

# Mobile Satellite (MSAT) Legacy Services and Equipment

## ANNEX A1 – STREAM 1

## STATEMENT OF WORK

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# 1 PART 1 – GENERAL REQUIREMENTS

## 1.1 INTRODUCTION

### 1.1.1 Mobile Satellite (MSAT) Legacy Services (Voice, Data, GPS and Dispatch) and Equipment

1.1.1.1 Shared Services Canada (SSC) has a requirement for provisioning, maintenance and operation of Mobile Satellite (MSAT) Legacy services (voice, data, GPS and dispatch) satellite services. The MSAT equipment (i.e. MSAT-G2) and legacy services needs to operate over the Ligado, SkyTerra-1 satellite network. The services need to be available across North and Central America, northern South America, the Caribbean, Hawaii and in coastal waters. Shared Services Canada also have a requirement for provisioning of terminal equipment, accessories and maintenance support.

### 1.1.2 Division of Document into Parts

1.1.2.1 This Statement of Work is divided into the following 6 Parts:

- a) Part 1 – Introduction
- b) Part 2 – Operational Requirements;
- c) Part 3 – Mobile Satellite (MSAT) (Voice, Data, GPS, and Dispatch) Legacy services;
- d) Part 4 – Mobile Satellite (MSAT-G2) Terminal Requirements;
- e) Part 5 – Installation and Repair Services
- 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. The Contractor must also provide the technical support through an abbreviated toll-free number accessible from any Mobile Terminal.
- 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.

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- v) Description of the problem;
- 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 Mobile Satellite (MSAT) services. 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 Mobile Satellite (MSAT) services.

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.

### 2.3.2 Escalation Procedures

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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 Mobile Satellite (MSAT) services 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 Mobile Satellite (MSAT) services, 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 Mobile Satellite (MSAT) Voice, Data and Push-To-Talk Radio Dispatch Services

2.4.1.1 The Contractor must provide the Mobile Satellite (MSAT) services with a Minimum Availability Level of at least **99.97%** 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:

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

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 the Mobile Satellite (MSAT) services. 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 A Mobile Satellite (MSAT) service outage is defined as a failure of any network facilities that completely prevent successful processing of any of the Mobile Satellite (MSAT) 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 Mobile Satellite (MSAT) services 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.

### 2.6.2 Meetings

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- 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 Mobile Satellite (MSAT) 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
  - g) Contract-to-date value of services delivered, where applicable.



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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 2.4.2 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 Mobile Satellite (MSAT) services has been restored, the Contractor must notify the Technical Authority by email immediately.

## 2.7.5 Availability Report

2.7.5.1 The Contractor must provide the technical authority with an availability report of all MSAT services listed under this contract within 20 calendar days following the end of the previous month of provided services.

## 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 1) 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.

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- 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.

### 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.

### 2.8.4 Service Delivery Intervals (SDI)

- 2.8.4.1 The Service Delivery Interval (SDI) is defined as the elapsed time between the issuance of the Service Order and the delivery/acceptance of the service.
- 2.8.4.2 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.

Service Order Type	MSDI for Regular Priority Service Orders	MSDI for Express Priority Service Orders
Service functionality activation, deactivation or change	8 hours	4 hours
Existing Terminal registration or deregistration	8 hours	4 hours
Delivery of new terminal(s) within Canada (for quantities of 10 or less)	10 business days	5 business days

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Delivery of new terminals within Canada (for quantities greater than 10)	20 business days	10 business days

## 2.8.5 Service Order Completion Notification (SOCN)

- 2.8.5.1 The Contractor must issue a Service Order Completion Notification in order for SSC to verify and validate that the Ligado service (Voice, Data, and Dispatch PTT) satellite service and/or equipment have been delivered per the Service Order. Any invoiced items related to a Service Order for which SSC has not received an SOCN will not be paid until the SOCN is received.
- 2.8.5.2 The Service Order Completion Notification must, at a minimum, provide Canada with:
- Service Order Number;
  - The serial or inventory numbers of all the terminals, and/or accessories processed from this Service Order;
  - All activated or deactivated service functionalities from this Service Order; and;
  - Service Order Completion Date.

### **3 PART 3 - MOBILE SATELLITE (MSAT) LEGACY SERVICES (VOICE, DATA, GPS AND DISPATCH) REQUIREMENTS**

#### **3.1 MOBILE SATELLITE (MSAT) VOICE SERVICE DESCRIPTION**

3.1.1.1 The Contractor's Mobile Satellite (MSAT) Voice Service must provide the following service functionalities:

- a) Monthly Access;
- b) Circuit-Switched Voice Access;
- c) Circuit-Switch Data Access (2.4 Kb/s);
- d) Circuit-Switch Data Access (4.8 Kb/s);
- e) Call Management (call forwarding, 3-way calling, call waiting);
- f) Call Barring;
- g) Conference Calling;
- h) Voice Mail;
- i) Messaging (enabling transfer of calls to 3rd party provider of voice mail);
- j) Ability to assign a North America Toll-Free phone number;
- k) Ability to place long distance phone calls (International Calling);
- l) Ability to receive long distance phone calls (International Calling)

#### **3.2 MOBILE SATELLITE (MSAT) DATA SERVICE DESCRIPTION**

3.2.1.1 The Contractor's Mobile Satellite (MSAT) services Data Service must provide the following service functionalities:

- a) Circuit-Switch Data (2.4 Kb/s);
- b) Circuit-Switch Data (4.8 Kb/s);
- c) Direct Internet Data Service, and;
- d) Bi-Directional Communication.

#### **3.3 MOBILE SATELLITE (MSAT) DISPATCH SERVICE DESCRIPTION**

3.3.1.1 The Contractor's Mobile Satellite (MSAT) services Dispatch Service must provide the following service functionalities:

- a) Talk Group Access (up to 6 Beams);
- b) The totality of all 6 Beams must cover North and Central America, northern South America, the Caribbean, Hawaii and in coastal waters;
- c) Dispatch Radio Usage flat rate;
- d) Point-to-Point Push-to-Talk (PTT) communications;
- e) Point-to-Multipoint Push-to-Talk (PTT) communications;
- f) Ability to have a PTT conference(s) with 200 and up to 9,999 users.
- g) Priority-1, interruption feature enabling a user to override a current speaker in the event of an emergency;
- h) Dispatch Radio Usage sensitive;
- i) Dial-In Dispatch, Dispatch feature enabling a user to join a Talk Group conversation from the Public Switched Telephone Network (PSTN);
- j) Dial-Out Dispatch, Dispatch feature enabling a Talk Group member to dial out to a specific PSTN phone number, bridging the PSTN user into a Talk Group conversation;
- k) Private Mode, and;
- l) Adding Additional Talk Group Access

## 4 PART 4 – MOBILE SATELLITE (MSAT-G2) TERMINAL REQUIREMENTS

### 4.1 GENERAL

- 4.0.1.1 The Contractor must provide terminals and terminal support, as specified in this Contract, for all Clients throughout the Contract Period.
- 4.0.1.2 The Contractor must provide MSAT terminal installation services for mobile vehicles and fixed terminal classes anywhere in Canada. The Technical Authority will issue the necessary Service Order for the Contractor to perform any required installation service.
- 4.0.1.3 The terminal equipment supplied must be type-approved by Canada and ability to operate under the Ligado satellite network.
- 4.0.1.4 “Mobile or Fixed” is defined as AC / DC powered land operation systems designed to be used in mobile or fixed locations using non-tracking high-gain antenna systems
- 4.0.1.5 Must be able to operate on a moving vehicle at speeds up-to 200KM/h.

### 4.1 MOBILE SATELLITE (MSAT) 2<sup>ND</sup> GENERATION TERMINALS

- 4.1.1.1 The Contractor must offer Mobile Satellite (MSAT) 2<sup>nd</sup> Generation Terminal Equipment.
- 4.1.1.2 Each Mobile Satellite (MSAT) 2<sup>nd</sup> generation terminals must include and support the following features:
  - a) Transceiver Unit with mounting bracket;
    - i) Compact Form Factor
    - ii) Handset Port (RJ-45)
    - iii) Ethernet Port (RJ-45)
    - iv) Ability to perform software upgrades
    - v) DB9 Serial Port
    - vi) GPS Output
    - vii) External Speaker Port
    - viii) Power Connector
  - b) AC/DC Power cables;
  - c) Dual Service Handset (i.e. Push-to-Talk and Voice) with handset cable;
    - i) Continent-Wide Two-Way Radio (PTT)) and Circuit Switched Voice and Data service capability
    - ii) GPS Display Feature
    - iii) Keypad & Display Backlight Control
    - iv) Headset Port
  - d) Outdoor antenna unit,
    - i) Land Mobile – Low profile land mobile 2-axis platform
    - ii) Fixed – Low profile land mobile 2-axis platform
    - iii) Maritime – 3-Axis Platform
    - iv) 16 Channel GPS Receiver (inside L-Band antenna)
  - e) 20FT Antenna Cable, and;
  - f) All required and included accessories and documentation.
- 4.1.1.3 The Contractor must offer the following accessories for the Mobile Satellite (MSAT) services Terminals:

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- a) Antenna cable 10 FT – LMR240 – TNC-M to TNC-M;
- b) Antenna cable 15 FT – LMR240 – TNC-M to TNC-M;
- c) Antenna cable 20 FT – LMR240 – TNC-M to TNC-M;
- d) Antenna cable 60 FT – LMR400 – TNC-M to TNC-M;
- e) Antenna cable 150 FT – LMR600 – TNC-M to TNC-M;
- f) Antenna Magnetic mounting kit;
- g) Antenna Permanent (Mast) pole mounting kit;
- h) Antenna Non-Penetrating Roof mount;
- i) Antenna Wall Mount;
- j) Power Cable, and;
- k) Fly away Kit for the MSAT G2

## 5 PART 5 - INSTALLATION AND REPAIR SERVICES

- 5.0.1.1 When requested by the Technical Authority via a Service Order, the Contractor must provide installation and repair services on-site or return to depot. On-site is considered at a site within Canada where Canada is requesting the installation or repair services. A return to depot repair is considered the Contractor's repair facility within North America.
- 5.0.1.2 When requested, the Contractor must provide a quote to Canada that details the number of effort hours required to complete the installation or repair and if applicable, the estimated Travel and Living expenses. Travel and Living expenses must not exceed Treasury Board guidelines and all expenses must be supported with the appropriate receipts.

## 6 PART 6 - GLOSSARY AND DEFINITIONS

- **Activation Fee:** The activation fee is the one-time charge to register the subscriber information on the Ligado Mobile Satellite (MSAT) 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.
- **Call Answering Performance Report:** call answering performance report is defined as a report based on the performance provided by the help desk support.
- **Call Barring:** A service feature that allows users to block certain incoming or outgoing calls.
- **Call Forward:** Custom calling service which enables the customer to forward any calls automatically to any telephone that can be dialled directly. When call forwarding is activated by a customer, and calls to that line are automatically routed to another line designated during activation.
- **Circuit-Switch Voice:** This is equivalent in functionality to that of standard land-line cellular telephone service provided over the Public Switched Telephone Network (PSTN). Within the Mobile Satellite (MSAT) services industry it is commonly referred to "Voice".
- **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.
- **Direct Internet Data services:** A service provided by Ligado that provides Internet connectivity through dedicated servers at the Mobile Satellite (MSAT) services Gateway. Through the use of compression techniques, 10 Kbps effective throughput can be achieved using the 2.4 Kbps Mobile Satellite (MSAT) services channel. This provides faster connection times and improved throughput.
- **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.
- **GPS:** Global Positioning System.
- **High Severity:** Complete unavailability of the network affecting any Mobile Satellite (MSAT) services, including the complete failure of a satellite for a period exceeding 30 minutes (excluding scheduled maintenance).
- **Kbps:** Kilobits per second
- **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.

- **North American phone number monthly access:** The North American phone number monthly access is the monthly fee charged by the provider to provide a North American phone number that gets automatically directed to the Mobile Satellite (MSAT) services satellite phone number, allowing callers to reach subscribers by dialling a North American based number, rather than the Mobile Satellite (MSAT) services international satellite phone number.
- **Omni-directional antenna:** An antenna which is capable of line-of-sight communication with a satellite without requiring any pointing.
- **Post Mortem Report:** Is defined as a report produced after the fact.
- **PSTN:** Public Switched Telephone Network.
- **RF:** Radio Frequency.
- **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 Deliver 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 Ligado (MSAT) satellite network with any of their mobile services
- **Terminal Equipment Warranty Period:** The Hardware Warranty Period described in section 14 of the Supplemental General Conditions, 4001.
- **Type-approval:** The official approval given by Ligado to a terminal model produced by an independent manufacturer when the terminal meets the technical standards defined by Ligado. Only models which have been granted type-approval (or case-approval) are permitted to operate via the Ligado satellite network.
- **Voice Mail:** Voice Mail allows a user to enable call forwarding to a voice mailbox. The user will be able to call the voice mailbox to retrieve and process stored messages, from the Mobile Satellite (MSAT) terminal.
- **Voice Mail Service monthly fee:** The voice mail service monthly fee includes a voice mail box specific to the Mobile Satellite (MSAT) services subscriber that allows the storage of any combination of a minimum of 10 individual messages and a minimum of 10 minutes of total time.