepancy; the Billing Detail File will take precedence. Therefore the amount reconciled that will be paid is the total amount on the Billing Detail File, minus any transactions that are rejected.
- 2.8.3.5 The Contractor must ensure that the file is received by the Technical Authority within 10 working days after the end of each billing period.
- 2.8.3.6 If the Contractor applies an exchange rate fluctuation adjustment, the amounts being invoiced in that month in the Billing detail file must reflect the adjusted invoiced amount at the detail level and summary levels.

3 PART 3 – TRACKING AND MESSAGING SERVICE REQUIREMENTS

3.1 IRIDIUM AIR-TIME SERVICES REQUIREMENTS

3.1.1.1 The Contractor's Iridium Short Burst Data Service must provide the following service functionalities:

- a) Short Burst Data access and airtime services provided under the following specified plans:
 - i) Short Burst Data Plan 1:
 - (A) Minimum message size must be no more than 30 bytes;
 - (B) The monthly access fee must not include any usage;
 - (C) Mailbox check usage; and
 - (D) Each increment of 30 bytes must be charged at the rate identified in Annex B2.
 - ii) Short Burst Data Plan 2:
 - (A) Minimum message size must be no more than 10 bytes;
 - (B) The monthly access fee must include at least 12 Kilobytes of usage at no additional cost above the monthly access fee;
 - (C) Mailbox check usage; and
 - (D) Each increment of 10 bytes above the included 12 Kilobytes must be charged at the rate identified in Annex B2.
- b) Virtual Private Network Interconnection services to allow the secure delivery of messages from the Iridium gateway in Tempe Arizona to a client location over public facilities.

3.2 TRACKING AND MESSAGING SERVICES DESCRIPTION

3.2.1 The portal solution must provide the following Tracking and Messaging functionality:

3.2.1.1 User interface:

- a) The user interface must provide a graphical user interface with ease of use characteristics.
 - i) The graphical user interface must be able to display information on vessel identification, position, heading, ship length, beam, type, draught, and hazardous cargo originating from the Canadian Coast Guard - Automatic Identification System (AIS).
 - ii) The graphical user interface must be able to process and display information on radiation levels in Canada from Health Canada remote monitoring devices.
- b) Selectable graphical mobile asset (Personnel, Vehicles, Vessels, etc...) Tracking;
- c) The user profile/account must support the ability to display the user interface in the language of their choice (i.e. English or French)
- d) Define Various Geofences shapes and sizes for Mobile Assets and Trigger alerts when Mobile Assets enter and/or exit the Geofence boundary;
- e) Creation of client groups and role based access within the portal to allow security separation;
- f) Visual and Exportable Location History Reporting;
- g) The user interface must provide the ability to group different assets together;
- h) The user interface must provide the ability to zoom in and out on the world map;
- i) Two-way text messaging to supported assets;
- j) Visual alert indicators;
- k) Configurable remote asset control by sending commands to supported assets; and

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- l) Configuration control;
- m) Ability to display Chemical, Biological, Radiological and nuclear (CBRN) information on the user interface.

3.2.1.2 Different alerts that the portal must support:

- a) Geofence alert: this type of alert is triggered when a particular beacon exits and/or enter its predefined area of operation.
- b) Non-Reporting alert: this type of alert is triggered when a particular beacon has not reported in its location in more than the pre-defined time.
- c) Speed alert: this type of alert is triggered when a particular beacon has exceeded a pre-defined speed.
- d) Panic alarm: this type of alert is triggered when a particular beacon is reporting a panic alert because the user has pressed the panic button on the beacon.

3.2.1.3 The service must allow for the following reports

- a) History report: this type of report would be an export of the reported locations of a beacon within a selectable time period going back up to 6 months; and
- b) Alert report: this type of report would be an export of the reported alerts within a selectable time period going back up to 6 months.

3.2.1.4 The portal server solution must be installable on a physical and virtualized server technology running under a Microsoft Windows Server Operating System or Linux Server Operating System within a Government of Canada Data Center as and when required.

3.2.1.5 The Contractor must offer maintenance, monitoring and support of their server solution with 24/7 coverage included in the price of the yearly licence fee.

3.3 TRAINING, SETUP AND CONFIGURATION SERVICES DESCRIPTION

3.3.1.1 The Contractor must offer Training services delivered either on-site or via videoconference or via an internet virtual classroom to user groups on their devices as well as their Tracking and Messaging services as and when required.

3.3.1.2 The Contractor must also offer setup and configuration services in order to assist the clients in deploying their Tracking and Messaging solution in an efficient manner.

4 PART 4 – IRIIDIUM TERMINAL REQUIREMENTS

4.1 GENERAL

- 4.1.1.1 The Contractor must provide terminals and terminal support, as specified in this Contract, for all Clients throughout the Contract Period.
- 4.1.1.2 The terminal equipment supplied must be type-approved by Canada and Iridium.
- 4.1.1.3 "Personal Locator Device" is defined as a handheld portable device (beacon), two-way satellite messaging and GPS device primarily used for emergency, rescue and tracking services. The Beacon utilizes various features such as text messaging, alert notifications, and "sleep and wake-up" positional reporting.

4.2 IRIIDIUM PERSONAL LOCATOR DEVICE WITH LCD INTERFACE (BEACON)

- 4.2.1.1 The Contractor must offer Personal Locator Devices.
- 4.2.1.2 Each Personal Locator Device must include:
 - a) The beacon must contain a GPS antenna and an Iridium antenna.
 - b) The beacon must include a Universal Serial Bus (USB) interface port (either Micro or Mini);
 - c) The beacon must include an internal rechargeable battery and built-in automatic battery charger;
 - d) The beacon must include an external AC adaptor and vehicle accessory connector plug (standard USB) that will operate on both 120-240 volts and 12-24 volts direct current (Vdc) power;
 - e) The beacon must include an interface for an external dual GPS-Iridium antenna; and
 - f) The beacon must provide M2M compatibility with multiple interfaces such as Bluetooth, RS232, and/or Wi-Fi connection. Integrated or external power supply for 10-32 Volt DC operation;
 - g) The beacon must include a user interface including buttons and LCD screen to be able to operate the features of the Personal Locator Device;
 - h) Operation and Maintenance manuals;
 - i) Technical Specifications data sheet; and
 - j) Hazardous materials parts list.
- 4.2.1.3 Each terminal must allow the user to use the following functions:
 - a) The beacon must operate as an Iridium Short Burst Data (SBD) Modem;
 - b) The beacon must transmit and receive messages anywhere using the Iridium satellite network;
 - c) The beacon must operate in both text messaging and tracking communications;
 - d) The beacon must confirm transmission of data, otherwise store data for later transmission;
 - e) The beacon must have a method of storing address numbers, messages and settings so that they can be transferred to another device if required;
 - f) The beacon stored messages must include date and time stamp to facilitate later review;
 - g) The beacon must provide the capability to send pre-programmed messages;
 - h) The beacon must provide the capability to send data in two formats; standard data format and 256-bit AES encrypted format;
 - i) The beacon must provide a user configurable encryption key capability;

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- j) A standard positional report must contain a minimum of Location, heading, time, IMEI, and speed;
- k) The beacon must support SI and imperial measurements for speed and altitude;
- l) The beacon must support reporting of position formats in Latitude, Longitude and MGRS coordinate systems;
- m) The beacon must provide the capability to send positional reports after device "wake-up" from "sleep" mode;
- n) The beacon must provide the capability for an automated position reporting that is user-configurable and shall allow a minimum reporting interval of one minute;
- o) The beacon must provide a confirmation capability when sending and deleting messages to inform the user that messages were successfully sent and to avoid unintentional deletion;
- p) The beacon must send a continuous positional report messages at a rate configurable by the user when the emergency feature is activated; and
- q) The beacon integrated software must enable reconfiguration by the user.

4.2.1.4 Each terminal must meet or exceed the following physical characteristics:

- a) The beacon must operate within the temperature range of -20°C to +50°C;
- b) The beacon display panel/screen must provide clear and display at all temperature ranges identified above;
- c) The beacon must comply in accordance with Ingress/International Protection Standards IP67;
- d) The beacon battery must provide an optimal capacity that allows a minimum of five (5) days (24 hour period) continual operation at an adjustable positional reporting rate ("sleep" mode between operations) provided a clear access to satellites (view of the sky);
- e) The beacon maximum dimensions must not exceed 140 mm tall x 70 mm wide x 35 mm thick with the objective to be as small as possible;
- f) The beacon weight must not exceed 400 g;
- g) The beacon must provide a LED or multiple LEDs that indicate the following 3 status indicators: Power indicator, emergency indicator and message indicator;
- h) The beacon must provide a separate emergency button feature.

4.2.1.5 The Contractor must offer the following accessories for the Personal Locator Device with LCD interface device:

- a) Cigarette power cable integrated with connector;
- b) Cigarette power adapter for 24v dc operation providing USB connector to charge device;
- c) Vehicle Mount;
- d) External Dual GPS/Iridium antenna with side SMA connectors (Aero);
- e) External Dual GPS/Iridium antenna galvanised case with mounting holes (Marine);
- f) External Dual GPS/Iridium Covert Antenna;
- g) Antenna Cables to connect to dual antenna;
- h) Quick release connectors;
- i) External Dual GPS/Iridium antenna with integrated antenna cables (Standard);
- j) Solar Panel with cables to connect to device;
- k) Spare antenna (if applicable);
- l) Spare battery;
- m) Handle mount for device; and
- n) Carry Case.

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4.3 IRIDIUM PERSONAL LOCATOR DEVICE WITHOUT LCD INTERFACE (BEACON)

4.3.1.1 The Contractor must offer Personal Locator Devices.

4.3.1.2 Each Personal Locator Device must include:

- a) The beacon must contain a GPS antenna and an Iridium antenna.
- b) The beacon must include a Universal Serial Bus (USB) interface port;
- c) The beacon must include an internal rechargeable battery and built-in automatic battery charger;
- d) The beacon must include an external AC adaptor and vehicle accessory connector plug (standard USB) that will operate on both 120-240 volts and 12-24 volts direct current (Vdc) power;
- e) The beacon must provide M2M compatibility with multiple interfaces such as Bluetooth, RS232, and/or Wi-Fi connection. Integrated or external power supply for 10-32 Volt DC operation;
- f) The beacon must include a user interface of buttons to be able to operate the features of the Personal Locator Device;
- g) Operation and Maintenance manuals;
- h) Technical Specifications data sheet; and
- i) Hazardous materials parts list.

4.3.1.3 Each device must allow the user to use the following functions:

- a) The beacon must operate as an Iridium Short Burst Data (SBD) Modem;
- b) The beacon must transmit and receive messages anywhere using the Iridium satellite network;
- c) The beacon must operate in both text messaging and tracking communications;
- d) The beacon must confirm transmission of data, otherwise store data for later transmission;
- e) The beacon stored messages must include date and time stamp to facilitate later review;
- f) The beacon must provide the capability to send pre-programmed messages;
- g) The beacon must provide the capability to send data in two formats; standard data format and 256-bit AES encrypted format;
- h) The beacon must provide a user configurable encryption key capability;
- i) A standard positional report must contain a minimum of Location, heading, time, IMEI, and speed;
- j) The beacon must support SI and imperial measurements for speed and altitude;
- k) The beacon must support reporting of position formats in Latitude, Longitude and MGRS coordinate systems;
- l) The beacon must provide the capability to send positional reports after device "wake-up" from "sleep" mode;
- m) The beacon must provide the capability for an automated position reporting that is user-configurable and shall allow a minimum reporting interval of one minute;
- n) The beacon must provide a confirmation capability when sending and deleting messages to inform the user that messages were successfully sent and to avoid unintentional deletion;
- o) The beacon must send a continuous positional report messages at a rate configurable by the user when the emergency feature is activated; and
- p) The beacon integrated software must enable reconfiguration by the user.

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4.3.1.4 Each device must meet or exceed the following physical characteristics:

- a) The beacon must operate within the temperature range of -20°C to +50°C;
- b) The beacon must comply in accordance with Ingress/International Protection Standards IP68;
- c) The beacon battery must provide an optimal capacity that allows a minimum of four (4) days continual operation at a positional reporting rate of 15 minutes;
- d) The beacon maximum dimensions must not exceed 110 mm tall x 60 mm wide x 30 mm thick;
- e) The beacon weight must not exceed 200 g;
- f) The beacon must provide a LED or multiple LEDs that indicate the following 3 status indicators: Power indicator, emergency indicator and message indicator;
- g) The beacon must provide a separate emergency button feature.

4.3.1.5 The Contractor must offer the following accessories for the Personal Locator Device with LCD interface device:

- a) Cigarette power cable integrated with connector;
- b) Cigarette power adapter for 24v dc operation providing USB connector to charge device;
- c) Vehicle Mount;
- d) External Dual GPS/Iridium antenna with strong magnets (Aero);
- e) External Dual GPS/Iridium antenna galvanised case with mounting holes (Marine);
- f) External Dual GPS/Iridium Covert Antenna;
- g) Antenna Cables to connect to dual antenna;
- h) Quick release connectors;
- i) External Dual GPS/Iridium antenna with integrated antenna cables (Standard);
- j) Solar Panel with cables to connect to device;
- k) Spare antenna (if applicable);
- l) Handle mount for device; and
- m) Carry Case.

4.4 IRIDIUM VEHICLE TRACKING DEVICE

4.4.1.1 The Contractor must offer Vehicle Tracking Devices.

4.4.1.2 Each Vehicle Tracking Device must include:

- a) The device must contain a GPS antenna and an Iridium antenna.
- b) The device must include a RS232 interface port;
- c) The device must include an internal rechargeable battery;
- d) Operation and Maintenance manuals;
- e) Technical Specifications data sheet; and
- f) Hazardous materials parts list.

4.4.1.3 Each device must allow the following functions:

- a) The device must operate as an Iridium Short Burst Data (SBD) Modem;
- b) The device must transmit and receive messages anywhere using the Iridium satellite network;
- c) The device must confirm transmission of data, otherwise store data for later transmission;

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- d) The device must provide the capability to send data in two formats; standard data format and 256-bit AES encrypted format;
- e) A standard positional report must contain a minimum of Location, heading, time, IMEI, and speed;
- f) The device must support SI and imperial measurements for speed and altitude;
- g) The device must provide the capability to send positional reports after an event occurs such as detecting movement; and
- h) The device must provide the capability for an automated position reporting that is user-configurable and shall allow a minimum reporting interval of one minute.

4.4.1.4 Each device must meet or exceed the following physical characteristics:

- a) The device must operate within the temperature range of -20°C to +50°C;
- b) The device must comply in accordance with Ingress/International Protection Standards IP67; and
- c) The device battery must provide an optimal capacity that allows a minimum of six (6) months with two positional reports a day.

4.5 REPAIR SERVICES

4.5.1.1 When requested by the Technical Authority via a Service Order, the Contractor must provide return to depot repair services. A return to depot repair is considered the contractor's repair facility within North America.

4.5.1.2 When requested, the Contractor must provide a quote to Canada that details the number of effort hours required to complete the repair.

5 PART 5 - GLOSSARY AND DEFINITIONS

- **Activation Fee:** The activation fee is the one-time charge to register the subscriber information on the Iridium network.
- **bps (bits per second):** A unit of measurement for speed of data transfer or throughput.
- **Byte:** A string that consists of a number of bits, treated as a unit, and usually representing a character or a part of a character.
- **Committed Service Delivery Date:** The Committed Service Delivery Date is the date that the Contractor is obligated to complete the delivery of a given Service Order. This date must be within the appropriate Maximum Service Delivery Interval (MSDI).
- **Critical Incident Report:** Is defined as a report outlining an occurrence that affected the Work.
- **Data services:** This is how a terminal may send and receive electronic messages such as e-mail.
- **E-mail:** Electronic mail: a global message-handling system whereby subscribers to commercial e-mail services can exchange electronic messages and data files between computers. E-mail services are provided by some service providers and private organisations. Access to e-mail services may be via PSTN or the Internet.
- **High Severity:** Complete unavailability of the network affecting any Iridium Service, including the complete failure of a satellite for a period exceeding 30 minutes (excluding scheduled maintenance).
- **Maximum Service Delivery Interval (MSDI):** The Maximum Service Delivery Interval (MSDI) is defined as the maximum allowable amount of time to process a Service Order depending on the type and priority of that Service Order.
- **Monthly Access:** Monthly access is the monthly subscription fee charged by the provider related to providing general access to voice, data and SMS services. The monthly access fee includes all (direct dialled) incoming voice and data calls as well as incoming SMS messages.
- **Omni-directional antenna:** An antenna which is capable of line-of-sight communication with a satellite without requiring any pointing.
- **SBD (Short Burst Data):** A service designed for applications that send and receive short data messages. The messages can be 1 to 1960 bytes in size.
- **Service Delivery Interval (SDI):** The Service Delivery Interval (SDI) is defined as the elapsed time between the issuance of the Service Order by the Technical Authority and the delivery/acceptance of the service.
- **Subscriber:** The eventual user or customer of a communication service or network. Subscribers can include individuals or organizations.
- **Terminal:** a satellite communication device used to access the Iridium network with any of their mobile services. It is often referred to a Iridium Satellite Phone within the Iridium environment.
- **Type-approval:** The official approval given by Iridium to a terminal model produced by an independent manufacturer when the terminal meets the technical standards defined by

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Iridium. Only models which have been granted type-approval (or case-approval) are permitted to operate via the Iridium network.