Type B Service

Reference Manual

SITA

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Preface

This edition of the Type B Service Reference Manual supersedes the SITAMAIL Type B Reference Manual issued in May 1995.

This manual is intended for new member companies to SITA, and all SITA and member company personnel involved in transmitting and receiving Type B messages, either wholly or partly over the SITA Network.

The manual establishes the telecommunication standards for Type B message handling used on the SITA Network. These standards will assist new members in making their physical connection(s) to the SITA Network and are essential to operations staff in obtaining maximum efficiency and security when using the SITA Network.

It is recommended that SITA member companies operating their own facilities use these rules as a guide for standardization.

About This Book

The manual is divided as follows:

- Chapters 1-5 describe the standards that are applicable to all Type B messages, independent of the type of connection used.
- Chapters 6-20 give information specific to each type of connection used for Type B.
- Appendix A defines the standard translation between the character sets used for Type B messages.
- Glossary - defines the terminology used in the manual.

Summary of Changes to this Edition

In addition to updates to reflect the evolution of the Type B Network topology since the last edition, the following major updates have been made:

- The document title has been changed from *SITAMAIL Type B Reference Manual* to *Type B Service Reference Manual.*
- Addition of chapters on three new connection types:
  - MATIP-Type B
  - MQ-Type B
  - Web-Type B
- Removal of connection types that are no longer used for new connections.

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1

General Information

This chapter gives a general explanation of Type B message handling. It includes an overview of the networking facilities available for the transmission of messages and the responsibilities of the individuals and organisations involved in handling messages.

What is Type B?

Type B is a store-and-forward communications system that supports worldwide operational applications, database services, and interpersonal communications. As with all store-and-forward services, Type B communications are often one-way. Delivery is carried out according to a four-level system of priority codes which range from immediate to deferred delivery.

Type B provides a multi-address delivery system with guaranteed end-to-end message security. The addressing system is based on the ATA/IATA 7-character address code and messages contain up to 32 destination addresses at the same time. There is also a facility for defining group addresses. This means that one address is used as the network destination and messages sent to that address are then automatically distributed to other terminals defined as part of that “group”.

Overview of Type B Features

SITA offers an enhanced Type B messaging service with a rich set of features, including:

- Access to the air transport industry from a single connection
- Connection far beyond the Type B community: SMTP, X.400, Internet, Fax, and Telex
- Assured message delivery using serial numbering or end-to-end protocols over the SITA global network
- Local access in over 225 countries, with support staff deployed on a truly global basis
- Levels of performance, speed, and reliability needed for mission-critical and time-critical messaging
- Flexible addressing and routing options: multiple deliveries for a single message, multiple destinations for a single address and group coding for multiple addresses
- Format and address validation to prevent delivery of erroneous messages
- Delivery according to a sender-assigned priority
- Message assurance without a surcharge for message security
- Central storage of messages for seven days after delivery, with retrieval on request

World's leading air transport messaging service

The SITA Type B messaging service is the world leader in air transport messaging. It serves over 700 of the world's largest air transport and travel related companies, and regularly handles over 10 million messages a day with an unmatched track record in performance and reliability.

Mission-critical applications as diverse as booking seats, tracking cargo, issuing flight plans and providing aerospace parts and repairs are run over the Type B service using messages formatted according to the International Air Transport (IATA) Type B messaging standard.

Airline community-specific messaging requirements

The Type B messaging service was developed specifically to meet the air transport community's need for fast, reliable and secure operational messaging. The aviation community has relied on Type B for many years for international electronic message exchange, covering the full spectrum of its business operations.

The Type B messaging service is used by airlines and many related businesses, including Customer Reservation Systems (CRS), cargo carriers, ground handlers, airport authorities and aerospace companies.

Maximum reach with a minimum investment

To ensure that customers continue to benefit from their investment in Type B in today's evolving messaging environment, SITA offers sophisticated and seamless access between the Type B messaging domain and other messaging environments. With one connection to the Type B messaging service over the SITA global network, you can communicate with:

- Any other Type B messaging service user
- Users of the world's most popular e-mail systems connected via SMTP or X.400 to Global Messaging Services
- MQ-enabled applications
- SITA's Information Services
- SITA's Cargo Community System
- Open Trading Services including ASC X12-SPEC2000 conversion service
- Other public and private networks including AFTN, ARINC, AT&T, Connect (BT/MCI), GE Information Services, Global One and IBM
- Internet e-mail users
- Fax and telex users worldwide

Flexible access options

Any computer (mainframe, mini or PC) running third party or customer-developed Type B message handling software can link to the Type B messaging service for store-and-forward messaging using P1024, P1124, AX.25, X.25, Frame Relay access and LAN Access, Intranet Connect, Aeronet connections.

SITA's Type B desktop e-mail software, also link to the service and have the option of store-and-forward messaging using P1024C, X.25 and X.28 fixed connections, or store-and-retrieve messaging over X.28 dial-up connections.

SITATEX IP will be available mid-2000, supporting all IP-based network applications.

Web-Type B allows access to the Type B service from a universal web browser.

By using the dial-up telex protocol, you can also link telex machines to the Type B messaging service.

Global availability and support

With over 5,800 professional staff, and a global network that spans 225 countries and territories, SITA provides a true end-to-end service in more countries than any other operator. Native language, round-the-clock, desk help support is offered in over 150 countries worldwide.

SITA Network users can send Type B messages from a full range of terminal types:

- Teleprinter
- Telex
- Intelligent Workstation (ASCII type terminal)
- PC/NC
- Mini
- Mainframe

and through various types of connections:

- MATIP access over TCP/IP
- MQ access over TCP/IP
- Web access over TCP/IP
- X.25
- AX.25
- P1X24 (P1024 or P1124)
- Asynchronous (single- or multi-circuit)
- MSL (full- or half-duplex)
- Telex

- SITATEX "Dial" (X.28 or PSTN)
- SITATEX Synchronous
- Dialup and fixed web browser access

Users of MATIP, MQ and web access can use any of SITA IP network services including LAN Access, Intranet Connect, AeroNet or Frame Relay Access for access to Type B messaging service.

The Type B Messaging service characteristics can be summarised as follows:

- Network transit time in the order of seconds
- Total protection; the data is stored and is retrievable, and totally protected end-to-end
- Multi-addresses per message (IATA format)
- Four levels of priority
- Access authority and configuration is mandatory
- Integrates a full portfolio of messaging services

Authorisation to use the SITA Network

The SITA Network is a private network open to all SITA customers. Only registered customers can hand in messages for transmission over the SITA Network.

The rules for acceptable messages are defined in the section Messages Used by the service. Messages which do not conform to these rules will not be accepted for transmission over the SITA Network.

The Type B Service

All Type B services follow the same rules in accordance with IATA recommendations.

Type B services are available worldwide using SITA's global communications network which covers more than 225 countries and territories. There are a number of High Level Centres (HLC) in the SITA Network which are responsible for Type B message acceptance, storage, and routing. These functions are performed automatically by 2 messaging centres.

MHS (Message Handling System)

The main types of MHS used by SITA are:

- Megaswitch, or MSW, is a high capacity, high performance store-and-forward message storage and switching system. The high volume Type B hosts are connected to Megaswitch.
- MSS (Message Storage-and-handling System). An MSS is a dedicated medium speed Type B store-and-forward system which handles medium volume Type B hosts and manages all SITATEX connections.
- HLS (High Level System) handles the low speed connections such as telex and point-to-point, and services such as transfer to AFTN.

Additionally, messaging gateways are connected to this environment for conversion and communication between SITA X.400 and SMTP messaging services and Type B.

All SITA MHS sites are manned full-time by trained SITA personnel who operate and manage the network.

Local help desk support is supplied by SITA personnel in over 150 countries to assist customers 24/7. Staff members skilled in the operation of SITA services, and with knowledge of local communications systems and equipment, are available to assist and support all Type B service customers.

Type B messages can be relayed from the SITA Network to other public or private networks by means of gateways. SITA provides gateways to other private and public networks such as the Aeronautical Fixed Telecommunications Network (AFTN), X.400 Administrations, ARINC, and Public Telex.

Availability of Service

The SITA Network operates 24 hours per day, 7 days per week.

Time System

The time system used on the SITA Network is UTC (Universal Time Co-ordinated). You may be more familiar with this system under the name GMT (Greenwich Mean Time).

Character Codes used by Service

The SITA Network allows the use of the following character codes:

- Baudot. The CCITT International Alphabet No.2
- Padded Baudot. Based on the CCITT International Alphabet No. 2, modified by SITA for use on synchronous lines
- 7-bit ASCII. The ATA/IATA 7-bit code (based on the CCITT Alphabet No. 5)

See Chapter 2 for more information.

Acceptable Messages

International or Governmental regulations, or separate contracts, or a combination of all three, may restrict the acceptance of certain messages.

Message Length

Type B messages have an average length of 300 characters. SITA recommends a maximum length of 3500 characters. Messages of up to 3840 characters are accepted by the service but remain the responsibility of the originator. The Megaswitch can handle messages of up to 64K. However, the receiver might not be able to handle this size of message. For technical reasons, messages of more than 3500 characters may be split into separate messages for transmission over the SITA Network.

There is no restriction on the input of messages of more than 3500 characters. However, because of the variations in Type B applications, SITA cannot guarantee the delivery format of such messages.

Confidentiality

The following rules are established to protect the confidentiality of messages transmitted over the SITA Network.

Secrecy Undertaking

A secrecy undertaking is signed by all personnel employed in messaging centres and stations handling messages from SITA Network customers.

Entry to Centres and Stations

Only SITA Operations personnel and authorised SITA or SITA member company personnel have the right to enter a centre or station.

Authorisation for other personnel can be given only by the official in charge of the centre or station, or by their authorised representative.

Traffic Information

Information to SITA Network users concerning traffic can only be provided by authorised personnel.

Prohibited Transmission

The deliberate transmission of unnecessary or anonymous signals or correspondence from a centre or station is forbidden.

Chapter

2

Message Formats

This chapter defines the general format for Type B messages transmitted over the SITA Network.

The SITA Network accepts the following standard character sets:

- Baudot (the CCITT International Telegraph Alphabet No.2). This character set uses a 5-bit code per character and is used on terminals that transmit over a telegraphic line.
- Padded Baudot. This character set is based on the CCITT International Alphabet No.2 modified by SITA to allow Baudot to be used on a synchronous, medium speed line. Padded Baudot is used for ACSs.

  Each Padded Baudot character has the following structure:
  - Bits 1 - 5 = Baudot character code
  - Bit 6 = 0 Letter Mode, 1 Figure Mode
  - Bit 7 = 1
  - Bit 8 = Parity bit
- 7-bit ASCII (the ATA/IATA 7-bit code per character based on CCITT Alphabet No.5). This character set uses a 7-bit code per character and can be used both for ACSs and terminals.

Where the format of message elements differs depending on the character set used, this is shown.

Important: General warning regarding the meaning of *Mandatory*, *Optional*, and *If Required* in this document:

Mandatory means the presence of this element must be filled by sender and handled by receiver.

Optional means the sender can decide to set this element or not, but in any case, the receiver must be in a position to handle the element if it is set by the sender.

If required means the same thing as optional in this document.

Representation of Non-printing Characters

This manual follows the convention for representing non-printing characters.

Baudot and Padded Baudot - non-printing characters are represented as follows:

Name	Symbol
Lettershift	↓
Figureshift	↑
Carriage Return	⟨
Space	→
Linefeed	≡

ASCII - non-printing characters are represented by their name, for example STX, ETX.

ASCII/Baudot/ASCII Translation

When a translation is required from one character set to the other, this is done automatically. Where the translation is from Baudot to ASCII, it is done on the basis of 1 padded Baudot character to 1 ASCII character.

In the case of ASCII to Baudot translation some data may be lost because of the ASCII characters for which there is no Baudot equivalent.

Note: Appendix A contains a table giving details of the character translation.

Component Sections

The component sections of a message in SITA format and the order in which they must appear are as follows:

- Heading
- Address
- Diversion Line
- Short Address Line
- Normal Address Line
- Origin
  - Originator Indicator
  - Double Signature
  - Message Identity
- Text
  - Start-of-Text signal
  - Text
  - End-of-Text signal
- Ending Section

Heading Section

The heading is connection type specific. Refer to the relevant chapter in this manual for details.

Address Section

The address section provides the information necessary to deliver a message to its destination. The address section is composed of the following elements in the order shown:

- diversion line (optional)
- short address line, also known as the supplementary address line (optional)
- normal address line (mandatory)

Most Type B messages contain only the normal address line.

Important: If the address section contains more than one element, there is a start-of-address signal in front of each element.

Diversion Line (optional)

The diversion line is used only when the message has to be transmitted on an alternative route because the standard route is unavailable. The diversion line must be inserted immediately after the message header (before either the short address line, if used, or the normal address line).

The diversion line is composed of the following elements in the order shown:

- start-of-address signal
- diversion indicator
- routing indicator
- end-of-address signal
- spacing signal

Start-of-Address Signal

The start-of-address signal differs depending on whether the connection uses the Baudot, Padded Baudot, or ASCII character code.

Baudot - the start-of-address signal consists of:

- CARRET
- LINEFEED
- LETTERS

Padded Baudot - the start-of-address signal consists of:

- CARRET (Figure Mode)
- LINEFEED (Figure Mode)

ASCII - the start-of-address signal consists of:

- CR
- LF
- SOH

Note: SITA will only accept variations in CR LF combinations for the alignment function when these are required to conform to local rules **and** where there is a bilateral agreement.

Diversion Indicator

The diversion indicator consists of the letters QSP followed by one space.

Routing Indicator

The routing indicator has 2 different uses:

- To inform an alternative SITA centre that the message is on an alternative route and confirm that the message has not been misrouted.
- To inform an alternative destination station that the message has been diverted.

The format of the routing indicator differs depending on its use.

Information for SITA Centre - When the information in the routing indicator is intended for a SITA centre, the routing indicator is a 7-character group composed of the following elements in the order shown:

- the 3-character location identifier of the destination station (city/airport code)
- the letter X

- the 3-character location identifier of the SITA centre that is rerouting the message (city/airport code)

For example, if the SITA centre in Hong Kong was rerouting messages to Bucharest through the SITA centre in Vienna then the diversion line would be QSP BUHXHKG. See Figure 2.1.

Information for Alternative Destination - When the routing indicator is used because of a deviation in the SITA switching system local delivery, the routing indicator is an 8-character group composed of the following elements in the order shown:

- the 4-digit destination number of the original destination station
- the letter X
- the 3-character location identifier (city/airport code) of the local SITA switching system that is rerouting the message

For example, if the destination station AMSTOBA is isolated and BA requests the local switching system (AMS) to reroute messages for that address to AMSRRSR then the routing indicator would be QSP 1732XAMS (1732 is the destination number for AMSTOBA). See Figure 2.2.

Note: There must be prior agreement between the isolated station and the chosen alternative station before messages can be rerouted.

End-of-Address Signal

The end-of-address signal differs depending on whether the connection uses the Baudot, Padded Baudot, or ASCII character code.

Baudot - the end-of-address signal consists of:

- CARRET
- LINEFEED
- . (full stop. Typed as FIGS M)

Padded Baudot - the end-of-address signal consists of:

- CARRET (Letter Mode)
- LINEFEED (Letter Mode)
- . (full stop. Typed as M in Figure Mode)

ASCII - the end-of-address signal consists of:

- CR
- LF
- **.** (full stop)

Note: SITA will only accept variations in CR LF combinations for the alignment function where these are necessary to conform to local rules **and** where there is a bilateral agreement.

Spacing Signal

The spacing signal identifies the end of the diversion line. The format of the spacing signal can differ depending on whether the connection uses the Baudot, Padded Baudot, or ASCII character code.

Baudot and Padded Baudot - the spacing signal consists of 5 spaces.

ASCII - the spacing signal consists of the US (Unit Separator) character. The Baudot and Padded Baudot spacing signal of 5 spaces is also accepted if there is a bilateral agreement. However, SITA does not recommend the use of a 5-space spacing signal in ASCII.

Figure 2.1 Diversion Line intended for SITA Centre

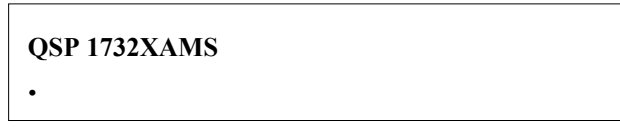


Figure 2.2 Diversion Line intended for Alternative Destination

Short Address Line (optional)

The short address line, also known as the supplementary address line (SAL), is used in order to avoid multiple delivery of messages when a deviation from SITA standard routing is required. When a message contains a short address line, the normal address is ignored for transmission purposes.

A message can contain multiple short address lines, however, only the first short address line is used for routing purposes.

The short address line is inserted before the normal address line.

The format of the short address line is identical to the format of the normal address line. See the section Normal Address Line (mandatory) on page 2-9. However, in a short address line there must be a spacing signal after the end-of-address signal. In Baudot and Padded Baudot, the spacing signal must consist of five (5) spaces, see Figure 2.3. In ASCII, the spacing signal is the US (unit separator) character, see Figure 2.4, although five spaces are also accepted if there is a bilateral agreement.

Figure 2.3 Short Address Line with Spacing Signal in Baudot or Padded Baudot

Figure 2.4 Short Address Line with Spacing Signal in ASCII

When a message contains a short address line, there is no restriction on the number of addressee indicators that you can have in the normal address line.

Normal Address Line (mandatory)

The normal address line is composed of the following elements in the order shown:

- start-of-address signal (mandatory)
- priority code (optional)
- addressee indicator (mandatory)
- end-of-address signal (mandatory)

Start-of-Address Signal

The start-of-address signal differs depending on whether the connection uses the Baudot, Padded Baudot, or ASCII character code.

Baudot - the start-of-address signal consists of:

- CARRET
- LINEFEED
- LETTERS

Padded Baudot - the start-of-address signal consists of:

- CARRET (Figure Mode)
- LINEFEED (Figure Mode)

ASCII - the start-of-address signal consists of:

- CR
- LF
- SOH

Note: SITA will only accept variations in CR LF combinations for the alignment function when these are required to conform to local rules **and** where there is a bilateral agreement.

Priority Code

The priority code specifies which priority level applies to the message. There are four priority levels for Type B messages. Table 2.1 shows these priority levels and their associated codes.

Level	Code	Usage
1	SS and QS	highest priority, life and death emergency situations
	QC	highest priority, reserved for SITA troubleshooting, network emergency situations
2	QU and QX	operationally urgent messages
3	QK or messages with either no priority code or any other Q priority code except those defined at levels 1, 2 and 4	normal messages
4	QD	deferred, delivered after all other messages cleared

Table 2.1 Priority Levels and Codes

The priority code must be followed by one space.

Note: Messages with a priority code which starts with any other letter than Q (with the exception of SS) are treated as having no priority code.

There are special requirements for confirming the delivery of Level 1 messages. See the section Additional Rules for Delivery of SS and QS Messages on page 3-17.

Addressee Indicator

The addressee indicator gives the destination to which the message must be delivered. The normal address line can contain a maximum of 32 addressee indicators in 4 address lines. This means that each address line can contain a maximum of 8 addressee indicators.

The addressee indicators must be separated by one space. The address lines must be separated by an alignment function consisting of one CR and one LF.

Note: SITA will only accept variations in CR LF combinations for the alignment function when these are required to conform to local rules **and** where there is a bilateral agreement.

Each addressee indicator consists of a 7-character group composed of the following elements in the order shown:

- the 3-character location identifier (city/airport code)
- the 2-character office function designator (department code)
- the 2-character SITA Network user designator (as defined by IATA)

Note: It is not necessary to include a space after the last indicator of an address line. However, an address line ending with a space is accepted.

Copy Indicator - If required, the originator can insert the copy indicator CPYXXXX in an address line. This indicates that the message is being sent to the addressees placed after the CPYXXXX indicator for information only.

CPYXXXX is not allowed as the first address.

CPYXXXX is counted as one addressee indicator. SITA accepts multiple copy indicators in the address line, however, some systems do not.

End-of-Address Signal

The end-of-address signal differs depending on whether the connection uses the Baudot, Padded Baudot, or ASCII character code.

Baudot - the end-of-address signal consists of:

- CARRET
- LINEFEED
- **.** (full stop. Typed as FIGS M)

Padded Baudot - the end-of-address signal consists of:

- CARRET (Letter Mode)
- LINEFEED (Letter Mode)
- **.** (full stop. Typed as M in Figure Mode)

ASCII - the end-of-address signal consists of:

- CR
- LF
- . (full stop)

Note: SITA will only accept variations in CR LF combinations for the alignment function where these are required to conform to local rules **and** where there is a bilateral agreement.

BUHRRBA
•
QD ZRHRRBA LONRRBA PARWDZZ
•

Figure 2.5 Address Section with Short Address Line and Normal Address Line

Origin Section

The origin section identifies the source of the message. It is composed of the following elements in the order shown:

- the originator indicator (mandatory)
- the double signature (if required)
- the message identity (optional)

Originator Indicator (mandatory)

The originator indicator is also known as the signature. It must start immediately after the end-of-address signal. This means that the originator indicator is always preceded by a full stop (the end-of-address signal).

The originator indicator consists of a 7-character group composed of the following elements in the order shown:

- the 3-character location identifier (city/airport code)
- the 2-character office function designator (department code)
- the 2-character SITA Network user designator (as defined by IATA)

The originator indicator must be followed by one space.

Note: The format of the originator indicator is exactly the same as for the addressee indicator.

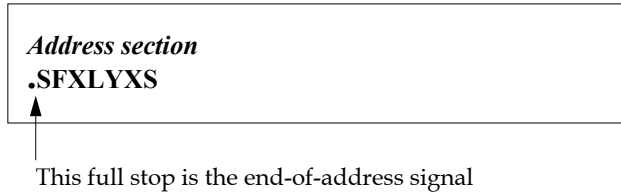


Figure 2.6 Originator Indicator

Double Signature (if required)

A double signature is used if the transmission costs for the message are not to be charged to the originator. The double signature identifies the SITA Network user who is to be charged for the transmission costs of the message.

It is necessary to have agreement between the concerned parties on the use of the double signature facility.

CAUTION: In some cases use of the double signature is restricted. For example, some network users are not authorised to originate a message with a double signature or to sign as the double signatory. If you require specific information, contact your SITA Group Account Manager.

A double signature is composed of the following elements in the order shown:

- the 2-character designator of the SITA Network user accepting the transmission charges for the message
- FIGS (only when using a Baudot machine)
- one oblique (/)

In Figure 2.7, the double signature "MS/" indicates the network user who is accepting the transmission costs for this message:

Address section
Originator indicator **MS/**

Figure 2.7 Double Signature

Important: The use of the oblique character (/) in this position is restricted to separating the double signature from the message identity. Do not use a format for the message identity which could be misread as a double signature.

Message Identity (optional)

The message identity is used by the originator to identify the message. There is no standard format although the date/time group is often used. The message identity can include any alphanumeric characters plus the full stop (with the exception of FIGS H and FIGS D).

The length of the message identity is limited by the length of the line. It is recommended in any case not to exceed more than thirty characters.

SITA does not recommend the use of the oblique character (/) in the message identity. If there is no double signature, the message identity must not include an oblique (/) as the third character following 2 letters because this is read as a double signature.

The message identity must not include a carriage return, linefeed nor any of the prohibited characters. See the section Prohibited Characters and Character Combinations on page 2-16.

If the date/time group is used in the message identity, the time must be expressed in UTC.

Address section
***Originator indicator Double signature* 061712**

Figure 2.8 Message Identity

Address section
.SFXLYXS MS/061712

Figure 2.9 Complete Origin Section with Double Signature

Address section
.SFXLYXS 061712

Figure 2.10 Complete Origin Section without Double Signature

Text Section

The text section is composed of the following elements in the order shown:

- start-of-text signal (mandatory)
- text
- end-of-text signal (mandatory)

Start-of-Text Signal (mandatory)

The start-of-text signal differs depending on whether the connection uses the Baudot, Padded Baudot, or ASCII character code.

Baudot - the start-of-text signal consists of an alignment function composed as follows:

- CARRET
- LINEFEED

Padded Baudot - the start-of-text signal consists of an alignment function composed as follows:

- CARRET (Letter or Figure Mode)
- LINEFEED (Letter or Figure Mode)

ASCII - the start-of-text signal consists of an alignment function followed by the STX character as follows:

- CR
- LF
- STX

Note: SITA will only accept variations in CR LF combinations for the alignment function when these are required to conform to local rules **and** where there is a bilateral agreement.

Text

The text of a message can be drafted in any agreed language, whether coded or not. The text must comply with the rules for acceptable messages. See the section Messages Used by Service in Chapter 1.

The text should be as brief as possible and must not contain any of the prohibited characters or character combinations. See Prohibited Characters and Character Combinations.

SITA recommends that each text line should contain a maximum of 69 characters (printed characters and spaces) and must end with an alignment function. The alignment function can be any combination of CR and LF. This line format is understood by all receiving systems. SITA places no restriction on line length.

Prohibited Characters and Character Combinations

The characters and combinations of characters specified in the following sections must never be used within the text of a Type B message.

Baudot and Padded Baudot

- ZCZC - start-of-message signal on some communications systems.

- NNNN - end-of-message signal on some communications systems.
- FIGS V - if preceded by a carriage return and a linefeed as this is the end-of-text signal on some communications systems.
- FIGS H - end-of-transmission signal on some communications systems.
- FIGS D - "WHO ARE YOU".
- LINEFEED QTA - if preceded by a carriage return and followed by the end-of-text signal. This is recognised as the cancellation sequence by a computer system. Only use this sequence in the text if you want to cancel the message.

ASCII

The following ASCII control characters:

- SOH - start of heading
- STX - start of text
- EOT - end of transmission
- ENQ - enquiry
- ACK - acknowledge
- NAK - negative acknowledge
- ETB - end of transmitted block
- DLE - data link escape
- ETX - end of text
- SYNC - synchronous
- DC1 - XON (11 Hex)
- DC3 - XOFF (13 Hex)

Any characters or sequences that would translate into the following prohibited Baudot characters.

- ZCZC - start-of-message signal on some communications systems.
- NNNN - end-of-message signal on some communications systems.
- = - end-of-text signal on some communications systems.
- LF QTA - if preceded by a carriage return and followed by the end-of-text signal. This is recognised as the message cancellation sequence by a computer system. Only use this sequence in the text if you want to cancel the message.

Indicators used in the Text

When the originator includes additional indicators in the text, such as:

- PDM (possible duplicate message)
- COR (correction message)
- information itself (text)
- COL (collation/confirmation of specific parts of the message)
- DUPE TO FOLLOW
- Sequence Indicator of Parts

These indicators must be placed in the order shown.

PDM (Possible Duplicate Message)

When it is necessary to repeat a message that has previously been transmitted, the repetition must contain the PDM indicator on a separate first text line. See Figure 2.11.

KHIRRAF
.ROMRRAF 031115
PDM
text as required

Figure 2.11 PDM Indicator

When a message is resent by a computer, the PDM indicator is added automatically.

COR (Correction Message)

When a message has been transmitted with an error in the text, this can be corrected in either of the following ways:

- correctly repeating the complete message
- sending a new message which contains information about the necessary correction

In both cases, the COR indicator is included on a separate text line of the correction message.

COL (Collation)

The correctness of significant text parts may be confirmed by repeating them as the last element of the message text. The repetition is preceded by the COL indicator.

DUPE TO FOLLOW

This indicator is used when a message has been received corrupted but contains enough information to be transmitted onwards. The DUPE TO FOLLOW indicator notifies the addressees that the full message will be retransmitted as soon as possible.

Sequence Indicator of Parts

When a message is split by the originator before transmission, the sequence indicator of parts tells the addressees the order in which the part-messages should be read. The sequence indicator included by the originator must always appear at the end of the text section and separated from the text by one blank line. See Figure 2.12.

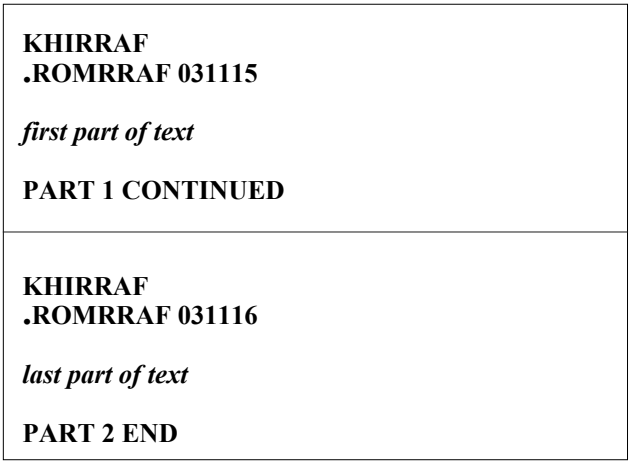


Figure 2.12 Sequence Indicator added by Originator

Adding the sequence indicator at the end of the text section avoids confusion if the message is also split during transmission by a SITA switching system. See the section Sequence Indicator of Message Parts on page 3-10.

Users of SITATEX

SITATEX includes the facility to split a message automatically before transmission. In this case, the Sequence Indicator of Parts is inserted at the beginning of the text section as described in the section Sequence Indicator of Message Parts on page 3-10.

In SITATEX 4 the part information at the beginning of the text section allows automatic re-assembly of the complete message. However, for the part information to be used in this way, the date/time group must be exactly the same in each part message. Part messages that have been split automatically by SITATEX always have the same date/time group.

End-of-Text Signal

The end-of-text signal differs depending on whether the connection uses the Baudot, Padded Baudot, or ASCII character code.

Baudot - the end-of-text signal consists of:

- CARRET
- LINEFEED
- = (Typed as FIGS V)

Padded Baudot - the end-of-text signal consists of:

- CARRET (Letter Mode)
- LINEFEED (Letter Mode)
- = (Typed as V in Figure Mode)

ASCII - the end-of-text signal consists of:

- CR
- LF
- ETX

Note: SITA will only accept variations in CR LF combinations for the alignment function where these are required to conform to local rules **and** where there is a bilateral agreement.

Ending Section

The ending section is connection type specific. Refer to the relevant chapter in this manual for details.

Cancelling a Partly-transmitted Message

When a partly-transmitted message is found to contain an error in the Address or Origin section, the part already transmitted must be cancelled by transmitting the following sequence:

- carriage return

- the sequence LINEFEED QTA repeated three times
- end-of-text signal and, if used, the ending

The repetition of the LINEFEED QTA sequence is used so the operator can see immediately that the message has been cancelled, for example with TTY or SITATEX. See Figure 2.13

```
QN NCEFWXS
.PARNMXS 031115
ATTENTION ALL X
QTA
      QTA
            QTA
```

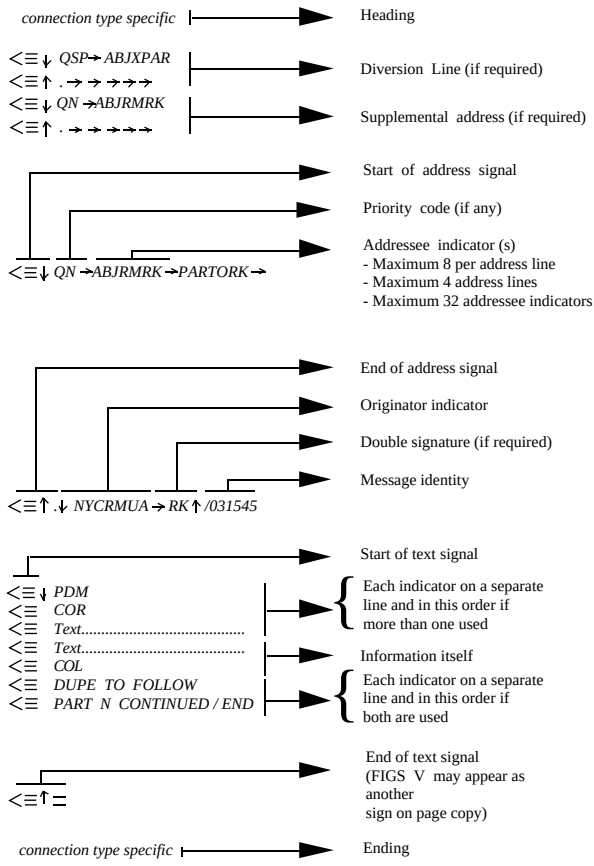
Figure 2.13 Cancellation Sequence for Typical TTY Connection

On circuits between 2 computer systems only one QTA is required. A computer system detects the cancellation on the following sequence:

- LF
- QTA
- end-of-text signal

```
QN NCEFWXS
.PARNMXS 031115
ATTENTION ALL X
QTA
=
```

Figure 2.14 Cancellation Sequence on Circuit between Two Computer Systems


connection type specific
Heading
QSP ABJXPAR
Diversion Line (if required)
QN ABJRMRK
Supplemental address (if required)
Start of address signal
Priority code (if any)
Addressee indicator (s)
- Maximum 8 per address line
- Maximum 4 address lines
- Maximum 32 addressee indicators
QN ABJRMRK PARTORK
End of address signal
Originator indicator
Double signature (if required)
Message identity
NYCRMUA RK /031545
Start of text signal
PDM
COR
Text.....
Each indicator on a separate line and in this order if more than one used
Text.....
Information itself
COL
DUPE TO FOLLOW
PART N CONTINUED / END
Each indicator on a separate line and in this order if both are used
End of text signal
(FIGS V may appear as another
sign on page copy)
connection type specific
Ending

Chapter

3

Transmission and Protection

This chapter describes the standards and procedures for ensuring that a Type B message is transmitted efficiently and securely over the SITA Network.

Message Acceptance

When a message is sent from a Type B terminal, it is first transmitted to its host SITA MHS. On arrival at the MHS, a message is checked for valid format, addresses, and origins. Any message that does not pass these checks is automatically returned to the service address, the terminal defined as accepting service messages for the originator. The service address can be the originator, a dedicated SITA intercept position, or any other position that has been specified in the circuit configuration.

Important: In some cases the text of the rejection message differs depending on the type of MHS that is responsible for handling the message. Therefore, the error messages listed here may not be comprehensive or an exact representation of the error messages that appear in the Type B message.

A validated message is handled in accordance with the following categories:

- Cancelled
- Format Error
- Invalid Origin or Destination
- Acceptable

Cancelled Messages

Messages that contain the QTA cancellation sequence are discarded. The cancellation sequence is composed as follows:

- carriage return
- the sequence LINEFEED QTA repeated three times
- end-of-text signal and, if used, the ending

The repetition of the LINEFEED QTA sequence is used so that the operator can see immediately that the message has been cancelled, for example with TTY or SITATEX.

On circuits between two computer systems, only one QTA is required. A computer system detects the cancellation on the following sequence:

- LF
- QTA
- end-of-text signal

If the message contains an input serial number, this is taken into account by the SITA MHS, therefore the next input message from the same origin must have the next serial number. See the section Serial Numbering on page 3-14.

Format Error

A format error is any deviation from the required SITA format, including the absence of mandatory elements. Messages that contain format errors are indicated by rejection messages. A rejection message is transmitted to the originator of a message that has been rejected if they are configured to receive such messages, otherwise the rejection is sent to the intercept position.

The rejection message has the following format:

PLS RPT YR *cnnn* DUE TO
Reason for Rejection

where "*c*" is the circuit number and "*nnn*" is the serial number, if any. See Figure 3.1.

QU ADSXXYY
.PARXMXS DDHHMM

PLS RPT YR 2123 DUE TO
reason for rejection
complete incorrect message

Figure 3.1 Format Error Rejection Message

Check on Address Section

The message is rejected if the address line contains any of the following errors:

- invalid number of addresses
- incorrect start-of-address signal
- incorrect end-of-address signal
- other format error

Invalid Number of Addresses

If the message contains more than 8 addresses per address line or more than 69 characters per address line, the reason for rejection is given as one of the following:

- EXSV ADS
- INCOR ADS LINE

Incorrect Start-of-Address Signal

If the start-of-address signal is incorrectly received, the reason for rejection is given as one of the following:

- INCOR SOA
- INCOR ADS LINE

Incorrect End-of-Address Signal

If the end-of-address signal is incorrectly received or there are more than 32 addressee indicators, the reason for rejection is given as one of the following:

- INCOR EOA
- INCOR ADS LINE

Other Format Error

If there is any other error in the format of the address line, the reason for rejection is given as one of the following:

- GARBLED ADDRESS
- INCOR ADS LINE

Check on Origin Section

If there is an error in the format of the origin section, the reason for rejection is given as one of the following:

- NON IDEN ORIGIN
- INCOR SIG LINE

Missing End-of-Text/End-of-Message Signal

If the end-of-text or end-of message signal is missing and enough characters have been received for the message to be relayed to its destination as DUPE TO FOLLOW, the reason for rejection is given as one of the following:

- NO EOM RLA
- W/O EOM RLA

If the end-of text or end-of-message signal is missing and not enough characters have been received to relay the message to its destination, the reason for rejection is given as one of the following:

- NO EOM NOT RLA
- W/O EOM NOT RLA

Miscellaneous

There are a number of other format errors that result in a message being rejected. These miscellaneous errors are as follows:

- message interrupted during reception
- data characters between messages
- excessive number of identical characters
- too many characters in message
- multiple errors

Message Interrupted During Reception

If the message is interrupted during reception and enough characters are received to relay the message to its destination as DUPE TO FOLLOW, the reason for rejection is given as one of the following:

- LINE IDLE RLA
- LINE OPEN RLA
- NO EOM RLA CCT ERR

If the message is interrupted during reception and not enough characters are received to relay the message to its destination, the reason for rejection is given as one of the following:

- LINE IDLE NOT RLA
- LINE OPEN NOT RLA
- NO EOM NOT RLA CCT ERR

Data Characters between Messages

If data characters are received that cannot be considered as part of a message, for example there is no start-of-message or start-of-address signal, the reason for rejection is as follows:

- SPURIOUS

Excessive Number of Identical Characters

If the message contains more than 120 consecutive identical characters the reason for rejection is as follows:

- STUCK TAPE

Note: Some systems detect STUCK TAPE on fewer characters, for example 80 consecutive identical characters.

Too Many Characters

If the message contains more than 3840 characters, the reason for rejection is given as one of the following:

- OVER LENGTH
- TOO LONG

Multiple Errors

If the message contains more than one format error the reason for rejection is as follows:

- MULTI ERRORS

Invalid Origin or Destination

Once the message format has been validated, the origin and destination addresses are checked against the system tables. A message can be rejected for the following reasons:

- unauthorised input
- unknown destination address
- routing error

Unauthorised Input

In general, all SITA members are authorised to input messages to the network. Non-members are authorised under specific agreements which may limit their authorisation. In addition, there is an optional restriction to limit use of an input circuit to a particular originator indicator (signature). Details of authorisation are held in local system tables for each MHS.

If the originator indicator is not recognised as an authorised SITA Network user, the message is rejected. The reason for rejection is given as one of the following:

- INPUT NOT AUTHORISED
- NSMA IN ADS LINE
- UNAUTHOR SIGN

For more information on authorisation to use the SITA Network, contact Marketing/Customer Support.

Unknown Destination Address

If an addressee indicator is not valid according to the system tables, the message is rejected for that address. An address is considered unknown for the following reasons:

- code unknown
- no delivery point
- out of use

Code Unknown

If any of the codes used in the address are not defined in the *ATA/IATA Airline Coding Directory*, the message is relayed to valid destinations with a short address line. An error message is returned to the originator with the following information:

- *address* UNKNOWN / OTHER DELIVERED AS FOLLOW:
  priority code and addresses delivered to

```
QU FRAQZXS
.PARNGXS 111321
XARXXXX UNKNOWN / OTHER DELIVERED AS
FOLLOW:

QU PARQSXS PARVRXS
•
```

Figure 3.2 Unknown Address Message

No Delivery Point

If the city code is valid but there is no delivery point defined for the address, the message is relayed to valid destinations with a short address line. An error message is returned to the originator with the following information:

- NO DISPOSAL FOR *address* OTHER DELIVERED AS FOLLOW *priority code and addresses delivered to*

```
QU PARQZXS
.PARNGXS 111321
NO DISPOSAL FOR PARXXXX OTHER DELIVERED AS
FOLLOW

QU PARQSXS PARVRXS
.
```

Figure 3.3 No Disposal Message

Out of Use

A mnemonic address can be configured temporarily in the routing database as being out of use. If a message contains such an address, it is returned to the originator with the following information:

- NO ACTION ADS
  address configured as no action
  original message

QU CCDDAA
.PARXMXS DDHHMM
PLS RPT YR CNNNN DUE TO NO ACTION ADS
DDDEEFF
followed by the original message

Figure 3.4 No Action Address Message

Routing Errors

A message received for which the receiving system has no routing responsibility is handled as follows:

1. For a single-address delivery message, the message must be accepted and relayed to its destination unless there are any local procedures in force that prevent delivery to the specified destination address. A copy of the message is sent to the information position in the MHS for information.

   If local procedures prevent delivery, the message is returned in the form of a service message with one of the following error messages:

   - MSR
   - PLS RPT YR *cnnn* DUE TO MSR SINGLE ADS

2. For a multiple-address message, when none of the addresses are within the routing responsibility of the receiving system, the message is sent to the intercept position, which then manually returns the message to the station from which it was received. The message is returned in the form of a service message with one of the following error messages:

   - MSR
   - PLS RPT YR *cnnn* DUE TO MSR MULTI ADS

Important: The start-of-message signal (ZCZC) must never be returned with the misrouted message. The message is returned from the start-of-address signal to the end-of-message signal.

3. The system receiving a misrouting service message must reroute the message correctly via the circuits prescribed in the applicable routing instructions. The indicator PDM must be added to the rerouted message as the first text line. See PDM (Possible Duplicate Message) in Chapter 2.

A routing error detected by the transmitting station while the message is in the course of transmission must be corrected by stopping transmission, cancelling the transmitted part, and transmitting the message over the correct circuit.

Messages Accepted by the Service

To be acceptable, a message must have passed the following checks:

1. Message format
2. Validity of origin and destination addresses

If the format, origin, and addresses are all valid, the message is transmitted to its destination.

Messages containing more than 3500 characters may be split for transmission over the SITA Network. See Sequence Indicator of Message Parts.

Sequence Indicator of Message Parts

For technical reasons, a message that contains more than 3500 characters may have to be split into smaller parts. The text is split into as many part-messages as required for transmission as separate messages.

Each of the part-messages must contain the same addressee indicators and the same originator indicator, and will be labelled accordingly.

The sequence of the part-messages is shown at the beginning of the text section by a sequence indicator. For example, if the original message required transmission in three parts, the sequence indicators for the three separate messages would be as follows:

- PART 1 CONTINUED

for the first part-message

- PART 2 CONTINUED

for the second part-message

- PART 3 END

for the last part-message

If the message contains a Standard Message Indicator (SMI), for example PDM, the sequence indicator is included on the line following the SMI.

Note: A sequence indicator of message parts added by the originator must appear at the end of the text section to avoid possible confusion with a sequence indicator added during transmission by a SITA message handling system. See Sequence Indicator of Parts in Chapter 2.

Figure 3.5 gives an example of a message with a total length exceeding 3500 characters that has been split into two parts for transmission, where the original message contained an SMI.

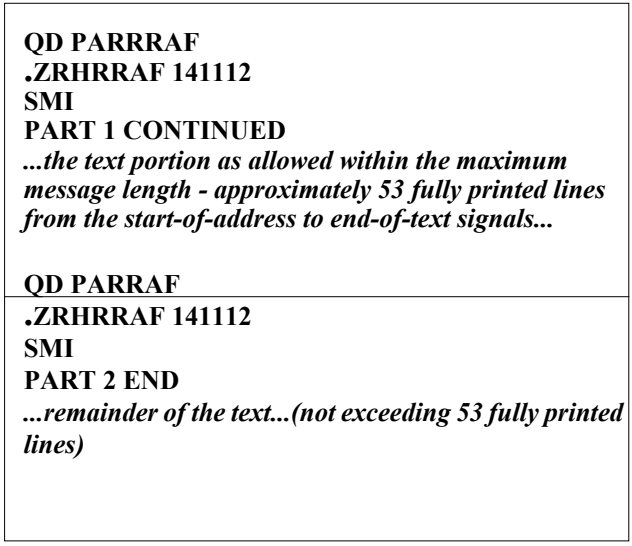


Figure 3.5 Message Transmitted in 2 Parts

In SITATEX 4, the part information at the beginning of the text section allows automatic re-assembly of the complete message.

Routing

The routing of messages over the SITA Network is automatic. Standard routes are predetermined by SITA. This standard routing is based on the following criteria:

- The addressee indicator(s) of the message to be protected
- The centre's responsibility on the receiving circuit
- The fact that, in general, a message is not transmitted back to the centre or station from which it was received. A circuit option is available to allow transmission back if required

The Role of the SITA MHS

Each SITA MHS is responsible for accepting, checking, storing, and routing messages received from the equipment and services which come under its control. For example, one type of MHS is responsible for the Teleprinters, Telexes, and PCs that make up the Low Level Network. A different type of MHS is responsible for the concentration of ACS traffic by means of a medium speed network and also acts as the SITATEX server.

There are a number of options for defining how a Type B message is handled when it arrives at its host MHS. These options are defined at the level of the circuit or station.

Once a message has been accepted, the MHS envelopes the message for routing within the SITA Network.

On reception, a message is stored for transmission according to its priority code. After it is transmitted, the message is stored again by the MHS, this time for retrieval. A message can be retrieved for up to 7 complete days after the transmission date. For example, if a message is transmitted at midday on Monday, it is retrievable up to midday on the following Monday. After seven days, the stored message is deleted.

Order of Transmission

The order of transmission of messages on a given circuit is determined by their priority codes as follows:

1. **Level 1** - Messages with priority codes SS, QS, or QC. These are handled before all other messages.
2. **Level 2** - Messages with priority codes QU or QX. These are handled before messages of levels 3 and 4.
3. **Level 3** - Messages with a QK code, a Q code other than QS, QC, QU, QX, and QD, or no priority code. These are handled before messages of level 4.

   Note: Messages with a priority code which starts with any other letter than Q (with the exception of SS) are treated as having no priority code.

4. **Level 4 -** Messages with priority code QD. These are deferred until no messages of levels 1, 2, or 3 are waiting for transmission. However, level 4 messages are delivered not later than the morning following the day they were handed in for transmission.

Note: In general, within a given level, the order of transmission is determined by the order of receipt, that is first in first out (FIFO). However, due to network structure and technical constraints, it is possible for messages of the same priority to arrive in a different order.

Traffic Protection and Continuity Control

Protection of messages is assumed by the protocol used. Type B is always protected, the type of protection depends on the protocol.

Type B messages are fully protected inside the SITA Network. In addition, input and output are protected by various methods, for example serial numbering (freewheeling circuits) and an end-to-end protocol called BATAP (Type B Application to Application Protocol).

Serial Numbering

Serial numbering is used on point-to-point (TTY, MSL, and LSC) circuits. Each message must be identifiable by its serial number within the sequence of messages transmitted. This means that once a serial number has been assigned to a message which is either partly or completely transmitted, that serial number is not re-assigned.

Where practical, the serial number is included in the heading or communications control information of each individual message.

The serial number is composed of 3 digits from 001 to 000 (1000). If the serial number reaches 000 then the numbering recycles to 001 for the next message.

From SITA to Network User

At 00.00 hours UTC the serial number is set to 001 and the SITA MHS generates a midnight continuity check.

The SITA MHS will also generate a continuity check when no message is received for 30 minutes, if this option has been selected by the user. See the section Continuity Check generated by SITA MHS on page 3-16.

If a message is received with a serial number out of sequence or without a serial number, the MHS takes the following action:

1. Handles the message normally
2. Sends a serial number error message to the originator and to the information position in the operations room

The text of the serial number error message has the following format:

EXP *expected serial number, preceded by circuit number if required*
RCV *serial number received, preceded by circuit number if required*
or
NO SRL NR *if the serial number was missing*

Figure 3.6 gives an example of a serial number error message. The last 3 digits are the serial number. The first digit is the circuit number; this is always 0 for single circuit connections.

```
QU AMSTOLH
.AMSXMXS 100900
EXP 0008
RCV 0003
=
```

Figure 3.6 Serial Number Error Message

Periodic Continuity Check

A SITA MHS will generate a periodic continuity check only if the option has been implemented. The default option is no continuity check.

A continuity check can be initiated and inhibited either by the user or the SITA MHS.

Continuity Check generated by SITA MHS

If the continuity check option has been implemented, the SITA MHS checks the serial numbers last transmitted and last received on all circuits at thirty minute intervals, at H+00 and H+30.

If, on a given circuit, between the preceding check and the one being made, the serial numbers have advanced on reception as well as on transmission, the MHS takes no further action.

If, on a given circuit, between the preceding check and the one being made, the serial numbers have not advanced on reception or on transmission or on both, the MHS sends a status message to the user.

The text of the status message has the following format:

LR....*serial number last received on each circuit, preceded by circuit number if required*
LS....*serial number last sent on each circuit*
or
LS THIS MSG NR (in the case of a single circuit)

Figure 3.7 and Figure 3.8 give examples of status messages from a SITA MHS.

```
QU PARXTAT
.PARXMXS 212359
LR      LS
0088    330
=
```

Figure 3.7 Single-circuit Status Message from SITA MHS

```
QU PARTOLH
.PARXMXS 212359
LR      LS
1806    921
2730    789
=
```

Figure 3.8 Multi-circuit Status Message from SITA MHS

Additional Rules for Delivery of SS and QS Messages

The following additional rules apply to delivery of SS and QS messages:

1. For each individual SS or QS message delivered, confirmation and exact time of receipt must be obtained from the addressee.
2. If confirmation and exact time of receipt are not received within ten minutes, the station of delivery must inform, by telephone, the person(s) named as being responsible for reception of SS and QS messages.
3. The local SITA Network user representative is responsible for supplying the station with any relevant information, for establishing a list of the persons responsible for receipt of SS and QS messages, and for keeping the list up-to-date.

Chapter

4

Machine-readable Messages

This chapter explains the machine-readable messages that can be sent by a user to SITA. Machine-readable messages contain commands that are carried out automatically by a computer system. The messages are divided into two categories as follows:

- messages to a SITA MHS that contain message handling commands
- messages to a SITA service that contain commands specific to that service

Within each category, the information is arranged in alphabetical order of the message text. The following information is given for each message:

- purpose
- example
- response
- restrictions (if any)

Service Messages to a SITA MHS

This type of machine-readable message must be addressed to the SITA MHS which must act on the command contained in the message. The addressee indicator must be composed of the following elements in the order shown:

- The 3-character location identifier of the MHS.
  For example, PAR.
- The office function designator XM.
- The airline/organisation designator XS.

Note: XMXS is used only for machine-readable messages.

The address section can include additional addresses.

The command to the MHS must appear within 200 characters of the start-of-address signal. See the section Unrecognisable Command on page 4-2.

Additional information, for example for tracking purposes, can be added by the user starting on the line following the command. This is not read as part of the command.

Unacceptable Messages

A machine-readable service message can be rejected for the following reasons:

- unauthorised user
- unrecognisable command

Unauthorised User

If the network user is not authorised to use service messages, the message is rejected as illegal. The reason for rejection is given as one of the following:

- ILLEGAL
- YR *cnnn* RETURNED DUE TO ILLEGAL SVC MESSAGE

Where '*c*' is the circuit number and '*nnn*' is the serial number, if any.

Unrecognisable Command

If the machine-readable message is unrecognisable or the parameters provided in the request fields are incorrect or missing, the message is returned to the originator. The reason for rejection is given as one of the following:

- ILLEGAL
- PLS RPT YR *cnnn* DUE TO INCORRECT SVC MESSAGE

Where '*c*' is the circuit number and '*nnn*' is the serial number, if any.

BACKLOG

This message is sent to the local SITA MHS by the network user to request information on the number of messages waiting to be delivered to them.

```
QU LONXMXS
.PARNMXS 171418
BACKLOG
=
```

Figure 4.1 BACKLOG Service Message

This example requests information on the number of messages waiting to be delivered to the destination PARNMXS.

Response

The MHS replies by sending a Backlog Report that shows the number of messages of each priority level waiting to be delivered.

```
QU PARNMXS
.LONXMXS 171417
BACKLOG
QC 0000
QU 0000
QN 0004
QD 0006
```

Figure 4.2 BACKLOG Report

Restrictions

BACKLOG is not available to Telex or MSL users.

CONT OFF

This message is used to suspend the continuity check carried out by the local SITA MHS for the circuit on which the message is received.
See also CONT ON.

```
LONXMXS
.LONTOLH 291719
CONT OFF
=
```

Figure 4.3 CONT OFF Service Message

Response

The MHS will stop the half-hourly continuity checks on the circuit on which the CONT OFF message is received.

Restrictions

CONT OFF is only valid for connections that use serial numbering.

If the connection is multi-circuit, the continuity check is stopped for all circuits in the group.

CONT ON

This message is used to establish a half-hourly continuity check by the local SITA MHS for the circuit on which the message is received.
See also CONT OFF.

```
LONXMXS
.LONTOLH 291719
CONT ON
=
```

Figure 4.4 CONT ON Service Message

Response

The MHS will start half-hourly continuity checks on the circuit on which the CONT ON message is received.

Restrictions

CONT ON is only valid for connections that use serial numbering.

If the connection is multi-circuit, the continuity check is implemented for all circuits in the group.

GA

This message is used to notify a computer centre that transmission can resume on a circuit that has been temporarily out of service. See also STOP, as GA is normally used after a circuit has been deactivated using STOP.

The format of the text section is as follows:

GA *circuit number* (if required)

Figure 4.5 gives an example of a GA service message for a single-circuit or for all circuits of a multi-circuit connection and Figure 4.6 gives an example of a GA service message for a specific circuit of a multi-circuit connection, in this case circuit number 3.

```
QU PARXMXS
.ISTXTXS 131123
GA
=
```

Figure 4.5 GA Service Message for a Single-Circuit or for All Circuits

```
QU FRAXMXS
.SXFXTXS 131123
GA 3
=
```

Figure 4.6 GA Service Message for a Specific Circuit

Response

In response to the GA message, the computer centre will immediately resume transmission on the specified circuit(s).

Restrictions

GA cannot be used for telex connections.

The message will be rejected as "illegal" if the command specifies a circuit number that does not exist.

RPT ALL

This message is used to request the retransmission of all messages after the last one correctly received.

The format of the text section is as follows:

RPT ALL *time of delivery (TOD) of last message correctly received*
serial number of the last message correctly received, preceded by the circuit number origin section of the last message correctly received (optional)

Figure 4.7 gives an example of a RPT ALL service message.

```
AMSXMXS
.AMSTOIB 271245
RPT ALL 261930
0652
=
```

Figure 4.7 RPT ALL Service Message with TOD

This example requests the retransmission of all messages after the message with time of delivery 261930 (7.30 p.m. on the 26th) and serial number 652. The connection is single-circuit, therefore the circuit number is 0.

Response

If the RPT ALL is for the same day, the SITA MHS will retransmit all messages originally transmitted between the message specified and the last message sent at the time the RPT ALL message was received.

If the RPT ALL is for a previous day, the MHS will retransmit all messages originally transmitted between the message specified and midnight of the specified day.

Restrictions

RPT ALL is not valid for Telex, ACS, or Synchronous SITATEX correspondents.

A maximum of 50 messages will be retransmitted.

A single RPT ALL can only repeat messages for the same day, the TOD range must not cross midnight.

A single RPT ALL cannot cover a series of messages within which the serial number was reset to zero. Two RPT ALL messages would have to be used.

RPT BTN (serial number)

This message is used to request a retransmission of all messages between two messages correctly received.

The format of the text section is as follows:

RPT BTN *time of delivery (TOD) of last correctly received message*
serial numbers of the two messages correctly received, preceded by the circuit number
origin sections of the two messages correctly received (optional)

Figure 4.8 gives an example of a RPT BTN service message.

```
FRAXMXS
.FRAXQSR 271230
RPT BTN 270930
1028 040
=
```

Figure 4.8 RPT BTN Service Message using Serial Numbers

This example requests retransmission of the messages with serial numbers between 028 and 040 that were received on circuit number 1 of a multi-circuit connection. The time of delivery of the last correctly received message is 270930 (9.30 a.m. on the 27th).

Note: The serial numbers specified are **exclusive**. This example will result in the retransmission of the messages numbered from 29 to 39.

Response

The SITA MHS will retransmit all messages with a serial number between the two message serial numbers specified.

Restrictions

RPT BTN using serial numbers is not valid for Telex, ACS, or Synchronous SITATEX correspondents.

RPT BTN can only be used if the number of messages to be retransmitted does not exceed 50.

A single RPT BTN (serial numbers) can only repeat messages for the same day.

A single RPT BTN (serial numbers) cannot cover a series of messages within which the serial number was reset to zero. Two RPT BTN messages would have to be used.

RPT BTN (time of delivery)

This is the only machine-readable service message that can be used by Telex correspondents to request the automatic retransmission of one or more messages.

The format of the text section is as follows:

RPT BTN TOD TOD *times of delivery (TOD) of the two correctly received messages*
circuit number (where applicable)
origin sections of the two messages correctly received (optional)

Figure 4.9 gives an example of a RPT BTN service message for Telex correspondents.

```
FRAXMXS
.FRAXQSR 271230
RPT BTN 270930 271000
=
```

Figure 4.9 RPT BTN Service Message using TOD

This example requests retransmission of all messages with a time of delivery between 270930 and 271000 (9.30 to 10 a.m. on the 27th). The connection is single-circuit, therefore, no circuit number is specified.

Response

The SITA MHS will retransmit all messages with a TOD between the two TODs specified.

Restrictions

RPT BTN (time of delivery) can only be used if the number of messages to be retransmitted does not exceed 50.

RPT BTN (time of delivery) cannot be used by Point-to-Point, MSL, or ACS users.

A single RPT BTN (time of delivery) can only repeat messages for the same day, the TOD range must not cross midnight. Two RPT BTN messages would have to be used.

RPT ONE

This message is used to request the retransmission of a single message.

The format of the text section is as follows:

RPT ONE *time of delivery (TOD)*
serial number, preceded by the circuit number
origin section (optional)

Figure 4.10 gives an example of a RPT ONE service message.

```
QU LONXMXS
.ACCXTXS 151530
RPT ONE 151525
0276
LONRRGH 151525
=
```

Figure 4.10 RPT ONE Service Message

This example requests retransmission of 1 message which has a time of delivery of 151525 (3.25 p.m. on the 15th) and the serial number 276. This is a single-circuit connection, therefore the circuit number is 0.

Response

The SITA message handling system will retransmit the specified message.

Restrictions

RPT ONE is not valid for Synchronous SITATEX, or ACS users.

STAT

This message is used to request information on the traffic status. It is only relevant for connections that use serial numbering.

The format of the text section is as follows:

STAT

Figure 4.11 gives an example of a STAT service message.

```
QU FRAXMXS
.SOFXTXS 212359
STAT
=
```

Figure 4.11 STAT Service Message

Response

The SITA MHS returns a traffic status message using the following format:

LR *serial number last received on each circuit, preceded by the circuit number*
LS *serial number last sent on each circuit*
or
LS THIS MSG NR (only in the case of a single-circuit)

Figure 4.12 gives an example of a traffic status message for multi-circuit direction.

```
QU PARTOLH
.PARXMXS 212359
 LR      LS
1806     921
2730     789
=
```

Figure 4.12 Traffic Status Message for Multi-circuit Direction

This example shows that for circuit 1, the last message received was number 806 and the last message sent was number 921. For circuit 2, the last message received was number 730 and the last message sent was number 789.

For a single-circuit direction, the circuit number is always 0.

Restrictions

STAT is not valid for Telex, Synchronous SITATEX, or ACS users.

STOP

Used to request a computer to suspend transmission on all circuits or on a specified circuit. See also GA, which is used to restart transmission.

The format of the text section is as follows:

STOP *circuit number* (if required)

Figure 4.13 gives an example of a STOP message for a specified circuit, in this case circuit number 3.

```
QU PARXMXS
.ISTXTXS 131117
STOP 3
=
```

Figure 4.13 STOP Service Message for a Specified Circuit

Response

The SITA MHS will stop transmission on the specified circuit.

Restrictions

STOP is not applicable to Telex users.

Messages to SITA Services

This type of machine-readable message contains commands relating to a particular SITA service. In general, one address is defined for each service. The exception is RTX, which currently uses a specific SITA centre in each country where the service is available.

For all SITA services, you can include additional Type B addresses in the address line of the message. The message is sent to the service for processing and is also sent to the additional Type B destinations as a normal Type B message.

The command to the service must appear within 200 characters of the start-of-address signal. Otherwise, depending on the service, the message is either rejected or discarded.

Each of these services is explained in more detail later in this manual.

FAX

This message is used to send a message to up to sixteen fax machine destinations. Figure 4.14 gives an example of a FAX message.

```
QN HDQFAXS
.PARRBXS
FAX 02306123456 3392966400 3155414181

HEADER: TO WHOM IT MAY CONCERN
text of the message
```

Figure 4.14 FAX Message

Response

The FAX service delivers the fax and returns a delivery notification to the originator.

Restrictions

The message must be addressed to HDQFAXS, the FAX server.

FAX is a one-way service. Type B messages can be sent to fax machines but not received from them.

GPS DIRECTORY REQUEST

This message is used to request an up-to-date list of the telephone numbers for SITATEX Gateway Processor Systems (GPS).

Figure 4.15 gives an example of a GPS Directory Request message.

```
QU PARNJXS
.XXXYYZZ
GPS DIRECTORY REQUEST
```

Figure 4.15 GPS Directory Request

Response

The GPS directory service returns a SITATEX message containing the telephone numbers of all SITATEX Gateway Processor Systems and the associated SITA Help Desks.

Restrictions

The message must be addressed to PARNJXS, the GPS directory service.

ROUT (address)

This command is used to request details of the routing for a specified Type B address. Figure 4.16 gives an example of a ROUT message.

```
QN HDQXMXS
.PARXXZZ 123456
ROUT PARYYZZ
```

Figure 4.16 ROUT Message

Note: An extended version of the ROUT command is available to SITA Operations staff.

Response

An acknowledgement message is returned giving the routing information for the specified address. Figure 4.17 shows an example acknowledgement.

```
QN PARXS7X
.HDQXMXS 123457
ACK ROUT PARXS7X
PARIS                    FRANCE

 CTR     ODN         SVC ADD      TYPE     R/I
-----    -----       --------     -----    --------
H-ATL    011123      CAIXXXS      P1124    PARXS7X
H-ATL    002211      QXBBAXS      STX      PARXX7X
H-CAI    0330        FTYXTXS      ACS/     PARXS7X
H-CAI    1234        QXBAJXS      TBC/T    PARXS7X
```

Figure 4.17 Acknowledgement of ROUT Message

The information in the acknowledgement message is given under the following column headings:

CTR The SITA MHS to which the circuit shown under SVC ADD is connected.

ODN The circuit Output Destination Number or Port Identifier (PID).

SVC ADD The circuit name/service address on which the routing address shown under R/I is delivered.

TYPE The type of connection/service, for example: STX for a SITATEX connection or TLX for a Telex connection.

R/I The routing address for which the information was requested.

Note: When the ROUT command is sent from a SITA address, the acknowledgement contains additional information on the internal SITA Network connections.

If the city code is unknown, the reply is as follows:

```
QN PARXS7X
.HDQXMXS 123457
NACK ROUT PXRXS7X
UNKNOWN CITY CODE
```

Figure 4.18 Negative Acknowledgment of ROUT Message

If a company requests routing information for an address belonging to a different company, the reply is as follows:

```
QN PARXS7X
.HDQXMXS 123457
NACK ROUT PARYYKL
COMMAND UNAUTHORISED
```

Figure 4.19 Rejected ROUT Message

Restrictions

The message must be addressed to HDQXMXS.

A company can only request routing information for addresses that belong to the same company, that is routing addresses that have the same company code as the message originator.

Companies with company codes such as CR, XH, XD, HL or 7X can only request routing information for the address corresponding to the originator indicator (signature) of the ROUT message. This is because these company codes represent a group of members or organizations.

RTB

This message is used to send commands to the RTB server, which controls the SITA broadcast service. There are a number of RTB commands that allow the user to set up and maintain lists of addresses and to broadcast a message over the SITA Network, the AFTN, and to fax and telex destinations. Figure 4.20 gives an example of an RTB message.

QN HDQXMXS
.PARNMXS
RTB XMIT LIST1

text of the message

Figure 4.20 RTB Message

Response

The RTB server will process the command and return confirmation to the originator address (signature).

Restrictions

The originator indicator must be identified as an authorised RTB user. This can be either a registered RTB user or a user with the same company code as a registered user.

The message must be addressed to HDQXMXS, the RTB server.

RTX (telex number)

This message is used to send a message to a commercial Telex destination by means of the SITA RTX service. Figure 4.21 gives an example of an RTX message for telex numbers.

QN PARXMXS
.PARRBXS
RTX 12345678

text of the message

Figure 4.21 RTX Message

Response

RTX delivers a Telex to the specified telex destination.

Restrictions

A message can be sent to only one Telex number at a time.

An RTX message must be addressed to only one RTX service centre for action.

The length of the dialling code must be in the range configured for the RTX server being addressed, otherwise the message is rejected as "invalid dial code".

A Telex user is not allowed to transmit RTX messages.

RTX (city)

This message is used to request either one or all RTX Service Centre addresses from the Main Control System (MCS) in Atlanta. The variable *city* allows you to request the RTX Service Centre address for a specific 3-character location code. Figure 4.22 gives an example of an RTX message requesting a service centre address.

```
QN HDQXMXS
.PARNMXS
RTX RTM
```

Figure 4.22 RTX Message Requesting a Service Centre Address

Response

If you specify a location, the MCS returns an acknowledgement giving the address of the RTX Service Centre for that location.

If you do not specify a location, the MCS returns an up-to-date list giving the addresses of all RTX Service Centres.

Restrictions

The message must be addressed to HDQXMXS.

RTX HELP

This message is used to request information on RTX from the Main Control System (MCS) in Atlanta. Figure 4.23 gives an example of an RTX Help message.

```
QN HDQXMXS
.PARNMXS
RTX HELP
=
```

Figure 4.23 RTX HELP Message

Response

The MCS returns an acknowledgement giving information on RTX.

Restrictions

The message must be addressed to HDQXMXS.

Chapter

5

Gateways

Gateways are a combination of hardware and software that fit two kinds of networks together. This chapter explains how messages are transferred to and from the following telecommunications systems:

- Aeronautical Fixed Telecommunications Network (AFTN)
- SMTP and X.400 service (GMS X.400)

AFTN (Aeronautical Fixed Telecommunications Network)

The methods of transferring messages between the SITA Network and the AFTN allow a great deal of flexibility. Although the two networks use different coding systems for addresses, all the codes are translatable in both directions.

Where the local AFTN station does not accept the procedures laid down in the following sections, local arrangements must be made to handle the traffic exchanged between the AFTN and the SITA Network.

The AFTN is a low speed network so the volume of traffic is always limited. The SITA Network user must make an individual arrangement with the AFTN concerning this aspect.

Message Transfer from SITA Network to AFTN

An AFTN circuit is identified as an option at circuit level. There are two ways of sending messages from the SITA Network to the AFTN, as follows:

- Message composed in AFTN format and addressed to SITA location YFXS. This method is recommended for messages to AFTN services which will be handled by a computer.
- Message composed in SITA format and SITA address translated in order to build an AFTN address.

Message Composed in AFTN Format

When it is known that a message will be transferred to the AFTN, the message is composed as follows:

- header in SITA Type B format
- complete message in AFTN format

For details about the AFTN message format, refer to *Aeronautical Telecommunications, Annex 10 to the Convention of Civil Aviation, Volume II, Fourth Edition, April 1985*.

The address in the SITA header must be composed as follows:

- the 3-character location code
- the office function designator YF
- the airline/organisation designator XS

The combination YFXS identifies the message as an AFTN message with a SITA header. The receiving SITA system strips the SITA header from the message and transfers the resulting message to the AFTN. Figure 5.1 shows an example of a message using a YFXS address.

ZCZC 003 251059
QN VIEYFXS
.PARNMXS

GG LOWMYFYX
240900 LFPSSITN
text as required
NNNN

Figure 5.1 Message for Transfer to AFTN using YFXS

Message Composed in SITA Format

All SITA Type B addresses can be translated into AFTN format (location identifier, office function designator, and airline/organisation designator). The message is composed as a normal Type B message as defined in Chapter 2.

Translation of Address - The codes that make up the SITA 7-character Type B address are translated into the AFTN 8-character format as shown in Table 5.1.

Code	Number of Characters	
	SITA	AFTN
Location	3	4
Office	2	1
Company	2	3

Table 5.1 Translation of Address Codes, SITA to AFTN

Details are given in the following documents:

- *SITA Designators Manual (Desman)* for translation of airline/organisation code
- *IATA Airline Coding Directory* for 3-character location codes
- *ICAO Location Indicators* for 4-characters location codes

The 2-character office code used by SITA is translated by keeping the first character. For example, FW becomes F.

Translation of Priority Code - The SITA priority codes are translated as shown in Table 5.2.

SITA Code	AFTN Code
SS	SS
QS	SS
QC	DD
QU	DD
QX	FF
QN	GG
QD	KK
Other	KK

Table 5.2 Translation of Priority Codes, SITA to AFTN

When the message is received at the SITA switching system that serves the AFTN destination, an AFTN header is added by translating the SITA header. The original message is not changed in any way. The resulting message that is transferred to the AFTN is composed as follows:

TRANSLATED AFTN HEADER
ORIGINAL SITA MESSAGE

CAUTION: If the AFTN destination is a computer system that handles machine-readable messages, the presence of a SITA header between the AFTN header and the text can cause problems. In this case, it is better to use the method described in the section Message Composed in AFTN Format on page 5-2.

Message Transfer from AFTN to SITA Network

A message originating at an AFTN station must enter the SITA Network by way of a circuit that has been configured to accept input in AFTN format.

SITA routes the message only to those addresses contained in the first address line. It is recommended that the AFTN message includes a short address line (SAL) containing the addresses that are the responsibility of SITA.

The SITA switching system checks that:

- the format of the AFTN address line is correct
- the address is present in the system translation table
- the message serial number is in sequence

Serial numbering is always used on an input circuit from the AFTN as this is a point-to-point line.

The message handling system then builds a SITA header for the message as follows:

1. Translates the AFTN address line into SITA format. Only the first AFTN address line is translated.
2. Adds the name of the input circuit as the originator indicator.
3. Adds a message identity composed as follows:
   a. the date/time group
   b. one space
   c. the letters AFTN

The SITA header is added to the message and it is transmitted over the SITA Network as a Type B message.

Translation of Address - The codes that make up the AFTN 8-character address are translated into the SITA 7-character Type B address as shown in Table 5.3.

Code	Number of Characters	
	AFTN	SITA
Location	4	3
Office	1	2
Company	3	2

Table 5.3 Translation of Address Codes, AFTN to SITA

Details are given in the following documents:

- *SITA Designators Manual (Desman)* for translation of airline/organisation code
- *IATA Airline Coding Directory* for 3-character location codes
- *ICAO Location Indicators* for 4-characters location codes
- *HLS Table Loader, Annex 4,* for translation of office code

Translation of Priority Code - The AFTN priority codes are translated as shown in Table 5.4.

AFTN Code	SITA Code
SS	SS
DD	QU
FF	QX
GG	QN
KK	QD

Table 5.4 Translation of Priority Codes, AFTN to SITA

AFTN to AFTN over the SITA Network

There are two situations when two AFTN stations might use the SITA Network for communication:

- the SITA Network provides the best route between the two stations
- the AFTN link is out of order and the messages have to be rerouted

Best Route over the SITA Network

When the SITA Network is used as the best route between the two AFTN stations, a SITA header is added to the message on input. See the section Message Transfer from AFTN to SITA Network on page 5-5.

When the message arrives at the local SITA switching system for output on an AFTN circuit, the message header is checked for the sequence AFTN in the message identity. The AFTN sequence identifies the message as being in AFTN format with a SITA header. The SITA header is stripped and the message is delivered without further changes.

Reroute over the SITA Network

When AFTN messages have to be rerouted over the SITA Network, the originating AFTN station adds a diversion line to the message. This diversion line consists of the letters VVV.

SITA has a prerouting table for messages originating from AFTN stations. This table gives the rerouting address to be used for each AFTN station. When an AFTN message containing a VVV diversion line is received, the message handling system adds a SITA header composed as follows:

- alternative destination address given in prerouting table
- the name of the input circuit as the originator indicator
- date/time group
- one space
- the letters AFTN

The procedure for delivery to the alternative AFTN station is the same as described in the section Best Route over the SITA Network on page 5-7.

X.400

GMS (Global Messaging Services) provides Type B users with the ability to send messages transparently to X.400 systems.

GMS gateway facilities include address mapping between Type B and X.400. This means that Type B users do not have to make any changes to their messaging systems or applications.

Sending Type B Messages to X.400 Destinations

There are two methods for addressing an X.400 destination:

- Address Mapping
- In-text Addressing

These two methods can be mixed in the same Type B message.

Address Mapping

The X.400 recipient can be addressed using a standard Type B address. The GMS gateway service converts the Type B address to an X.400 address that is preregistered on the service. This method is recommended when application messages are involved, for example machine-generated and machine-processed messages.

Address Mapping has to be requested by X.400 users when they first connect to the GMS gateway. The gateway is then completely transparent to Type B users. There are already a large number of people using this facility to send Type B messages to X.400 users without being aware of it.

In-text Addressing

The X.400 address is specified in the text of the Type B message. This method is suitable for Type B users sending messages to a wide range of X.400 addresses.

In-text X.400 addresses are not counted in the maximum of 32 addresses to which a Type B message can be addressed.

The Type B message is sent to the GMS X.400 gateway. GMS X.400 gateway processes the in-text address(es) to create the X.400 address(es). Preregistration of addresses on the service is not required.

Note: In SITATEX 4, the Extended Addressing facility automatically creates the in-text addressing line in the correct position and format.

Type B Address for the GMS X.400 Service

The default Type B gateway address for sending Type B message to the GMS X.400, FDS, Telex, and SMTP services is:

QXTGWXS

Specific addresses are created for each GMS customer, for example:

QXTGWZZ (for customer ZZ)
or
QXTXZ7X (for customer XZ)

SITA recommends the use of the QXTGWZZ format.

These customer addresses can be used for sending messages to the GMS X.400, FDS, Telex, and SMTP services, however, their main use is as the originator indicator (signature) in Type B messages sent out by the GMS X.400 service and will also include supplementary sender/recipient information.

In-text X.400 Address Format

The format used to specify the X.400 address is:

TO *attrib1=value1/attrib2=value2/attrib n=value n*

QN QXTGWZZ
.PARXXXS 123456

TO S=JONES/O=ACCOUNTS/P=COMPANYZZ/A=SITAMAIL/C=WW

SUBJECT: NEXT WORKING GROUP MEETING

THIS IS AN EXAMPLE OF A TYPE B USER (PARXXXS) SENDING A MESSAGE TO AN X.400 USER, MR JONES, AT COMPANY ZZ USING IN-TEXT ADDRESSING.

Figure 5.2 GMS Gateway Services - X.400 In-text Addressing

The parameters A=SITAMAIL/C=WW are the default values for the GMS X.400 service and can be omitted.

In addition to "TO", the tag "CC" is used for copy recipients.

Group Aliasing

Group Aliasing allows the use of simplified in-text addresses. A Group Alias is a convenient way of representing a number of X.400 address attributes that are the same for a group of users, for example a department or location. See Figure 5.3.

SITAMAIL Group Alias Name:
APARTS

X.400 address parameters:
O=ENGINES DIVISION/P=AEROPARTS/A=SITAMAIL/C=WW

Figure 5.3 Group Alias

A Type B user can use the Group Alias instead of all the X.400 address parameters.

Qualifying parameters, for example Surname, are used to ensure that the message is sent to the correct recipient. It is mandatory to specify at least one attribute, even if the Group Alias fully identifies an O/R (Originator/Recipient) name. See Figure 5.4.

X.400 address entered by Type B sender:
TO S=JONES/APARTS

X.400 address created by SITAMAIL:
S=JONES/O=ENGINES DIVISION/P=AEROPARTS/A=SITAMAIL/C=WW

Figure 5.4 Conversion of Group Alias to Full X.400 Address

X.400 address parameters that form part of a Group Alias can be overwritten by specifying a different value in the in-text address. See Figure 5.5.

X.400 address entered by Type B sender:
TO S=SMITH/O=SALES/APARTS

Group Alias 'APARTS' X.400 address parameters:
O=ENGINES DIVISION/P=AEROPARTS/A=SITAMAIL/C=WW

X.400 address created by SITAMAIL:
S=SMITH/O=SALES/P=AEROPARTS/A=SITAMAIL/C=WW

Figure 5.5 Overwriting Group Alias X.400 Address Parameters

Document Transfer from Type B to X.400

SITATEX users can exchange binary files with X.400 users through the GMS X.400 service. The SITATEX document must be addressed to the appropriate Type B address. For SITATEX V3, if Address Mapping is not used, the X.400 recipient address(es) must be indicated in the "Users Comments" field of the SITATEX window. For SITATEX 4, the automatic addressing facilities can be used.

Receiving X.400 Messages

All Type B users are already able to receive X.400 messages from any X.400 system that is connected directly or indirectly (through another service provider, for example MCI) to the GMS X.400 service.

If you want to give your Type B address to an X.400 user so that they can send you a message, then the address format that you should give them is:

c=ww/a=SITAMAIL/o=typeb/s=*cccooaa*

where *cccooaa* is your normal Type B address.

Messages Received from X.400 Systems

When Address Mapping is used, the message is delivered as a normal Type B message.

When Address Mapping is not used, the addresses of the X.400 originator and other non-Type B recipients are included at the end of the message under the heading SUPPLEMENTARY SENDER/RECIPIENTS INFORMATION. See Figure 5.6.

QN LONRBXS
.QXTGWZZ 123456

SUBJECT: NEXT MEETING WITH SITA

This message has been sent from an X.400 system.The GMS X.400 service has processed it for delivery to a TYPE B recipient (LONRBXS). The GMS X.400 service has allocated a TYPE B originator code of QXTGWXS. X.400 address details of the sender and other X.400 recipients are given at the end of the message.

Figure 5.6 Type B Message Received from an X.400 System

If the message has been split during transmission, the X.400 addresses are given at the end of the last part message.

You can use the X.400 address(es) to reply using In-text Addressing. See the section In-text Addressing on page 5-8.

The GMS X.400 service modifies any strings of Type B control characters in an X.400 message, by replacing one character in the string with a question mark (?).

Rejected Messages

There are two basic reasons why the GMS X.400 service will reject a message:

- **X.400 Address Expected in Message Text** - The message is addressed to a QXT gateway address but the message does not contain an X.400 In-text Address.
- **Non-Delivery** - There is at least one X.400 In-text address but GMS X.400 is unable to deliver the message.

X.400 Address Expected in Message Text

If the message does not contain an X.400 address, the GMS X.400 service will return the message with the response:

ERROR: NO ADDRESS FOUND FOR X.400 SERVER QXT*XXXX*

Figure 5.7 gives an example of the rejection message.

```
QN PARRBXS
.QXTYAXS 123456
ERROR: NO ADDRESS FOUND FOR X.400 SERVER - QXTZZ7X

023 123455
QN QXTBI7X CPYXXXX LONRBXS
.PARRBXS 123455
Attention Mr. Jones/ sales
text of message
```

Figure 5.7 No Address Found for X.400 Server

The message is delivered to any Type B copy addresses, in this example LONRBXS.

Non-delivery

If a message has at least one X.400 address in the text, but cannot be delivered by the GMS X.400 gateway, a non-delivery notification is sent back to the originator. The rejection message format is shown in Figure 5.8.

```
QN PARRBXS
.QXTGWXS 123456
Non-Delivery Report


YR PARRBXS 123455
NOT DELIVERED TO INTENDED RECIPIENT(S):
S=DUPOND/G=PIERRE/O=AEROSPACE/P=AERO1/A=SITA/C=WW
CAUSE: reason for non-delivery
```

Figure 5.8 GMS X.400 Non-delivery Notification

Reasons for Non-delivery

The possible reasons for non-delivery are:

Reason	Explanation and Action
Ambiguous O/R Name	The X400 address provided is insufficient to identify the required recipient. Check the address.
Content Too Long	Certain X.400 systems have a transfer size limitation in terms of the number of characters accepted in one message. Reduce the number of characters in the message and resend it. The normal limitation is 2 Mb. Shorten the message.
Invalid Parameters	There are incorrect or unsupported parameters in the X.400 address. Check the address.
Loop Detected	GMS X.400 or another X.400 system has detected the message looping between X.400 systems. The looping is caused by incorrect internal routing. Notify the support group immediately.
Maximum Time Expired	The called X.400 system does not answer. This message is generated after a (configurable) number of retries. Notify the support group immediately.
MTA Congestion	A destination or remote X.400 system is temporarily busy and is unable to accept the message. Try again. If the problem persists, notify the support group.
UA Unavailable	The X.400 message cannot be delivered because the local User Agent workstation is unavailable. Try again.
Unknown Group Alias	The X.400 address has been written incorrectly or uses an abbreviated address (Group Alias) that is not recognised by the GMS gateway. Check the address.

Reason	Explanation and Action
Unrecognised O/R Name	The GMS gateway is unable to route and deliver the message because either the message is incorrectly addressed or the routing is not defined in the GMS X.400 service or a subsequent X.400 system. Check the address.
Type B Error or Rejection Messages	Standard Type B responses such as "NO DISPOSAL" and "UNKNOWN ADDRESS" are generated by SITA switching systems and received by the message originator. See the section Message Acceptance on page 3-1.

Interconnected X.400 Services

The Type B service is able to send messages and binary files to users on other X.400 ADMD services using the GMS Gateway. Please refer to the GMS Gateway and GMS X.400 Service Descriptions for further details.

Chapter

6

Bridges

A bridge is a device that connects two local area networks (LANs) or two segments of the same LAN. Bridges are protocol independent; they forward packets without analysing and rerouting messages.

This chapter explains how messages are transferred to and from the following telecommunications systems using bridges:

- Facsimile Service (BFAX)
- Public Telegraph Network (PTN)
- SITA Broadcast Service (RTB)
- Telex Network (RTX)

BFAX Service

The BFAX service is a bridge system between the Type B network and Facsimile networks (private and public). The BFAX service consists of a number of servers that allow a SITA Type B network user to access any Group III Fax machine using the telephone line.

Fax messages are transmitted on the SITA Network and then delivered to the recipient fax number. The BFAX service manages the delivery to the fax number including retries for busy or poor line conditions.

Important: The BFAX service is a unidirectional service that only allows messages to be sent to fax machines. Messages sent using the BFAX service must contain the originator's own fax number in order to allow the fax destination to reply if necessary.

The BFAX service is not available to Telex users.

Once the BFAX server has processed the message, it notifies the originator, see Delivery Notification on page 6-5. If the BFAX server is unable to process the message, the originator receives notification that the message has been rejected, see Rejected Messages on page 6-7.

Messages Intended for Delivery to Fax Machines

Messages for delivery to fax numbers are composed as Type B messages (see Chapter 2), however, they must also include the following elements that are specific to the BFAX service.

- BFAX server address
- Origin section with restricted format
- Fax numbers
- Fax cover page (optional)
- Message text

Fax Server Address

The message must be addressed to HDQFAXS. The address section can also include up to 31 other Type B addressee indicators. The message can be sent to fax numbers and Type B destinations at the same time.

Restricted Origin Section

The origin section must include a message identity consisting of the date/time group.

Fax Numbers

SITATEX users can simply select FAX attribute, and specify a fax destination in the Extension box during address section composition. The server address HDQFAXS is automatically added to the address section. The FAX command line, first and last names (optional) are added in the text.

A maximum of 16 fax machines can be addressed in one message. The destination fax numbers are given in one or more FAX command lines. The FAX command line(s) should be the first element of the text section; however, if the PDM indicator is required, it must appear before the FAX command line(s).

The FAX command line consists of the following elements in the order shown:

- The keyword FAX
- At least one space
- A list of up to 8 CCITT-compliant fax destinations separated by at least one space

Each destination is composed of CCITT country code, area code, and telephone subscriber number of the fax machine.

All three components are necessary even if the destination fax machine is in the same country or city as the originator.

The prefix or special characters (including embedding space) is not allowed. For example: FAX 17708505390

An example of incorrect addressing would be 011-1-770-850-5390, or +00442085727984

The complete number must be 7 digits or longer.

If more than one fax number is included, each number must be separated by a space. If there are more fax numbers than can fit on one line, additional FAX command lines can be included up to the maximum of 16 fax numbers.

Any duplicate fax numbers will be ignored and the message will be faxed only once. Any fax numbers beyond the first 16 numbers will be ignored. Fax numbers must be CCITT-compliant (that is, 7 up to 20 digits long).

A fax broadcast feature is already available on BFAX when used in conjunction with RTB where users can maintain their own broadcast database through RTB commands.

Fax Cover Page

To add a cover page to the fax message, type one or several Header lines after the FAX command line. A Header line consists of the keyword HEADER: or HEADER followed by the text to be included on the front page.

Important: The keyword HEADER must be immediately followed by a colon or a space.

Both the FAX and HEADER lines do not need to be at the start of or close to the text as long as they are preceded by lines beginning with recognised keywords such as ATTN, TO, FROM, FM, COPY, CC, BCC, SUBJECT, etc..

There is no limit to the number of Header lines that can be included. Long messages are split into 3800-character parts (configurable length by SITATEX software) before submission to the Type B network. The BFAX service will reassemble them before sending to fax machines.

An option is available to change the cover page for Host users. This allows the SITA logo to be replaced by a customer's logo.

Message Text

Type the text after the FAX and HEADER lines and transmit the message as a normal Type B message.

Delivery to Fax Destination

When the message is received at HDQFAXS, the BFAX server, all parts, if any, are collected and reassembled before conversion into fax format. As many pages as necessary are generated with a page break every 62 lines. The Type B message address section and origin section are included as part of the first page, so if a particular presentation is required this must be taken into account when composing the original message.

If a cover page has been specified, it is added. The Header lines appear on the cover page and are deleted from the first message page.

The BFAX service will manage the delivery to the fax numbers, including retries for busy and poor line conditions. The rate for retries is currently 8 calls every 2 minutes.

Delivery Notification

Once the message has been processed, the BFAX service returns a positive, negative, or combined delivery notification to the originator. There are 4 types of notification issuance as follows:

1. Default Notification - either positive or negative result
2. Positive Notification - issuance upon positive delivery only
3. Negative Notification - issuance upon negative delivery only
4. No Notification at all

The following status messages are used in the delivery notification.

DELIVERED
The message has been successfully delivered. This is the normal acknowledgement received from a fax machine.

NOT DELIVERED: NO ANSWER
Communication cannot be established with the destination fax machine for one of the following reasons:

- the fax number is always busy, does not answer, or is in error
- there are errors on the line
- the fax machine is disconnected from the phone line
- the fax machine is malfunctioning, out of paper, etc.

NOT DELIVERED: HUMAN RESPONSE, PLEASE CHECK
Please check the fax number. When dialling this number, the normal answer for a fax machine is not received. This may be caused by:

- noise on the line
- a voice number instead of fax has been specified
- the number has been disconnected, changed or is out of service

- it could be a shared voice/fax number where the fax function takes control too late due to various reasons such as too long greeting message, fax machine setup to wait for too many rings, etc. BFAX is set to wait for fax response tone (CED signal) within 40 seconds from dialling.

The originator is encouraged to dial the number manually to check its validity.

NOT DELIVERED: BAD PHONE NUMBER
The FAX server cannot interpret the phone number or the phone number is invalid. Please check the phone number. This may be because:

- The fax number is shorter than 7 or longer than 20 digits long
- There is/are non-numeric character(s) in it such as alphabet, dash, plus, left/right parenthesis, etc.

NOT DELIVERED: COUNTRY NOT CONFIGURED
Delivery to this country is not available using the BFAX service. This may be due to:

- An invalid or unknown CCITT country code. Most of the time, it is due to dialling prefix specified in front, no country/area codes specified (only telephone subscriber), etc. . For examples, 00442085727984, 017708505390.

NOT DELIVERED: AREA NOT CONFIGURED
Delivery to this area is not available using the BFAX service.This may be due to:

- an invalid or unassigned area code

NOT DELIVERED: COUNTRY NO AUTOMATIC ACCESS
The number provided cannot be dialled automatically.

NOT DELIVERED: PLEASE CONTACT BFAX USER SUPPORT
There is an error in the message or database file. This may be due to:

- an unauthorised user

NOT DELIVERED: DISABLED PHONE NR IN RED LIST

All servers are barred from further dialling this residential voice number. It has been put in the red list in response to its owner's complaints. The sender is obliged to immediately stop addressing the number.

NOT DELIVERED: POSSIBLE PARTIAL DELIVERIES
A number of transmission errors have been detected which may have caused partial reception at the destination.

NOT DELIVERED: BAD SITAFAX ADDRESS
The SITAFAX destination is no longer recognised.

SEE OTHER NOTIFICATIONS
This status message may appear in the delivery notification of a message that was addressed to several fax numbers when delivery to all destinations involves multiple BFAX servers and could not be synchronised. It means that a separate notification will be issued by each server.

This report indicates the number is being taken care of by a different server. Each server is assigned its own geographical area of responsibility.

Rejected Messages

If the message cannot be processed by the BFAX service, the server returns a notification message which includes the main rules of fax message composition and the reason for the rejection.

The reasons for rejection of a message by the BFAX service server are as follows:

INVALID MESSAGE
The message format is incorrect.

DATE TIME GROUP NOT FOUND OR INVALID
Date/time group is missing or incorrect.

MISSING/BAD POSITION OF -FAX -SMI
The keyword FAX in the command line is missing or BFAX finds a line with unrecognised keyword before a FAX command line.

NO FAX DESTINATION
The FAX command line does not contain a fax number or BFAX address.

TOO MANY DESTINATIONS (MAX = 16)
The message contains more than 16 fax/BFAX destinations.

USER ADDRESS INHIBITED
PLEASE CONTACT YOUR SITA ACCOUNT MANAGER
The Type B station that sent the message does not subscribe to the BFAX service.

ALL FAX DESTINATION ARE IN RED LIST
All specified fax destination(s) were barred from further dialling and there is no surviving destination to serve.

DOUBLE SIGNATURE NOT ALLOWED
The message is signed with an unauthorised double signature airline code.

PTN (Public Telegraph Network)

For some destinations, normal routing requires a message to be transmitted partly by over the PTN. In other cases, there may be particular reasons for the originator to request transmission over the PTN.

Transfer of a Type B message to and from the PTN is part of the SITA hand-delivery service. See the section Hand-Delivery on page 8-2.

Messages for Transfer to the PTN

Messages for transfer to the Public Telegraph Service must be composed as Type B messages as defined in Chapter 2 of this manual.

Normal Routing Requires Relay over the PTN

A message destined for a location where there is no alternative to delivery via the PTN can be addressed directly to its final destination using the Type B address. The message is automatically routed to the appropriate SITA station for transfer to the PTN.

The PTN telegraphic service indicator should be given on the first line of the text section (before the message identifier and/or the reference group, if any).

Routing over the PTN Requested by Originator

Messages for a location where there is an alternative to delivery via the PTN must be addressed to a predetermined SITA station for transfer to the PTN.

Forwarding details must be given as the first line of the text section (before the message identifier and/or the reference group, if any). The forwarding details must be composed as follows:

- the telegraphic service indicator (URGENT, LT, or none)
- the registered or full telegraphic address

If required, an additional instruction to the transfer station can be inserted before the forwarding details as follows:

- RTP indicating: Relay via Public Telegraph Network
- RTC indicating: Relay via Private Cable Company Network

Handling at the Transfer Station

Messages received over the SITA Network must be recomposed to comply with the local PTT regulations.

Messages received in several parts must be recomposed as one single telegram. The sequence indicators and remarks that may have been repeated in subsequent parts are not transferred.

The Telegraphic Service Indicator

The telegraphic service indicator, if any, is typed as given in the message. If the message does not contain a telegraphic service indicator, one is allocated as shown in Table 5.5.

SITA Code	PTN Priority Level	PTN Indicator
SS, QC, QS, QU, QX	Urgent	URGENT
QN, QK, no code	Ordinary	no indicator
QD	Letter Telegram (deferred)	LT

Table 6.1 Translation of Priority Codes, SITA to PTN

Note: QD is only translated as LT (Letter Telegram) where permissible according to the International Telegraph Regulations.

The Registered or Full Telegraphic Address

For messages addressed to their final destination, the telegraphic address is translated from the addressee indicator according to instructions already given to the transfer station.

For messages addressed to the transfer station, the telegraphic address is taken from the forwarding details given at the beginning of the text section of the message.

Note: If a message is addressed to several departments of the same airline/organisation at the same destination, the station transfers only one message. The various 2-letter office function designators, separated from each other by an oblique (/), are typed as one word at the beginning of the text.

Any other addressee indicators that appear in the address section are not transferred to the PTN.

Notification of other Addresses Served

The following amendments must be made to any list of addressee indicators included by the originator at the end of the text section:

1. CPYXXXX must be shortened to CPY.

2. For online messages, the addressee indicators must consist only of the 3-letter location identifier and the 2-letter office function designator.

The Signature

The signature of the telegram consists of the origin section of the message. The following rules must be observed:

1. In messages received with a double signature, the double signature is not transmitted onward. It is recorded by the transfer station for invoicing purposes.
2. In messages with a reference group at the beginning of the text, only the originator indicator is used as the signature of the telegram. The message identity is omitted.
3. In messages without a reference group at the beginning of the text, the whole origin section is used as the signature. The origin section is typed as one word in the telegram.

Parts of Messages not Transferred to the PTN

The following parts of messages are not transferred:

1. Error correction in the text.
2. The indicators PDM and COR. The text is compared with the original, if it has previously been received.

   If the text is identical, no action is taken.

   If the text has been modified, the PTT (or the organisation concerned) is requested to inform the addressee of the modification.
3. Collation and obvious repetition or confirmation of text sections.
4. The sequence indicators and remarks repeated when a message was received in several parts.
5. Messages with the mention DUPE TO FOLLOW. These are stored until the good copy is received for transfer.

Telegrams for Transfer to the SITA Network

Telegrams for transfer to the SITA Network must be composed in accordance with the International Telegraph Regulations and local PTT rules.

The contents of such telegrams must also conform to SITA regulations regarding the authorisation and acceptance of messages. See Authorisation to use the SITA Network and Messages Used by the Service in Chapter 1.

The Registered Telegraphic Address

Telegrams must be addressed to the predetermined transfer station using the registered telegraphic address TELESITAIR.

The Telegram Text

The text of the telegram must include all the routing details necessary for transmitting the message over the SITA Network.

The priority code and the addressee indicators to be protected over the SITA Network must be given, in that order, at the beginning of the text. If a short address line is included it must be typed before the normal addressee indicators and separated from them by one oblique character (/).

The addressee indicators must be composed in accordance with SITA standards. See Address Section in Chapter 2.

The Signature

The signature of the telegram must consist of the originator indicator to be used on the SITA Network. The originator indicator must be typed as one word at the end of the text. If a message identity is to be included, this is typed as part of the signature immediately following the originator indicator.

Handling at the Transfer Station

If the transfer station considers that the telegram infringes the SITA regulations defined in Chapter 1, Messages used by the Service, it must take the following action:

- If the telegram is originated by an authorised SITA Network user, forward the telegram by commercial means at the originator's expense.
- If the telegram originator is not an authorised SITA Network user, refuse to accept the telegram and request the PTT or organisation concerned to advise the originator accordingly.

Telegrams received over the PTN must be recomposed in accordance with SITA regulations before being transferred to the SITA Network.

The Address Section

The address section must consist of the addressee indicators given at the beginning of the text of the telegram. The address section is preceded by the priority code supplied either by the originator or by the transfer station.

If the originator does not include a priority code, the transfer station assigns a priority code as shown in Table 6.2.

PTN Indicator	SITA Priority Level	SITA Code
URGENT	Urgent	QU
no indicator	Ordinary	no code
LT	Deferred	QD

Table 6.2 Translation of Priority Codes, PTN to SITA

The group CPY, if used in the telegram, must be translated into CPYXXXX in the message.

The Origin Section

The origin section consists of the originator indicator and the date/time group giving the date and time of transfer into the SITA Network. The date/time group is followed by an oblique (/) and then the message identity, as given in the telegram.

When no originator indicator or message identity is given in the telegram, the origin section must be composed as follows:

1. The 3-letter location identifier of the place of origin of the telegram.
2. The 2-letter office function designator "XY".
3. The 2-character alphanumeric airline/organisation designator of the originating SITA Network user.
4. The date/time group giving the time of transfer to the SITA Network. This is followed by an oblique (/) and the date/time group in local time, if any, copied from the telegram.

The Text Section

The text section is composed of the complete text of the telegram, except for the parts which have been used for the composition of the address and origin sections of the message.

RTX (Relay To Public Telex)

The SITA RTX service allows messages to be sent from a Type B station to destinations which can only be served or accessed by commercial telex (PTT). Access to the RTX service is by means of SITA special addresses.

Important: The RTX service is not available to telex users.

RTX is an output service which allows messages to be transmitted to telex destinations. RTX cannot receive a telex for onward transmission to a Type B station.

Type B Messages for RTX

Messages for transmission to telex destinations by RTX are composed as Type B messages as defined in Chapter 2. However, they must include the following elements which are specific to the RTX service:

- RTX address
- RTX command line

RTX Address

An RTX message is a machinable message. The destination address must be composed of the 3-character city destination code plus the letters XMXS.

RTX currently provides only local delivery so the RTX message must be addressed to the relevant SITA centre in the destination country. For example a message intended for delivery to a telex destination in France must be addressed to PARXMXS. See RTX Service Centres on page 6-16.

Only one XMXS destination can be included in each message. However, other Type B addresses can be included. The message is delivered to these other addresses as a standard Type B message.

Note: Currently, ACK/NACK of delivery is only implemented for one specific signature.

Telex Number

The destination telex number is specified in an RTX command line which must be the first line of the text section. The RTX command line must be composed of the following elements in the order shown:

- the letters RTX
- one space
- the destination telex dial-code number

The end of the telex dial-code number can be marked either by a space or a carriage return. The number must conform to the rules of the local PTT administration.

Only one telex number can be included in the command line of each message.

Figure 6.1 shows an example of a message to the RTX service.

```
QN PARXMXS
.PARRBXS
RTX 230612

text of the message
```

Figure 6.1 RTX Message

RTX Service Centres

The addresses of RTX Service Centres can be obtained by sending an RTX enquiry message to the address HDQXMXS. You can request all RTX Service Centre addresses or only the address to be used for sending an RTX message to a specific location.

The enquiry message must be addressed to HDQXMXS.

The format of the RTX command line is as follows:

RTX *city*

city is an optional variable which gives the 3-character location code of the intended destination, for example RTM for Rotterdam.

If you specify a city, you will receive an acknowledgement giving the address of the RTX Service Centre for the specified location.

```
QN HDQXMXS
.PARRBXS
RTX RTM
```

Figure 6.2 Message Requesting One RTX Address

```
QU PARRBXS
.HDQXMXS
ACK RTX RTM
ROTTERDAM   NETHERLANDS

List of RTM RTX deliveries listed by country
COUNTRY        CITY          RTX ADDRESS
NETHERLANDSAMSTERDAMAMSXMXS
```

Figure 6.3 Acknowledgement of Message Requesting One RTX Address

If you do not specify a city, you will receive an acknowledgement giving the addresses of all RTX Service Centres listed by country and city.

```
QN HDQXMXS
.PARRBXS
RTX
```

Figure 6.4 Message Requesting All RTX Addresses

```
QU PARRBXS
.HDQXMXS
ACK RTX
                    Part 1 of 2

List of all RTX deliveries listed by country

COUNTRY         CITY          RTX ADDR
--------------- ------------- --------
ARGENTINA       BUENOS ARIES  BUEXMXS
AUSTRALIA       SYDNEY        SYDXMXS
AUSTRIA         VIENNA        VIEXMXS
BAHRAIN         BAHRAIN       BAHXMXS
BELGIUM         BRUSSELS      BRUXMXS
...
U. S. A.        NEW YORK      NYCXMXS
```

Figure 6.5 Acknowledgement of Message Requesting All RTX Addresses

Delivery to Telex Machines

Messages received at the XMXS address are delivered, in their original format, to the telex number given in the RTX command line.

RTX Help

You can request help by sending an RTX message to the address HDQXMXS. The format of the RTX command line is as follows:

RTX HELP

```
QN HDQXMXS
.PARRBXS
RTX HELP
```

Figure 6.6 RTX HELP

You will receive an acknowledgement giving information on the RTX service.

Chapter

7

Servers

This chapter explains how messages are transferred to and from the SITA Broadcast Service (RTB) using the RTB server.

RTB (Relay Through Broadcast)

RTB allows authorised users to broadcast Type B messages over the SITA and AFTN Networks at the same time by means of broadcast lists. Access to this service is based on the sending of commands to an RTB server. For more information refer to the *RTB User Guide* (Document Code: 213A).

The registration of RTB users is handled by HDQOAXS (Order Entry and Configuration).

RTB Broadcast Lists

There are 2 categories of broadcast list:

- Lists owned by a single registered RTB user. A user list can only be modified by the owner but can be used by all Type B users who have the same 2-letter company code as the owner.
- Lists owned by a given 2-letter company code. A company list can only be modified by the registered company supervisor but can be used by all Type B users who have the same 2-letter company code as the registered supervisor.

There is no limit to the number of lists that a user can create. There is no limit to the number of addresses that each list can contain, however, SITA recommends a maximum of 1500 addresses per list. The same list can contain SITA addresses, AFTN addresses, fax numbers and telex numbers. A list name can contain a maximum of 8 alphanumeric characters.

Registered RTB users can create, delete, display, and modify their address lists. Each user can update their own lists at any time. Company lists can only be updated from a company supervisory station that is defined at the time of registration.

RTB Commands

All access to the RTB server is by means of machinable messages. The messages contain the instructions to the server. The RTB commands are as follows:

- **HELP**

  Returns a message giving help to the user on the use of the RTB service.

  This command is available to non-registered users.

- **ADD** *broadcast-list option*
  address 1
  ...
  address n
  END

  Adds the specified addresses to the named broadcast list. If the list does not exist, it is created. The available options are */M* (multi-address messages, this is the default) and */S* (single-address messages).

  The **END** indicator is optional and only needs to be used if text is likely to be added after the list of addresses.

- **CLEAR** *broadcast-list*

  Deletes all addresses from the named broadcast list. The list is also deleted.

- **COPY** *broadcast-list1 broadcast-list2*

  Creates the new list *broadcast-list2* and copies all addresses from *broadcast-list1* to *broadcast-list2*.

- **DEL** *broadcast-list*
  address 1
  ...
  address n
  END

  Deletes the given addresses from the named broadcast list. If all addresses are deleted then the list is also deleted.

  The **END** indicator is optional and only needs to be used if text is likely to be added after the list of addresses.

- **DISP**

  Returns a message that displays the names of all broadcast lists available to the user.

- **DISP** *broadcast-list*

  Returns a message that displays all addresses contained in the named broadcast list.

- **EXAM**

  Returns a message that lists all registered RTB users with the same company code as the originator of the EXAM message.

  This command is available to non-registered users.

- **EXAM** *user-address*

  An extension of the EXAM command that returns a message listing all broadcast lists belonging to the specified *user-address*.

  This command is available to non-registered users.

- **EXAM** *user-address broadcast-list*

  An extension of the EXAM command that returns a message listing all the addresses in the named *broadcast-list* belonging to the specified *user-address*.

  This command is available to non-registered users.

- **MERGE** *broadcast-list1 broadcast-list2* **TO** *broadcast-list3*

  Creates the new list *broadcast-list3* and copies all addresses from *broadcast-list1* and *broadcast-list2* to *broadcast-list3*.

- **SEARCH** *[user-address] search-address*

  Searches broadcast lists for the *search-address*. To search all lists owned by a specific user, include the *user-address*.

  This command is available to non-registered users.

- **STAT** *identifier*

  Checks the availability of the RTB service. The optional variable *identifier* allows the user to specify an ID of up to 8 alphanumeric characters. The ID can be used to match the command message to the acknowledgement for tracking purposes.

  This command is available to non-registered users.

- **XMIT** *broadcast-list [owner-address]*
  message text

  Sends the message text to all addresses contained in the named broadcast list.

  The *owner-address* must be included if the originator of the command does not own the *broadcast-list*.

  This command is available to non-registered users.

- **XMIT***nn broadcast-list [owner-address]*

  Sends the message text to all addresses contained in the named broadcast list but cancels the message if it is not transmitted within the limit *nn*.

  nn defines the permissible transmission delay in hours from 01 to 12. The starting time for calculating the delay is taken from the date/time group of the XMIT message.

  The *owner-address* must be included if the originator of the command does not own the *broadcast-list*.

  This command is available to non-registered users.

RTB Message Format

Messages to the RTB server are machinable service messages. They must include the following elements which are specific to the RTB service:

- RTB server address
- RTB command line

RTB Server Address

The message must be addressed to HDQXMXS, the RTB server. Other addresses can be included.

RTB Command Line

The instruction for the server is specified in an RTB command line which must be the first line of the text section. The RTB command line must be composed of the following elements in the order shown:

- the letters RTB
- one space
- the RTB command

Only one command can be included in each machinable message.

Figure 7.1 shows an example of a message to the RTB server.

```
QN HDQXMXS
.YYYXXZZ 123456
RTB XMIT list1
text as required
```

Figure 7.1 Message to RTB Server

The server will return an acknowledgement (ACK) confirming that the command has been carried out and including any relevant information. If the command cannot be carried out, the server returns a negative acknowledgement (NACK) containing an explanation.

Chapter

8

Overview of Connection Types

The following chapters describe the connection types available at the time of publication. SITA will receive customer requirements for other connection types and will try to provide these connections wherever feasible.

The currently available connection types for Type B messaging services are:

- AX.25
- MSL - Full-duplex
- MSL - Half-duplex
- P1X24 - P1024 or P1124
- SITATEX Synchronous
- SITATEX "Dial" - X.28 and PSTN
- Telex
- Asynchronous
- X.25
- MATIP
- MQ
- WebAccess

Note: If required, a P1020 connection can also be made available.

For each connection type, the information is given under the following standard headings:

- General Description, including the speed and code
- Services available
- Protocols used
- Message Format, specifically for Heading and Ending
- Message protection methods
- Availability of statistics and automatic performance report

- User options, message handling options implemented at circuit level in the local SITA switching system

Hand-Delivery

SITA also provides hand-delivery of messages where necessary.

The definition of hand-delivery includes the following:

- User's Messenger
- Telegram via PTN (see Chapter 5)
- Mail
- Fax (excluding the BFAX Service)
- Telephone

The following additional rules apply to collection of messages by the user's messenger:

1. A record must be made of messages to be collected.
2. This record must be signed by the recipient when messages are handed over.

Chapter

9

AX.25

General Description

AX.25 is a medium speed connection used for connecting airline reservation or switching systems. The connection is bit-oriented and uses synchronous link control.

Speed - Up to 64 Kb

Codes - Padded Baudot, ASCII

Services

The connection is used to provide an ACS customer service. The ACS service can have access to the following SITA services:

- Gateways to AFTN
- Facsimile Service (BFAX)
- Data Processing
- Global Broadcast (RTB)
- Gateway to Public Telex (RTX)
- Gateway to X.400 Service (GMS X.400) and SMTP
- MQ-enabled Application

Protocols

The AX.25 protocol is a subset of X.25 that ensures the exchange of conventional (Type B), conversational, and other traffic types.

AX.25 is a 2-tier procedure. It uses the P3000/LAP-B protocol at the level of the Data Link Layer and X.25 at the levels of the Network and Transport Layers.

For full details of the AX.25 protocol, refer to Chapter X of the *ATA/IATA Interline Communications Manual* and the SITA *AX.25 on DIS Operational Handbook*.

Message Format

Messages must be composed in accordance with the standard format defined in Chapter 2. No Heading or Ending is required.

Message Protection

Message protection is assumed by the BATAP protocol. See the SITA document *SIHN HLS/MSS - User System Application to Application Type B Protection* (Ref. 100/LP-SN-030).

There is no serial number check on this type of connection.

Statistics and Performance Report

The following statistics are recorded:

- Number of messages received and transmitted
- Number of characters received and transmitted
- Number of data and service blocks received and transmitted

An automatic performance report is generated giving the following details:

- System outage
- Link outage
- Traffic handled

User Options

The following options are available at circuit level:

- Output Address Stripping done prior to output
- Short Address Line added prior to output
  When this option is used, Output Address Stripping cannot be used for the same circuit.
- Multiple delivery - if several addresses contained in the message are destined for the same subscriber, this message will be sent as many times as these addresses occur
- All service messages are sent to the intercept position of the operator room and not back to the subscriber
- Spacing signal in US characters

Chapter

10

MSL - Full-duplex

General Description

MSL (Multi-Station Line) - full-duplex is a low speed multidrop configuration where several stations are connected to the same line.

Speed - The speed ranges from 50 to 600 Baud depending on the SITA equipment to which the connection is made

Code - Baudot

Services

This connection is used to provide a TTY customer service. The TTY service can have access to the following SITA services:

- Gateways to AFTN
- Facsimile Service (BFAX)
- Data Processing
- Global Broadcast (RTB)
- Gateway to Public Telex (RTX)
- Gateway to X.400 Service (GMS X.400) and SMTP
- MQ-enabled Applications

Protocols

The connection supports the 81D1 and S626 protocols. Refer to the following documentation for details of these protocols:

- Bell System 81D1

- *C.W. S626 Description*. Automatic Teleprinter Selective Calling System for use with computer switching centres - January 1978
- SITA document *MSL on Concentrator* (Ref. 100/LP-SN-013)

Message Format

Messages must be composed in accordance with the standard format defined in Chapter 2. The specific formats for the Heading and Ending are described in the following sections.

Heading

The heading is mandatory both for messages transmitted from the MSL station to the SITA Network and from the SITA Network to the MSL station. The heading has the following format:

- The characters ZCZC
- The CDC(s) of the station(s) addressed. Each CDC must be followed by one lettershift
- One space
- The message Serial Number (SNR)
- One space
- An optional Message Identity consisting of the Date/Time Group (TOD)

Note: The sequence CDC LTRS SNR can be repeated if the same message is being sent from the SITA Network to several stations on the same MSL.

Ending

In the absence of a bilateral agreement, this section is mandatory.

For messages from the MSL station to the SITA Network, the ending section consists of the following elements in the order shown:

- figureshift
- the letter H in figure position (this will normally be the symbol #)
- lettershift

For messages from the SITA Network to the MSL station, the ending section consists of the following elements in the order shown:

- carriage return
- the page feed sequence of 4 to 7 linefeeds
- 4 letters N in an uninterrupted sequence, preceded by lettershift when necessary
- a minimum of 5 or 6 lettershifts unless otherwise determined by a bilateral agreement

Message Protection

Transmission protection is assumed by the Polling/Calling techniques of the protocol itself.

A check can be performed on the serial number if it is present.

The HLS generates a midnight continuity check and resets both transmitted and received serial numbers. The midnight check message contains both the last sent (LS) and last received (LR) serial numbers.

Statistics and Performance Report

The following statistics are recorded:

- Number of messages transmitted and received on the MSL trunk
- Number of characters transmitted and received on the MSL trunk
- Number of messages transmitted and received by each MSL station
- Number of characters transmitted and received by each MSL station

No automatic performance report is generated for this type of connection.

User Options

The following options are available at circuit level:

- Output Address Stripping done prior to output

- Short Address Line added prior to output
  When this option is used, Output Address Stripping cannot be used for the same circuit.
- No Time of Delivery added for output
- Multiple delivery - if several addresses contained in the message are destined for the same subscriber, this message will be sent as many times as these addresses occur
- All service messages are sent to the intercept position of the operator room and not back to the subscriber

Chapter

11

MSL - Half-duplex

General Description

MSL (Multi-Station Line) - half-duplex is a low speed multidrop configuration where several stations are connected to the same line.

Speed - The speed ranges from 50 to 600 Baud depending on the SITA equipment to which the connection is made

Code - Baudot

Services

This connection is used to provide TTY or SITATEX customer services. These customer services can have access to the following SITA services:

- Gateways to AFTN
- Facsimile Service (BFAX)
- Data Processing
- Global Broadcast (RTB)
- Gateway to Public Telex (RTX)
- Gateway to X.400 Service (GMS X.400) and SMTP
- MQ-enabled Applications

Protocols

The connection supports the 83B1, 83B3, and S619 protocols. Refer to the following documentation for more information:

- *Bell System Data Communications Technical Reference*. 83B3 teletypewriter Selective Call System. System Operator and Interface Specification - September 1967
- *C.W. S619 Half-Duplex System Facilities Specification* - Issue 6 October 1969
- SITA document *MSL on Concentrator* (Ref. 100/LP-SN-013)

Message Format

Messages must be composed in accordance with the standard format defined in Chapter 2. The specific formats for the Heading and Ending are described in the following sections.

Heading

A heading is not required for a message transmitted from the subscriber to SITA. On a message transmitted from SITA to the subscriber, the heading has the following format:

- The characters ZCZC
- The CDC(s) of the station(s) addressed. Each CDC must be followed by one lettershift
- One space
- The message Serial Number (SNR)
- One space
- An optional Message Identity consisting of the Date/Time Group (TOD)

Note: The sequence CDC LTRS SNR can be repeated if the same message is being sent to several stations on the same MSL.

Ending

In the absence of a bilateral agreement, this section is mandatory.

For messages both from and to the subscriber using the 83B3 protocol, the ending section consists of the following elements in the order shown:

- figureshift
- the letter H in figure position (this will normally be the symbol #)

- lettershift

For messages both from and to the subscriber using the S619 protocol, the ending consists of 4 letters N, that is NNNN.

Message Protection

Transmission protection is assumed by the Polling/Calling techniques of the protocol itself.

A check can be performed on the serial number if it is present.

Statistics and Performance Report

The following statistics are recorded:

- Number of messages transmitted and received on the MSL trunk
- Number of characters transmitted and received on the MSL trunk
- Number of messages transmitted and received by each MSL station
- Number of characters transmitted and received by each MSL station

No automatic performance report is generated for this type of connection.

User Options

The following options are available at circuit level:

- Output Address Stripping done prior to output
- Short Address Line added prior to output
  When this option is used, Output Address Stripping cannot be used for the same circuit.
- No Time of Delivery added for output
- No trailer. A trailer consists of 5 lettershift characters
- Multiple delivery - if several addresses contained in the message are destined for the same user, this message will be sent as many times as these addresses occur
- All service messages are sent to the intercept position of the operator room and not back to the subscriber

Chapter

12

P1X24

General Description

P1X24 can be either P1024 or P1124. P1X24 is used for connecting airline reservation or switching systems. It is a medium speed bit-oriented connection that uses synchronous link control.

Speed - up to 64 Kb according to the SITA equipment to which the connection is made

Codes - Padded Baudot, ASCII

Services

P1X24 is used to provide an ACS customer service. The ACS customer service can have access to the following SITA services:

- Gateways to AFTN
- Facsimile Service (BFAX)
- Data Processing
- Global Broadcast (RTB)
- Gateway to Public Telex (RTX)
- Gateway to X.400 Service (GMS X.400) and SMTP
- MQ-enabled Applications

Protocol

The connection uses the P1024 protocol which is a communications control procedure defined by ATA/IATA. P1024 has two main functions: synchronous link control, and message control. Refer to the *ATA/IATA Interline Communications Manual* for details.

Message Format

Messages must be composed in accordance with the standard format defined in Chapter 2. The specific requirements for the Heading and Ending are described in the following sections.

Heading

No heading is required in either Padded Baudot or ASCII code.

Ending

No ending is required in Padded Baudot.

When using ASCII code, the ETX character is always followed by an EOT character in messages transmitted from the SITA Network to the user. The EOT character is optional in messages transmitted from the user to the SITA Network.

Message Protection

Message protection is provided by a CML (Clear Message Label) Link Control Block. The CML is used even for a single block.

There is no serial number check on this type of connection.

Statistics and Performance Report

The following statistics are recorded:

- Number of messages transmitted and received
- Number of characters transmitted and received
- Number of data and service blocks transmitted and received

An automatic performance report is generated containing the following information:

- System outage

- Link outage
- Traffic handled

User Options

The following options are available at circuit level:

- Output Address Stripping done prior to output
- Short Address Line added prior to output
  When this option is used, Output Address Stripping cannot be used.
- Multiple delivery - if several addresses contained in the message are destined for the same subscriber, this message will be sent as many times as these addresses occur
- All service messages are sent to the intercept position of the operator room and not back to the subscriber
- Spacing signal in US characters

Chapter

13

SITATEX Synchronous

General Description

This connection can be to a stand-alone, a PC cluster station, a LAN gateway, or a SITATEX mail-enabled application.

Speed - 2400 to 19200 bps

Code - ASCII

Services

The connection is used to provide a SITATEX customer service. The SITATEX service can have access to the following SITA services:

- Gateways to AFTN
- Facsimile Service (BFAX)
- Data Processing
- Global Broadcast (RTB)
- Gateway to Public Telex (RTX)
- Gateway to X.400 Service (GMS X.400) and SMTP
- MQ-enabled Applications

Protocol

The connection uses the P1024C protocol. Refer to the SITA document *P1024C Communication Control Specification* (Ref. 100/LP-SD-001) for details.

Message Format

Messages must be composed in accordance with the standard format defined in Chapter 2. Messages do not require either a Heading or an Ending section.

Message Protection

Message protection is assumed by the BATAP protocol. The BATAP used for SITATEX is not exactly the same as used on other types of connections. See the *SITATEX 3 Technical Manual* (Ref. PZ/PC-TN002).

Statistics and Performance Report

Statistics are recorded on the number of messages transmitted and received.

An automatic performance report showing the volume of traffic exchange is sent to operations staff.

User Options

The following options are available at circuit level:

- Output Address Stripping done prior to output
- Short Address Line added prior to output
  When this option is used, Output Address Stripping cannot be used for the same circuit.
- No Time of Delivery added on output

Chapter

14 SITATEX “Dial” (X.28 and PSTN)

SITA currently provides two modes of dial access for the SITATEX service:

- X.28
- PSTN (Public Switched Telephone Network)

However, the SITATEX Dial for X.28 service is progressively replacing the PSTN dial service.

SITATEX for X.28 Dial Service

General Description

This connection provides all SITATEX message and file transfer capabilities. The link is established by dialling one of the SITA X.28 PADs which are available throughout the world. This allows mobile users to connect to the SITA Network by means of a simple telephone call.

The SITATEX Dial software includes a file that lists the telephone numbers for all of the Dial Access systems.

Speed - 1200 to 9600 bps

Code - ASCII

Services

The SITATEX dial service can have access to the following SITA services:

- Gateways to AFTN
- Facsimile Service (BFAX)

- Data Processing
- Global Broadcast (RTB)
- Gateway to Public Telex (RTX)
- Gateway to X.400 Service (GMS X.400) and SMTP
- MQ-enabled Applications

Protocol

This connection type uses the international X.28 standard. A session is established between a SITATEX station and an X.28 PAD.

Message Format

Messages must be composed in accordance with the standard format defined in Chapter 2. Heading and Ending sections are not required.

Message Protection

Message protection is provided by the BATAP protocol. The BATAP used for SITATEX is not exactly the same as used on other types of connections. See the *SITATEX 3 Technical Manual* (Ref. PZ/PC-TN002).

Statistics and Performance Report

The following statistics are available at circuit level:

- Number of messages transmitted and received
- Number of characters transmitted and received

No automatic performance report is generated for this type of connection.

User Options

The following options are available at circuit level:

- Output Address stripping
- Short Address Line

- Multi-delivery allowed
- Spacing signal in US characters
- No reject to user
- Time of Delivery (TOD), yes or no, with month and year except for LSC circuit

X.28 Node Directory

The latest information on X.28 PAD telephone numbers can be requested from the X.28 PAD directory service. The request must be sent as a machine-readable message with the following format:

```
QU JPUUKXS
.XXXYYZZ
X28 DIRECTORY REQUEST
```

Figure 14.1

Note: SITATEX 4 users must delete the optional header information when making this request.

The directory service responds with a message containing the location identifier (city code), the X.28 PAD telephone number, the corresponding Help Desk telephone number and the city name. The telephone numbers are given in the format: *Country Code-City/Area Code-Local Number*.

PSTN SITATEX Dial Service

General Description

This connection also provides all SITATEX message and file transfer capabilities, but at lower speeds than the more sophisticated X.28 service. The link is established by dialling one of the SITA Gateway Processor Systems (GPS) throughout the world.

Speed - 300 to 2400 bps

Code - ASCII

Services

The PSTN SITATEX dial service can have access to the following SITA services:

- Gateways to AFTN
- Facsimile Service (BFAX)
- Data Processing
- Global Broadcast (RTB)
- Gateway to Public Telex (RTX)

Protocol

This connection type uses an asynchronous proprietary protocol for establishing a session between PSTN stations and the GPS. Refer to Appendix D, SITATEX PSTN, of the *SITATEX 3 Technical Manual* (Ref. PZ/PC-TN002) for details.

Message Format

Messages must be composed in accordance with the standard format defined in Chapter 2. Heading and Ending sections are not required.

Message Protection

Message protection is assumed by the BATAP protocol. The BATAP used for SITATEX is not exactly the same as used on other types of connections. See the *SITATEX 3 Technical Manual* (Ref. PZ/PC-TN002).

There is no serial number checking on this type of connection.

Statistics and Performance Report

The following options are available at circuit level:

- Number of messages transmitted and received
- Number of characters transmitted and received

No automatic performance report is generated for this type of connection.

User Options

The following options are available at circuit level:

- Output Address stripping
- Short Address Line
- Multi-delivery allowed
- Spacing signal in US characters
- No reject to user
- Time of Delivery (TOD), yes or no, with month and year except for LSC circuit

GPS Directory

The latest information on GPS telephone numbers can be requested from the GPS directory service. The request must be sent as a SITATEX machine-readable message with the following format:

```
QU PARNJXS
.XXXYYZZ
GPS DIRECTORY REQUEST
```

Figure 14.2

The GPS directory service responds with a message containing the up-to-date list of the telephone numbers for all GPSs and the corresponding SITA Help Desks.

Chapter

15 Telex

General Description

A Telex connection provides access to public telex networks around the world. It simplifies the exchange of messages between the airlines and their many industry correspondents who may or may not be SITA Network users.

The connection to a concentrator is always made by means of a TANU (Telex Answering and Numbering Unit).

Frequently used correspondent telex numbers can be mapped to SITA codes in the MHS tables. This allows SITA Network users to continue to use familiar SITA 7-character addresses while sending to off-network destinations.

Speed - 50 Bd

Code - Baudot

Services

This connection is used to provide a Teletype (TTY) customer service. The TTY service can have access to the following SITA services:

- Gateways to AFTN
- Facsimile Service (BFAX)
- Data Processing
- Global Broadcast (RTB)
- Gateway to X.400 Service (GMS X.400) and SMTP
- MQ-enabled Applications

Note: The RTX service is not available to Telex users.

Protocol

The connection uses the ATA/IATA Telex and Interface Exchange protocols. Refer to the *ATA/IATA Interline Communications Manual* for details.

Message Format

Messages must be composed in accordance with the standard format defined in Chapter 2. The specific formats for the message Heading and Ending are described in the following sections.

Heading

The heading contains the elements needed for communications control on a given circuit and must not exceed one line containing a maximum of 69 characters.

The standard heading may be simplified, depending on the mode of operation of a circuit, and subject to a bilateral agreement.

Standard Heading

The standard heading must be composed of the following elements in the order shown:

- start-of-message signal
- circuit identification
- message serial number (optional for subscriber)
- supplemental information
- spacing signal

Start-of-Message Signal (mandatory)

The start-of-message signal identifies the beginning of a message. The signal consists of one of the following:

- the characters ZCZC followed by one space
- CR LF

Circuit Identification (optional)

This identifies the circuit on which the message is transmitted. The circuit identification consists of one of the following:

- Three letters of which the first one identifies the transmitting end, the second one the receiving end, and the third one the number of the channel
- One figure preceded by a figureshift. The figure identifies the number of the channel when more than one channel is operated between the same centres

Do not leave a space between the circuit identification and the message serial number which follows it.

Message Serial Number (optional)

This element is optional for the subscriber as any continuity check is done on the trunk Telex and not on the individual user's connection. The message serial number identifies each individual message within a sequence of messages transmitted. The serial number consists of three figures in the range 001 to 000 (representing 1000).

If the preceding signal was in lower case (Letters), the message serial number must be preceded by one figureshift.

Supplemental Information (optional)

This allows the inclusion of additional information relating to the message header which is not provided in any of the other heading elements. The supplemental information is preceded by one space.

If this section is used to provide time of delivery information (TOD), this is composed of the following elements in the order shown:

- Day: 2-figure group
- Time in UTC: 4-figure group

Spacing Signal

The spacing signal signifies the end of the heading. It consists of 5 spaces.

Simplified Heading

The simplified heading is composed of the following elements in the order shown:

- CR
- LF

Ending

In the absence of a bilateral agreement, this section is mandatory.

The ending section consists of the following elements in the order shown:

- one carriage return
- the page feed sequence composed of 4 to 7 linefeeds
- 4 letters N in an uninterrupted sequence, preceded by one lettershift when necessary
- a minimum of 5 or 6 lettershifts unless otherwise determined by a bilateral agreement

Message Protection

Message protection is assured by 2 Telex answerbacks exchanged once at connection time and again before disconnecting.

If required, a continuity check can be done on the trunk telex. There is no option to have a continuity check done on the user's connection.

Statistics and Performance Report

At HLS level statistics are recorded on the number of messages transmitted and received on each telex trunk.

No automatic performance report is generated for this type of connection.

User Options

The following options are available at circuit level:

- Output Address Stripping done prior to output
- Short Address Line added prior to output
  When this option is used, Output Address Stripping cannot be used for the same circuit.
- No Time of Delivery added on output

Chapter

16

Asynchronous

General Description

The asynchronous connection type is a Point-to-Point Telegraphic connection in which a link connects only 2 centres (a station to a SITA centre), as opposed to the multidrop line configuration in which several stations are connected to the same link.

Speed - 50 to 9600 Bd

Codes - Baudot, ASCII

Services

The connection type is used to provide an asynchronous customer service, for example connection of a TTY or PC. This customer service can have access to the following SITA services:

- Gateways to AFTN
- Facsimile Service (BFAX)
- Data Processing
- Global Broadcast (RTB)
- Gateway to Public Telex (RTX)
- Gateway to X.400 Service (GMS X.400) and SMTP
- MQ-enabled Applications

Note: The version of SITATEX used for this type of connection does not include the document transfer facility.

Protocol

The connection uses the ATA/IATA TTY protocol. Refer to the *ATA/IATA Interline Communications Manual* for details.

Message Format

Messages must be composed in accordance with the standard format defined in Chapter 2. The specific formats for the Heading and Ending are described in the following sections.

Note: The SITATEX application handles the heading and ending automatically.

Heading

The heading contains the elements needed for communications control on the circuit being used for transmission. The heading must consist of only one line containing a maximum of 69 characters.

The composition of the heading may be simplified, depending on the mode of operation of a circuit, and subject to a bilateral agreement.

The complete heading, if used, must be composed of the following elements in the order shown:

- start-of-message signal
- circuit identification
- message serial number
- supplemental information
- spacing signal

Start-of-Message Signal

The start-of-message signal identifies the beginning of a message.

In Baudot code, the signal consists of the characters ZCZC followed by one space.

In ASCII code, the signal consists of the characters ZCZC followed by the SOH character.

Circuit Identification

This identifies the circuit on which the message is transmitted. The circuit identification consists of one of the following:

- Three letters of which the first one identifies the transmitting end, the second one the receiving end, and the third one the number of the channel
- One figure (preceded by a figureshift, if required). The figure identifies the number of the channel when more than one channel is operated between the same centres

Do not leave a space between the circuit identification and the message serial number which follows it.

Message Serial Number

The message serial number identifies each message within a sequence of messages. The serial number consists of three figures in the range 001 to 000 (representing 1000).

In Baudot code, if the circuit identification was in lower case (Letters), the message serial number must be preceded by one figureshift.

Supplemental Information

This allows the inclusion of information relating to the message heading which is not provided in any of the other elements. The supplemental information is preceded by one space.

If this section is used to provide time of delivery information (TOD), this is composed of the following elements in the order shown:

- Day: 2-figure group
- Time in UTC: 4-figure group

Spacing Signal

The spacing signal signifies the end of the heading.

In both Baudot code and ASCII code, the spacing signal consists of a minimum of 5 spaces.

Ending

In the absence of a bilateral agreement, this section is mandatory.

In Baudot code the ending section consists of the following elements in the order shown:

- one carriage return
- the page feed sequence composed of 4 to 7 linefeeds
- 4 letters N in an uninterrupted sequence, preceded by one lettershift when necessary
- a minimum of 5 or 6 lettershifts unless otherwise determined by a bilateral agreement

In ASCII code the ending is composed of the following elements in the order shown:

- CR
- LF
- LF
- LF
- EOT

Note: There must be 3 line feeds (LF) between the carriage return (CR) and end-of-text (EOT) characters.

Message Protection

Message protection is assumed by the protocol and by serial number comparison. A midnight continuity check is carried out.

There is no end-to-end mechanism on this type of connection. The connection operates in pure freewheeling mode.

There is no session mechanism for SITATEX on this type of connection.

Statistics and Performance Report

The following statistics are recorded:

- Number of messages transmitted and received
- Number of characters transmitted and received

User Options

The following options are available at circuit level:

- Output Address Stripping done prior to output
- Short Address Line added prior to output
  When this option is used, Output Address Stripping cannot be used for the same circuit.
- No Time of Delivery added to output
- Multiple delivery - if several addresses contained in the message are destined for the same subscriber, this message will be sent as many times as these addresses occur
- All service messages are sent to the intercept position of the operator room and not back to the originator
- Input Message Acknowledgement (IMA) used

Chapter

17 X.25

General Description

Host systems can now access the SITA Network by means of an X.25 SVC (Switched Virtual Circuit). The standard features of the CCITT X.25 recommendation 1988 (blue book) are supported.

The Type B over X.25 SVC connects by mean of an HPAD (Host Packet assembler/Disassembler) housed in the MHS FEP (Front End Processor). The HPAD function allows the MHS access through X.25.

Note: Type B traffic management over X.25 SVC requires the implementation of the *Specification of SITA Network Access for exchange of Mixed Type A/Type B Transparent traffic over X.25 SVCs* and of BATAP. If requested, the specifications can be provided by SITA.

Speed - Up to 64 Kb

Codes - ASCII, Padded Baudot

Services

The full range of services is available as follows:

- Gateways to AFTN
- Facsimile Service (BFAX)
- Data Processing
- Global Broadcast (RTB)
- Gateway to Public Telex (RTX)
- Gateway to X.400 Service (GMS X.400) and SMTP
- MQ-enabled Applications

Protocol

The standard features of the CCITT X.25 recommendation 1988 (blue book) are supported. In addition, the following optional facilities are offered:

- non-standard default packet size (up to 1024)
- non-standard default window size
- default throughput class assignment
- flow control parameters negotiation
- throughput class negotiation
- call redirection
- hunt group

The protocol conversion between X.25 and the Type B protocol is entirely handled by the HPAD function of the MHS-FEP.

Message Format

Messages must be composed in accordance with the standard format defined in Chapter 2. The Type B message plus the BATAP trailer set up by the host application is encapsulated into X.25 packets.

Message Protection

The BATAP protocol must be implemented by the X.25 host for end-to-end protection. See the SITA document *SIHN HLS/MSS - User System Application to Application Type B Protection*, (ref. 100/LP-SN-030).

Statistics and Performance Report

The following statistics are recorded:

- Number of messages received and transmitted
- Number of characters received and transmitted
- Number of data and service blocks received and transmitted

An automatic performance report is generated giving the following details:

- System outage
- Link outage
- Traffic handled

User Options

The following options are available at circuit level:

- Call direction
  The user can choose the SVC establishment direction. The SVC is either established by the MHS-HPAD at initialisation time and maintained as long as the MHS is available or established by the user host. The two options are not mutually exclusive and in the event of collision, the call from the host is maintained.
- Text code
  The user must specify at the time of subscription whether the text code used is ASCII or Padded Baudot.

Chapter

18 MATIP-Type B (MATIP access to Type B)

General Description

MATIP-Type B (MATIP access to Type B) is being introduced primarily to meet the expressed requirements of the Type B customers for Type B over TCP/IP. It is developed by a working group initiated and led by SITA with the participation of several Airlines and CRS, and with 3rd Party Vendor Support for MATIP including CISCO, IBM, Unisys.

MATIP-Type B (MATIP access to Type B) enables customer hosts running several air transport business applications to access Type B service for business messaging communications using SITA IP-based network services including Intranet Connect, AeroNet, LAN Access, Frame Relay Access.

For this purpose, a standard protocol MATIP (Mapping of Airline Traffic over IP) is developed to support the Air Transport Industry in the migration from proprietary protocols to TCP/IP. MATIP is ratified by IETF (Internet Engineering Task Force) as RFC2351. MATIP provides a common Interface for Type A and Type B with no impact on existing applications.

Once customer applications are linked with BATAP/MATIP, a unique IP connection to the SITA Network for access to Type B service is established that ensures Type B message communications between different applications and with different Type B users and business partners.

BATAP is to ensure reliable delivery of Type B messages between two applications.

MATIP is an end-to-end protocol for the transport of Type B (and Type A) traffic over TCP. It ensures session establishment and closure, and data transfer on top of TCP/IP.

SITA implementation specifications are posted at the SITA web site www.sita.com (search for MATIP), assistance and consultancy can be provided on request.

The customer will continue to benefit from reliability, security, high availability and performance of the Type B service necessary for its operational and mission critical message exchanges.

This chapter provides reference material for MATIP; for detailed, up-to-date specifications, please refer to *Type B ACS Traffic Over TCP/IP, FSD - MZ/OR/B98060004*.

Speed - Depends on local ACS access network connectivity

Code - ASCII

Services

The full range of services is available as follows:

- Gateways to AFTN
- Facsimile Service (BFAX)
- Data Processing
- Global Broadcast (RTB)
- Gateway to Public Telex (RTX)
- Gateway to X.400 Service (GMS X.400) and SMTP
- MQ-enabled Applications

Protocol

The standard features of a TCP/IP network are implemented.

- DNS for service name resolution
- Firewalls for service protection

Message Format

Messages must be composed in accordance with the standard format defined in Chapter 2. The Type B message plus the BATAP trailer set up by the host application is encapsulated in TCP segments.

Message Protection

BATAP (Type B Application to Application Protocol) must be implemented by the MATIP host for end-to-end protection.

See the SITA document *SIHN HLS/MSS - User System Application to Application Type B Protocol*, (ref. 100/LP-SN-030).

Statistics and Performance Report

The following statistics are recorded:

- Number of messages received and transmitted
- Number of characters received and transmitted
- Number of data and service blocks received and transmitted

An automatic performance report is generated giving the following details:

- System outage
- Link outage
- Traffic handled

User Options

The user can choose to act as:

- a CLIENT
- a CLIENT and SERVER

As the client, the ACS is responsible for establishing the connection to the service.

As both client and server, both the ACS and the SITA Switching System may establish the connection.

Chapter

19

MQ-Type B (MQ access to Type B)

General Description

The MQ-Type B service enables customer applications to use MQSeries off-the-shelf package to access Type B and related messaging services over TCP/IP for exchange of business messages as diverse as seat availability, flight plans, spare parts, cargo and several other messages.

Type B messaging is predominantly used for operational messaging in the air transport industry to exchange messages with structured data content between applications. The MQ-Type B service couples large availability of MQSeries with the strength of the SITA Type B service to provide the capability to a wide range of applications within different systems to access Type B and associated services for inter-application communication within and between various air transport companies.

MQSeries is a message-oriented off-the-shelf software package that enables reliable application-to-application message exchanges across heterogeneous systems using IP-based network services. MQSeries is available on several platforms including:

- IBM MVS, TPF, OS/400, AIX
- Microsoft Windows 3.1, 95&98, NT
- Unisys 2200/A and U series
- Sun, SunOS, Solaris
- Compaq OpenVMS, UNIX
- Hewlett-Packard HP-UX
- UNIX

Once customer applications are linked with MQSeries, a unique IP connection to the SITA Network for access to MQ-Type B service is established that ensures Type B message communications between different applications and with different business partners, as well as the use of other complementary services.

An MQ-Type B service enables any customer sending messages from its host to use MQSeries over a wide range of SITA IP-based network services including Intranet Connect, AeroNet, LAN Access or Frame Relay Access to send and receive Type B messages.

The customer will continue to benefit from reliability, security, high availability and performance of Type B service necessary for its operational and business sensitive message exchanges. On the customer MQ interface to MQ-Type B, standard MQ communications and reliability features are used.

Customers can use an MQ-Type B service from wherever they have a dedicated IP connection to the SITA Network (Intranet Connect, LANAS, AeroNet, FR).

Connections via MQSeries may be made from an MQSeries Client or MQSeries Queue Manager to the SITA MQSeries Queue Manager using TCP/IP. Using the features of MQSeries the customer has complete freedom in naming those MQSeries elements under his control.

This access method also allows access to the SITA Type B messaging domain from any platform and using any programming language supported by MQSeries.

Services

In addition to the Type B messaging service, the MQ-Type B may be used to access the following services among others:

- Gateways to other e-mail networks such as SMTP and X400
- Facsimile Services such as BFAX and FDS
- Data Processing
- Global Broadcast (RTB)
- Gateway to Public Telex (RTX)

Protocol

The standard features of a TCP/IP network are implemented such as DNS name service, firewalls and proxies for protection.

Message Format

Although MQSeries has no format requirements for the messages contained within its envelope, this service assumes all messages are legal Type B messages composed in accordance with the standard format defined in Chapter 2.

MQSeries then encapsulates this Type B message within a MQSeries envelope and using the MQSeries high level channel protocol moves the messages over a TCP/IP network.

Message Protection

MQSeries guarantees once and only once delivery. Using Persistent messages, the MQ-Type B service sends all messages as Persistent and requires the customer to do so as well.

Statistics and Performance Report

The following statistics are recorded:

- Number of messages received and transmitted
- Number of characters received and transmitted

An automatic performance report is generated giving the following:

- System outage
- Link outage
- Traffic handled

User Options

Users may chose to connect to SITA using an MQSeries Client or Queue Manager. In addition, message splitting and reassemble or rejection if too big are also available options.

MQ Manager Customer Connection to MQSeries

Each Customer remote queue MQ Manager requires one normal local queue, one local transmission queue, one remote queue definition containing the name of the local transmission queue, and two channels. The channels may have any name but must be the same on both ends. One channel should be a SDR/RCVR channel with a transmission queue name of the local transmission queue.

Note: The mq_GetQueueName is on the SITA queue manager. The mq_PutQueueName is on the customer queue manager.

On incoming messages, the customer always comes in through the proxy on port 1414. MQ Client Customer Connection to MQSeries.

For customers connecting by MQSeries clients there must be two local queues and one SVRCONN channel. There may be a different SVRCONN for each client or one or more clients may use the same SVRCONN channel. No transmission queues are required.

Note: Both mq_GetQueueName and mq_PutQueueName are on the SITA queue manager.

Because there is only a single channel, incoming and outgoing messages both go through port 1414 through the proxy.

Chapter

20 Web-Type B

General Description

Web-Type B is a web based electronic mailbox service associated to the Type B messaging domain. It enables customers to use a web browser (such as Netscape Navigator or Microsoft Explorer) to access the Type B mailbox and exchange messages with Type B users, Internet mail users or for sending messages to fax and telex worldwide.

Web-Type B may be deployed as a stand-alone or through a large or small LAN environment.

Customer mailboxes are accessible by connecting to:
http://typebmail.sita.com using a web browser from a PC or NC.

Web-Type B service is available only over the SITA IP Network, and cannot be accessed over the Internet. Customers can use Web-Type B from wherever they have a dedicated connection to the SITA Network (Intranet Connect, LAN-AS, AeroNet, FR). For Dial access Aeronet dial is available, and PPP dial will be available early in the year 2000

Web-Type B user requires a Type B address on the service, and may also request to have that address configured on SITA Type B gateway in order to exchange messages with Internet or X.400 E-mail users.

Additionally, a simple web interface is designed to enable applications to interface the service for communications with various applications and Type B users.

User Id and password protect access to the mailbox. Every single message send by the customer is uniquely acknowledged and traceable by the service.

The service provides all common e-mail functionalities including:

- view message list (sent and received messages)
- compose message, includes simplified entry for Internet addresses and fax numbers
- view message, view next/previous message
- forward message (quote), reply to message sender or to all
- delete message, delete all messages, sent messages, read messages
- password change with automatic administration confirmation message
- print, copy/paste, and other features through local browser

Services

In addition to Type B messaging service, the Web-Type B may be used to access the following services among others:

- Gateways to other e-mail networks such as SMTP and X400
- Facsimile Service (BFAX)
- Data Processing
- Global Broadcast (RTB)
- Gateway to Public Telex (RTX)
- MQ enabled applications

Protocol

The standard features of a TCP/IP network are implemented such as DNS name service, firewalls and proxies for protection. Standard HTTP is used between the web browser and the server.

Message Format

Type B messages are presented in a GUI (graphic user interface) format. The fields of the Type B message (e.g. recipient, subject line, message body, etc.) have their own GUI input widgets that are found in a typical GUI mail tool.

The Web-Type B server uses HTML and Javascript to present the message on the user interface. The message is then converted to standard Type B message format for Type B communications.

Message Protection

User access to the service is verified using a password-based encryption mechanism.

Every message send by the user is uniquely acknowledged and traceable by the service.

All messages received for a user are kept on the SITA message store until explicitly deleted.

Statistics and Performance Report

The following statistics are recorded:

- Number of messages received and transmitted
- Number of characters received and transmitted

An automatic performance report is generated giving the following:

- System outage
- Link outage
- Traffic handled

User Options

The same web interface is currently provided to all customers, so there are no user options required.

Appendix

A

ASCII/Baudot/ASCII Translation Table

Character Code Translation Table

The table starts with the ASCII character and shows how the character is translated into Baudot and then how the Baudot character is translated into ASCII.

Decimal, octal, and hexadecimal values are shown for the ASCII characters. The octal value given in the Baudot column corresponds to the Padded Baudot character as follows:

- bit 7 always = 1
- bit 6 = 0 for letter mode, 1 for figure mode

In addition to the conventional notation for ASCII and Baudot characters, the table uses the following notation:

- delete - the character is not translated, it is deleted from the message
- let - lettershift
- fig - figureshift

ASCII ➡				BAUDOT ➡	ASCII		
	dec	oct	hex	oct	dec	oct	hex
NUL	00	000	00	delete			
SOH	01	001	01	delete			
STX	02	002	02	delete			
ETX	03	003	03	delete			

ASCII →				BAUDOT →		ASCII			
	dec	oct	hex		oct		dec	oct	hex
EOT	04	004	04	delete					
ENQ	05	005	05	delete					
ACK	06	006	06	delete					
BEL	07	007	07	BEL	153	BEL	07	007	07
BS	08	010	08	delete					
HT	09	011	09	delete					
LF	10	012	0A	let LF	102	LF	10	012	0A
VT	11	013	0B	delete					
FF	12	014	0C	delete					
CR	13	015	0D	let CR	110	CR	13	015	0D
SO	14	016	0E	delete					
SI	15	017	0F	delete					
DLE	16	020	10	delete					
DC1	17	021	11	delete					
DC2	18	022	12	delete					
DC3	19	023	13	delete					
DC4	20	024	14	delete					
NAK	21	025	15	delete					
SYN	22	026	16	delete					
ETB	23	027	17	delete					
CAN	24	030	18	delete					

ASCII ➡				BAUDOT ➡		ASCII			
	dec	oct	hex		oct		dec	oct	hex
EM	25	031	19	delete					
SUB	26	032	1A	delete					
ESC	27	033	1B	delete					
FS	28	034	1C	delete					
GS	29	035	1D	delete					
RS	30	036	1E	delete					
US	31	037	1F	delete					
SP	32	040	20	let SP	104	SP	32	040	20
!	33	041	21	é	155	%	37	045	25
“	34	042	22	?	171	?	63	077	3F
£ or #	35	043	23	?	171	?	63	077	3F
$	36	044	24	?	171	?	63	077	3F
%	37	045	25	?	171	?	63	077	3F
&	38	046	26	&	172	&	38	046	26
‘	39	047	27	‘	145	‘	39	047	27
(	40	050	28	(	157	(	40	050	28
)	41	051	29	)	162	)	41	051	29
*	42	052	2A	?	171	?	63	077	3F
+	43	053	2B	+	161	+	43	053	2B
,	44	054	2C	,	154	,	44	054	2C
-	45	055	2D	-	143	-	45	054	2D

ASCII ➡				BAUDOT ➡		ASCII			
	dec	**oct**	**hex**		**oct**		**dec**	**oct**	**hex**
.	46	056	2E	.	174	.	46	056	2E
/	47	057	2F	/	175	/	47	057	2F
0	48	060	30	0	166	0	48	060	30
1	49	061	31	1	167	1	49	061	31
2	50	062	32	2	163	2	50	062	32
3	51	063	33	3	141	3	51	063	33
4	52	064	34	4	152	4	52	064	34
5	53	065	35	5	160	5	53	065	35
6	54	066	36	6	165	6	54	066	36
7	55	067	37	7	147	7	55	067	37
8	56	070	38	8	146	8	56	070	38
9	57	071	39	9	170	9	57	071	39
:	58	072	3A	:	156	:	58	072	3A
;	59	073	3B	=	176	=	61	075	3D
<	60	074	3C	?	171	?	63	077	3F
=	61	075	3D	=	176	=	61	075	3D
>	62	076	3E	?	171	?	63	077	3F
?	63	077	3F	?	171	?	63	077	3F
@	64	100	40	?	171	?	63	077	3F
A	65	101	41	A	103	A	65	101	40
B	66	102	42	B	131	B	66	102	42

ASCII ➡				BAUDOT ➡		ASCII			
	dec	**oct**	**hex**		**oct**		**dec**	**oct**	**hex**
C	67	103	43	C	116	C	67	103	43
D	68	104	44	D	111	D	68	104	44
E	69	105	45	E	101	E	69	105	45
F	70	106	46	F	115	F	70	106	46
G	71	107	47	G	132	G	71	107	47
H	72	110	48	H	124	H	72	110	48
I	73	111	49	I	106	I	73	111	49
J	74	112	4A	J	113	J	74	112	4A
K	75	113	4B	K	117	K	75	113	4B
L	76	114	4C	L	122	L	76	114	4C
M	77	115	4D	M	134	M	77	115	4D
N	78	116	4E	N	114	N	78	116	4E
O	79	117	4F	O	130	O	79	117	4F
P	80	120	50	P	126	P	80	120	50
Q	81	121	51	Q	127	Q	81	121	51
R	82	122	52	R	112	R	82	122	52
S	83	123	53	S	105	S	83	123	53
T	84	124	54	T	120	T	84	124	54
U	85	125	55	U	107	U	85	125	55
V	86	126	56	V	136	V	86	126	56
W	87	127	57	W	123	W	87	127	57

ASCII ➡				BAUDOT ➡		ASCII			
	dec	**oct**	**hex**		**oct**		**dec**	**oct**	**hex**
X	88	130	58	X	135	X	88	130	58
Y	89	131	59	Y	125	Y	89	131	59
Z	90	132	5A	Z	121	Z	90	132	5A
[	91	133	5B	?	171	?	63	077	3F
\	92	134	5C	?	171	?	63	077	3F
]	93	135	5D	?	171	?	63	077	3F
^	94	136	5E	?	171	?	63	077	3F
_	95	137	5F	?	171	?	63	077	3F
‘	96	140	60	?	171	?	63	077	3F
a	97	141	61	A	103	A	65	101	41
b	98	142	62	B	131	B	66	102	42
c	99	143	63	C	116	C	67	103	43
d	100	144	64	D	111	D	68	104	44
e	101	145	65	E	101	E	69	105	45
f	102	146	66	F	115	F	70	106	46
g	103	147	67	G	132	G	71	107	47
h	104	150	68	H	124	H	72	110	48
i	105	151	69	I	106	I	73	111	49
j	106	152	6A	J	113	J	74	112	4A
k	107	153	6B	K	117	K	75	113	4B
l	108	154	6C	L	122	L	76	114	4C

ASCII ➡				BAUDOT ➡		ASCII			
	dec	**oct**	**hex**		**oct**		**dec**	**oct**	**hex**
m	109	155	6D	M	134	M	77	115	4D
n	110	156	6E	N	114	N	78	116	4E
o	111	157	6F	O	130	O	79	117	4F
p	112	160	70	P	126	P	80	120	50
q	113	161	71	Q	127	Q	81	121	51
r	114	162	72	R	112	R	82	122	52
s	115	163	73	S	105	S	83	123	53
t	116	164	74	T	120	T	84	124	54
u	117	165	75	U	107	U	85	125	55
v	118	166	76	V	136	V	86	126	56
w	119	167	77	W	123	W	87	127	57
x	120	170	78	X	135	X	88	130	58
y	121	171	79	Y	125	Y	89	131	59
z	122	172	7A	Z	121	Z	90	132	5A
{	123	173	7B	?	171	?	63	077	3F
|	124	174	7C	?	171	?	63	077	3F
}	125	175	7D	?	171	?	63	077	3F
~	126	176	7E	?	171	?	63	077	3F
DEL	127	177	7F	delete					
				NUL	100	delete			
				LS	137	delete			

ASCII ➡			BAUDOT ➡		ASCII			
dec	oct	hex		oct		dec	oct	hex
			NUL	140	delete			
			fig LF	142	LF	10	012	0A
			fig SP	144	SP	32	040	20
			fig CR	150	CR	13	015	0D
			fig D	151	ENQ	05	005	05
			fig H	164	£ or #	35	043	23
			FS	173	delete			

Glossary

This glossary defines the terminology used in this manual. If you do not find the term you are looking for, see the SITA *Glossary of Acronyms and Technical Terms*, Document Code: 100B.

Address Stripping

Removal, from the address line used for routing, of all addressee indicators, except those for which the receiving system is responsible.

Addressee

The person, office, or system for which the contents of a message are intended.

Addressee Indicator

A group of characters that identifies the delivery station of a message.

AFTN

Aeronautical Fixed Telecommunications Network
An integrated worldwide system of aeronautical fixed circuits provided as part of the aeronautical service for the exchange of messages between stations in the network.

Alternative Centre

A centre which relays messages between two communication centres not able to communicate via the predetermined route.

Alternative Routing

Routing of messages via circuits other than those prescribed by the predetermined routing (see *Alternative Centre*).

ARQ

Automatic Return Query
A system used to control and correct errors in a transmission link.

ASCII

American Standard Code for Information Interchange
In this code, each character is represented by a unique combination of 7 bits.

ATA

Air Transport Association of America
A gathering of US domestic airlines that monitors, by mutual agreement, the common interest of air transportation.

AX.25

Implementation of the X.25 protocol defined by IATA and implemented on the DTN, based on PVCs.

BATAP

Type B Application to Application Protocol
A protocol implemented between customer terminals and the SITA network to ensure end-to-end message protection.

Baud Rate

The number of changes in modulation bits that can be transmitted in 1 second, by definition, the reciprocal of the time of the shortest signal element in the character.

Baudot

A code used for transmission of data in which 5 bits represent one character. Baudot is sometimes referred to as a 5-bit code, 5-channel code, 5-unit code, or teletype code although it is no longer limited to teletype use.

BCS

Type B Concentrator System

Bridge

A communications product that interconnects two computer networks or systems which have the same or similar characteristics.

CCITT

Comité Consultatif International Télégraphique et Téléphonique.
Also known as the International Telegraph and Telephone Consultative Committee. One of the main committees of the ITU.

CDC: Call Directing Code

Code used in a Multi-Station Line (MSL) system to identify the receiver part of a station. The code is used to call the station (to invite it to receive).

Channel

In SITA terminology, a channel is one of the physical communication paths used to transmit information on a link.

Continuity Check

A check made on a circuit or circuits in a connection to verify that a path (for transmission of data, speech, and so on) exists.

Data Block (Transmission)

A group of characters to be transmitted over a data link as a unit, provided with an envelope used for protection and control.

Double Signature

The 2-character alphanumeric airline/organisation designator that identifies the airline/organisation accepting the SITA charge for the transmission costs of the message.

Full-duplex (FDX)

Data transmission over a circuit in both directions at the same time.

Gateway

A communications product that provides a connection between two different network protocols. It acts as a translator to change one network protocol into the attached network protocol.

Half-duplex (HDX)

Data transmission over a circuit capable of transmitting in either direction, one direction at a time.

Handling

Relating to data switching systems, the word “handling” designates the complete processing of a set of data from its input into a system (network or switching centre) through to its output.

HLS

High Level System
Performs Type B message handling, control, mass storage and associated tasks, Type B message switching, and interfaces with the local low level network.

IATA

International Air Transport Association
A gathering of international air carriers formed to protect the common interest of international air transportation in the fields of air fares, technology, currency exchange, and “interlined” agreements.

ICAO

International Civil Aviation Organisation
Responsible for the setting up and application of rules for air traffic control, and operates the AFTN.

Interface

A means permitting the interconnection of equipment or systems with different functions or modes of operation.

Interline Message

A message originated by one airline and addressed to one or more other airlines.

ITU

International Telecommunications Union
Its main purpose is to establish legal and technical rules for the interconnection of member countries and telegraph networks, and to agree on common tariffs for international telegrams.

Leased Circuit

A service whereby a circuit (or circuits) of the public network is made available for exclusive use to a user or group of users (ITU).

Link

Data link - one or more telecommunications circuits between two points for the purpose of data interchange (IATA).

Transmission link - a means of transmission with specified characteristics between two points. The type of transmission path or the capacity is normally indicated; for example radio link, coaxial link.

Message Handling System (MHS)

The SITA systems that handle the Type B message acceptance, storage, and routing.

MSL

Multi Station Line (Party Line)
A low speed multi-drop line configuration. Several stations are connected to the same line.

OFTS

Overseas Fixed Telecommunications Service
The British Airways network which was developed from the former BOAC network. The OFTS is organised like a club and most of the member airlines are from British Commonwealth countries.
Members provide services to other members on a reciprocal basis.

P.1020

SITA protocol comprising a processor-to-processor asynchronous link control procedure providing the logic for control and assurance of the full-duplex low-speed teletype circuits connecting two processors.

P1024

SITA protocol comprising a communications control procedure providing synchronous link control and message control.

PAD

Packet Assembler/Disassembler
A functional unit that permits DTEs (Data Terminal Equipment) not equipped for packet switching to access a packet-switched network.

PDN

Public Data Network
A shared resource data network that offers data communications services to public subscribers.

Priority Code

A 2-letter combination preceding the first address of an address section that determines the order of transmission.

Protocol

A mutually agreed upon formal set of conventions governing the format and control of information exchange between two systems.

PSTN

Public Switched Telephone Network

PTN

See *Public Telegraph Network*

PTT

An abbreviated term that represents the Post, Telephone, and Telegraph administrations of the world (it does not apply to Canada and the United States).

Public Telegraph Network (PTN)

A network set up to perform a telegraph service for the public. It belongs to a telecommunications operating body (administration or private) and may be used to provide general telegraph service, telex service or leased circuits service (ITU).

Service Message

Message exchanged between centres and/or stations concerning the operation of the network.

SMI

Standard Message Identifier
In machine-readable messages SMI is a 3-character mnemonic abbreviation identifying the message type. The SMI is always the first element of the text section and can be processed by computer whilst retaining a mnemonic value for human operators.

SNA

System Network Architecture
An IBM hierarchical network architecture which allows point-to-point synchronous dialogue between the host and each terminal.

SNADS

SNA Distribution Services
An IBM distributed services architecture based on SNA for telecommunication services. It consists of a set of software tools added to SNA at the application level. SNADS allows end-users (terminals, PC, distributed processing computer) to speak together in asynchronous mode.

Supplemental Address

An address line preceding the normal address line of a message and containing only those addressee indicators to be actioned. Also known as Short Address Line.

TANU

Telex Answering Numbering Unit

TBC

Type B Concentrator

TDM

Time Division Multiplexer

Telecommunications System

An entity of telecommunications facilities under the control of one organisation.

Transfer Centre

The centre where messages are transferred between the SITA Network and another telecommunications system.

TTY

Teletype
TTY is used to designate a teleprinter communication terminal used for telegraphic traffic. Teletype is in fact a trademark of the TELETYPE CORPORATION.

Unixmail

Developed and marketed by UNIPLEX, Unixmail is an office automation system designed to run in the UNIX environment.

UTC

Universal Time Co-ordinated
In French the term is TUC (Temps Universel Compensé). This is the time system used on the SITA Network and is the same as GMT.

X.25

The CCITT recommendation for the first 3 layers of the ISO OSI model. X.25 provides an interface between a network DTE (Data Terminal Equipment) and a network DCE (Data Circuit-terminating Equipment) for terminals operating in the packet mode and connected to public data networks by a dedicated circuit.

X.28

A CCITT recommendation that defines the DCE/DTE interface between start-stop mode terminal equipment accessing the PAD facility and a PDN in the same country. X.28 is used for SITATEX Dial access.

X.400

The set of CCITT recommendations that define a universal standard for a Message Handling System (MHS), permitting the store and exchange of messages between users (persons or computer applications) on a store and forward operation mode.

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