


GLOBALink Voice Services Operating Procedures Handbook



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NOTICE: *A current copy of this manual can also be obtained from the Rockwell Collins website: (www.arinc.com.)*

 **Note:** Jeppesen maps are not provided in this document, but may be downloaded separately.

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1 Scope

1.1 Identification

This document provides a brief description of the Air/Ground Voice communication services offered by Rockwell Collins, Information Management Services (the Company) and includes operational procedures for their use. Operational communications services have been provided to aviation by the Company since 1929. The Information Management Services (IMS) business unit is located in Annapolis, Maryland.

1.2 Description of Service

1.2.1 International Air/Ground Voice Service

The Air/Ground International Voice Service is comprised of Air Traffic Control (ATC) communication services for the Federal Aviation Administration (FAA) and Aeronautical Operational Control (AOC) communication services for the airlines and other aircraft operators. These services are provided by the Communications Centers located at New York (Long Island MacArthur Airport), and San Francisco (near Livermore), California. HF and VHF voice radio are the primary means of air/ground communications. There is limited data link capability for some aircraft. The Communications Centers also have telephone facilities to accommodate Satellite Communications (SATCOM) voice. Besides communications services, both Communications Centers can provide weather reports and forecasts on request.


IMS provides Oceanic ATC communications services for the FAA in the Anchorage, Houston, Miami, New York, and Oakland Flight Information Regions (FIRs) and the San Juan CERAP airspace. ATC messages, known as flight safety messages in International Civil Aviation Organization (ICAO) terminology, are handled on Major World Air Route Area (MWARA) HF radio frequencies. VHF radio sites are used along the coastal areas to supplement HF coverage. For aircraft communicating directly with the FAA via Controller Pilot Data Link Communications (CPDLC), the Communications Centers provide backup voice communication services for ATC utilizing VHF/HF radio and SATCOM voice, to aircraft so equipped.

AOC services, known as flight regularity messages in ICAO terminology are handled on HF Long Distance Operational Control Facility (LDOCF) frequencies or on VHF networks covering coastal areas within the Gulf of Mexico and Caribbean, and throughout the domestic U.S. Both Communications Centers are equipped to connect Air/Ground HF and VHF radio channels and SATCOM voice to telephone lines to permit flight crews to talk directly with offices on the ground. Multiple ground parties can be conferenced simultaneously. Connecting a radio circuit to a telephone line is known as a Phone Patch.

1.2.2 Domestic Air/Ground Voice Service

IMS operates a system of over 100 ground radio stations within the CONUS, which are interconnected using Voice-Over-Frame (VoF) circuits to form six (6) networks. In addition, the Company maintains a VHF network between Seattle (SEA) and Anchorage (ANC) for use by aircraft flying this route. The networks are designed to provide continuous coverage above 20,000 feet. Below 20,000 feet, coverage is available but not guaranteed to be continuous. On-ground coverage is provided at most major airports. The advantage of this service is that stations are networked to provide coverage over long distances, well beyond single station line-of-sight coverage. These 7 networks are controlled from the San Francisco (SFO) Communications Center. The domestic VHF networks are used primarily for handling AOC communications.

The SFO Communications Center also operates a “Domestic” VHF network, the “MexNet” with 15 sites in Mexico. The MexNet provides enroute coverage over most of Mexico and on the ground coverage at 15 airport sites.

 **Note:** See Jeppesen ARINC-1 for VHF enroute coverage above F200
See Jeppesen ARINC-2 for VHF airport on-ground coverage
See Jeppesen ARINC-5 for MexNet enroute coverage above F200
See Jeppesen ARINC-6 for MexNet on-ground coverage

1.3 Communications Centers

The Communications Centers are connected to customer data communication circuits through the AviNet®, an electronic switching system that handles the data message switching requirements for many airlines and airline-associated industries that have contracted with the Company for this service. AviNet® also connects to other telecommunications networks such as the FAA/ICAO Aeronautical Fixed Telecommunications Network (AFTN) and Societe Internationale de Telecommunications Aeronautiques (SITA) affording AviNet® customers a worldwide data communications capability.

1.4 Message Formats

All Air/Ground messages received by Radio Operators on HF/VHF circuits are copied into the Air/Ground Terminal System (AGS) computer for relay to ATC and/or company operational and maintenance control offices.

Air/Ground messages transmitted from the Communications Centers are in Standard Message Text (SMT) format. A message type is identified by a Standard Message Identifier (SMI) on the first line of message text. Each element of message text is identified by a Text Element Identifier (TEI). An element of message text that cannot be associated with a TEI is entered as Free Talk. The Free Talk portion of the message is identified by a dash symbol followed by a space. The SMT format was developed primarily for airline use within their host computer flight management systems. Definitions of the commonly used SMIs and TEIs, along with message examples, can be found in Appendix A.

 **Note:** The Company’s Air/Ground Message Format Specification is described in Document #20932.

1.5 Charging Contacts

Voice Services are available to all aircraft operators – airline, corporate, private and State (U.S. and foreign) without discrimination. A service contract with the Company is required for delivery of AOC messages.

In the Air/Ground Services, each contact and/or required intercept is counted as a charge unit. A contact is defined as the completed exchange of information between an aircraft and a Communications Center and may consist of more than one transmission from the aircraft and/or the Communications Center. A contact begins with a call-up (by the aircraft or a Communications Center) and ends with an acknowledgement of receipt of the transmission or transmissions made between call-up and the acknowledgement. For example, an Air/Ground call from an aircraft, Communications Center response, position reported by flight, and Communications Center acknowledgement constitutes one contact.

1.6 Document Overview

This document provides a basic description of radio and voice services provided by the Company's HF and VHF Communications Center facilities. It is intended for distribution to users of the Air/Ground voice services as well as radio operations personnel. Below is a brief summary of the sections of this document:

Section 1, Scope

Introduces the system and describes the purpose and contents of this document.

Section 2, Air/Ground Communications Procedures

Provides a description of radio procedures for international and domestic Air/Ground radio communications and SATCOM voice

Section 3, Phone Patch Procedures

Phone Patch direct-voice connections between a flight crew and company operational offices

Section 4, Long Distance Operational Control Facility

Explains the radio telephone voice communication to aircraft operating outside the VHF range

Section 5, SELCAL

Describes the signaling method used to alert aircraft that a ground station wishes to communicate with it.

Section 6, Permissible Communications

Describes acceptable and unacceptable communications

Section 7, Communications Records

Describes communications records retention practices at the Communications Centers

Appendix A, Standard Message Text Identifiers

Lists the definitions for the most commonly used identifiers used in message transcription by radio operators

Appendix B, Communications Center Contact Information

Lists information relating to Communications Centers and GLOBALink Voice Services Administration

Appendix C, LDOC Frequencies

Lists the HF SSB LDOCF frequencies guarded by the Communications Centers

Appendix D, North Atlantic HF SSB Families

Lists the North Atlantic radio telephone networks and associated NAT routes

Appendix E, Services Coverage Charts (Jeppesen)

Contains information pertaining to International, Domestic and ACARS/FIS coverage charts produced for the Company by Jeppesen (These maps are not provided within this document but may be downloaded separately.)

1.7 Acronym List

ACARS	Aircraft Communications Addressing and Reporting System
A/G	Air/Ground
AES	Aeronautical Earth Station
AFIS	Aircraft Flight Information System
AFTN	Aeronautical Fixed Telecommunications Network
AGS	Air/Ground Terminal System
AOC	Aeronautical Operational Control
APRL	Air/Ground Phone Patch and Routing Guide List
ARTCC	Air Route Traffic Control Center
ASRI	Aviation Spectrum Resources, Inc.
ATC	Air Traffic Control
ATIS	Automatic Terminal Information Service
ATOP	Advanced Technologies and Oceanic Procedures (aka Ocean21)

AviNet®	Integrated network of message processing and switching processors operated by the Company. AviNet® provides inter-airline message switching, including a universal inter-computer exchange for rapid data transfer between many U.S. and foreign airline computer systems.
CAR	Caribbean
CEP	Central East Pacific
CFR	Code of Federal Regulations
CPDLC	Controller Pilot Data Link Communication
CTA	Control Area
CWP	Central West Pacific
DTMF	Dual Tone Multi-Frequency
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FIR	Flight Information Region
GES	Ground Earth Station
GOM	Gulf of Mexico
GVS	GLOBALink Voice Services
HF	High Frequency
ICAO	International Civil Aviation Organization
ID	Identification
IMS	Information Management Services Business Unit
INMARSAT	International Maritime Satellite Telecommunications Company
LDOCF	Long Distance Operational Control Facility
MNPS	Minimum Navigation Performance Specifications
MWARA	Major World Air Route Area

NAT	North Atlantic
NP	North Pacific
OTS	Organized Track System
PRESTO	“Press to Talk” Direct Dial Service
PST	Public Switched Telephone Network
SATCOM	Satellite Communications
SELCAL	Selective Calling System
SITA	Societe Internationale de Telecommunications Aeronautiques
SMI	Standard Message Identifier
SMT	Standard Message Text
SP	South Pacific
SSB	Single Sideband
TEI	Text Element Identifier
VERN	VHF Extended Range Network
VHF	Very High Frequency

2 Air/Ground Communications Procedures

2.1 General Description

This section describes the procedures for International and Domestic Services associated with ATC and AOC voice communications. It addresses the use of HF, VHF, and SATCOM voice for ATC and AOC for flights through U.S. controlled FIRs and the use of VHF for AOC within U.S. domestic airspace.

2.1.1 International Service

In areas beyond the coverage of ATC VHF or UHF radios, the Company provides ATC communications services on HF frequencies comprised of the relay of ATC clearances, requests, advisories, and position reports between the FAA and aircraft. The Communications Centers are staffed with radio operators who act as the intermediary between controllers and pilots. Radio operator positions are equipped with computer workstations consisting primarily of a terminal and keyboard as part of the Air/Ground System (AGS) and a radio and telephone communications system. The latter is comprised of radio and frequency selection, SELCAL, antenna selection, telephone, and various other communications features. Nearly 80 percent of international services are conducted in support of the FAA. The Communications Centers handle over two million ATC messages and position reports per year. The remaining 20 percent (over 500,000 messages) are AOC in nature.


2.1.2 Domestic Service

The Air/Ground Domestic Service is provided by the Communications Center at San Francisco. Only AOC traffic is handled by this service, consisting of company information relay and weather-related product delivery and phone patches. The radio operators dedicated to this service also use the AGS and communications equipment. This service meets FAR 121.99 communication requirements for dispatch and is complementary to the Aircraft Communications Addressing and Reporting System (ACARS), which is a data link communications system.

2.2 International and Domestic Operations

International A/G radio procedures apply to the following oceanic regions:


- North Atlantic/Maritime Canada
- Caribbean/Gulf of Mexico
- Pacific

 **Note:** Jeppesen ARINC-3 and ARINC-4 charts list all HF and International VHF frequencies monitored and operated at our aeronautical stations. In addition, the

frequencies are published on Jeppesen Oceanic Charts and in the DoD Flight Information Handbook.

2.2.1.1 North Atlantic/Maritime Canada

Aircraft operating over the North Atlantic (NAT) on routes within the New York and Miami oceanic FIRs will be under the radio guard of the New York Communications Center. Communications concerning air traffic control in these areas are conducted on the NAT Family A and E MWARA high frequencies.

 **Note:** The International Notices to Airmen, published by the FAA, states that it is mandatory to have HF radio equipment installed and operational in aircraft operating anywhere in the New York Oceanic FIR airspace. This includes the oceanic airspace between the United States and Bermuda.

Flights operating over the Canadian Maritime Region and then via oceanic routes to Europe will be in direct contact with, and under the control of, the Canadian domestic ARTCCs until leaving the North American coastline, after which they will be under HF radio guard of the Canadian aeronautical station at Gander, Newfoundland.

Aircraft operators who desire to have their A/G messages relayed to their company offices may make prior arrangements with the Gander aeronautical station for this service. Flight crews may also transmit *company* information to New York via the VHF network covering the Canadian Maritime Region that operates on 129.90 MHz; the LDOCF frequencies may be used for company messages and phone patches while on oceanic routes. (See Section 4 for additional information on LDOCF.)

2.2.1.2 Caribbean/Gulf of Mexico (GulfNet)

Flights operating to and from the Caribbean (CAR) and over the Gulf of Mexico (GOM) will be under the radio guard of the New York Communications Center while operating within the New York, Miami, and Houston oceanic FIRs. If not instructed by Houston ARTCC to maintain guard of the VHF Extended Range Network (VERN), the Caribbean Families A and B MWARA high frequencies will be used when beyond range of VHF facilities while operating in these FIRs.

 **Note:** See the Jeppesen ARINC-3 chart.

NYC VHF GulfNet frequency 130.70 MHz (KA) should be used while operating in the GOM and Caribbean areas covered by this frequency, as depicted on the Jeppesen ARINC-1 and ARINC-3 charts.

2.2.1.3 Mexico Network

Flights operating over central and northern Mexico will be under the radio guard of the San Francisco Communications Center on frequency 130.7 MHz (MX). The MexNet is available only for AOC type traffic and can be used for both message delivery and phone patches. See the Jeppesen ARINC-5/6 Chart for enroute and on-the-ground coverage of this network.

 **Note:** MID and CUN are operated by New York on the GulfNet, 130.7 MHz (KA).

2.2.1.4 Pacific

Aircraft operating in the Pacific Ocean on routes within the Oakland FIR—between the U. S. West Coast, Honolulu, and south on routes toward Tahiti (CEP), in the South Pacific (SP), Central West Pacific (CWP), and North Pacific (NP) regions, and within the Anchorage Oceanic FIR in the North Pacific will be under radio guard of the San Francisco Communications Center.

Radio coverage in these regions is provided on the CEP, SP, CWP, and NP HF MWARA frequency families, respectively.

 **Note:** See the Jeppesen ARINC-4 chart for frequencies. Frequencies are also published on Jeppesen Charts and in the DoD Flight Information Handbook.


2.2.1.5 HF Radio Checks

An HF radio check should be made with the NYC or SFO Communications Center prior to departure or while airborne prior to entering U. S. oceanic airspace. An HF ramp check at selected airports may be arranged by calling the appropriate Communications Center on an international VHF network or a domestic VHF network. The radio operator responding to the call will provide the appropriate frequency for the HF communication check.

HF frequencies for ramp/SELCAL checks may also be coordinated by calling NYC or SFO via landline. When calling, state the aircraft location, call sign, SELCAL, and destination; request a primary and secondary frequency for an HF check. The 24 X 7 contact numbers for both NYC and SFO are listed in Appendix B.

FCC regulations relating to the use of HF aeronautical enroute frequencies forbid the regular use of high frequencies for communications in domestic airspace within the continental United States (except Alaska). Use of HF must be limited to radio and equipment checks or for emergency purposes only while operating in domestic airspace.

HF radio checks and/or SELCAL checks on international HF or international VHF frequencies are completed free of charge by the NYC and SFO Communications Centers. SELCAL checks and radio checks on domestic VHF networks are chargeable at prevailing rates.

 **Note:** Public correspondence (personal message traffic) to or from passengers (or crew members) is not permitted on aeronautical mobile frequencies.

2.2.2 Domestic Operations

The Domestic VHF Voice Network System is controlled from the Communications Center in San Francisco. Aircraft operating over the contiguous United States shall direct calls to San Francisco on a VHF network serving the area over which the aircraft is operating. See the Jeppesen ARINC-1 and ARINC-2 charts for appropriate enroute and on-ground frequencies.

The Radio Operators do not guard each network on this service. Calls are switched to a radio operator through an electronic call distribution system. If there is a radio operator that is not busy, the call will be switched to that position immediately. If all radio operators are busy working other aircraft, the call will be placed in a first-in, first-out distribution system awaiting a free operating position. If the call goes into the distribution system, the calling

aircraft will hear a recording, "Flight calling San Francisco, please stand by," telling the caller to wait for the next available operator.

This distribution system enables a small number of radio operators to control numerous VHF radio networks. For this reason, it is imperative that flight crews provide ample time for their initial call to be answered. When making an initial call on a domestic VHF network, if the call is not answered by a radio operator or a recording in a reasonable amount of time (15-30 seconds), another call should be made before changing the frequency. Changing to another frequency too quickly will increase the delay if the Radio Operators are all busy on other networks. Receiving the recorded call announcement means that you have positively made contact with SFO and your call will be responded to shortly. Do not change to an alternate frequency, if available, as this will only increase the wait time for service.

To initiate calls on a domestic VHF network, complete the following:

1. Call "Rockwell Collins" on an area frequency relative to the aircraft position shown on the Jeppesen ARINC-1 chart or an on-ground frequency for an airport location listed on the ARINC-2 charts. San Francisco (SFO) controls all networks except 130.70/KA (GulfNet) and 129.90/JW in the Northeast U.S. and Maritime Canada which are controlled by New York (NYC).

Only the NYC networks are guarded by a dedicated radio operator. All SFO networks are routed through a call distribution system; this allows control of all networks with only one or two radio operators and provides a visual indication of calls waiting for radio operator service.

During busy periods, initial calls may be answered by a recording. If not answered within 1 minute, call again on the same frequency. ***Do not change frequencies. This may cause further delays. Stay on the frequency at least 3 minutes.***

 **Note:** Coverage depicted on the Jeppesen ARINC-1 and ARINC-2 charts is for aircraft operating at and above FL200. Coverage below FL200 cannot be assured. Gaps in coverage exist when operating below FL200, especially in mountainous areas.

2. If not answered within 3 minutes, call on an adjacent area frequency using the above procedures. In many locations, overlapping coverage exists.

2.3 International and Domestic Procedures

Flight crews should be prepared to include the following information when transmitting a company message to a Communications Center by voice in either the international or domestic environment.

1. Aircraft flight identification as filed in the flight plan and currently being used in communications with air traffic control facilities.
2. HF transmitting frequency—in the initial call, state the first and second numeral of the frequency on which you are transmitting, such as "San Francisco, this is N28V on 88".

 **Note:** This procedure is applicable to HF frequencies only.


3. Message delivery instructions and Service Agreement number; if the

Service Agreement number is not readily available (in the aircraft), the name of the company operating the aircraft should suffice. However, in this case, the Radio Operator may also request the company mailing address.

4. Aircraft SELCAL code or SATCOM voice octal code, if applicable.

Radio Operators copy all Air/Ground messages directly into a computer for immediate transmission through AviNet® to customer offices. If a message can only be delivered by telephone, the message is routed to a local printer at the Communications Center for telephone delivery by the Team Leader.

The flight crews should transmit their messages at a moderate speed to prevent unnecessary repeating. During transmission of a lengthy message, the flight crew should pause at intervals to ensure that the radio operator has the message complete to that point.

 **Note:** See Appendix A (page A-1) for explanation and examples of Standard Message Text formats used by the Communications Centers.

2.4 VHF Direct Access Service

The domestic voice service has the capability for customers to directly access VHF networks using standard phone equipment and a Company authorized access code. This allows operations and dispatch offices to make direct ground-to-air contact with their aircraft without Radio Operator (RO) intervention. Prior authorization and configuration by the Company is required to use Direct Access.

2.4.1 VHF Direct Access Procedures

VHF Direct Access customers gain access to the networks using these specific procedures. From any touch-tone phone, perform the following:

1. Determine the location of your aircraft and identify the nearest VHF network to access.
2. Dial the access number (925) 371-1299.
3. After the ringing, a "chirp" and single "beep" will be heard.
4. After the beep, enter the Company-provided access code and a 2-digit network code (see Table 2-1).
5. If the correct access and network codes have been entered, a low-high 2-tone acknowledgment will be heard and the call will be connected.
6. If an incorrect access code or network code has been entered, three beeps will be heard and the call will be disconnected.
7. To change networks, you must hang up and redial.

Table 2-1 Access Codes

<i>Frequency</i>	<i>Network</i>	<i>Access Code</i>
129.40/NE	YN	01
131.175	MZ	02
129.45	IJ	03
128.90	JN	04
130.40	JD	05
131.80	KY	06
129.40/NW	II	07
130.70	MX	08

2.4.2 When Direct Access Login Sequence is Complete

1. Maintain silence for several seconds and monitor the network to see if it is in use.
2. Contact your aircraft.
3. Terminate the connection by hanging up the phone.

2.4.3 Standards for Use

1. Use only accepted phraseology and strict radio discipline.
2. Limit distribution of your access code to a small number of users.
3. For security purposes, it is not possible to change networks without hanging up and dialing back into the system.
4. Never use a speakerphone when using VHF Direct Access.
5. Keep background noise (e.g., typing, nearby conversations) to an absolute minimum when using this system.
6. Failure to comply with these standards will result in termination of Direct Access use.

 **Note:** SELCAL is not supported over Dial Access and aircrews must guard VHF frequencies to receive Dial Access calls.

2.5 VHF Direct Dial Press to Talk (PRESTO) Service

Dual-Tone Multi Frequency (DTMF) microphones allow direct phone patch connections Air-to-Ground on all networks managed by San Francisco (SFO), including the MexNet, 130.70 MHz (MX). Prior coordination with the Company is necessary to set up customer office phone numbers in the PRESTO ground equipment and authorize use by Domestic Voice service customers.

Contact Customer Service at 1-800-633-6882 (select option 2) or via email to CONTACTUS@arinc.com to establish PRESTO network access.

2.5.1 Direct Dial PRESTO Procedures

To initiate a DTMF call on the Domestic VHF networks, complete the following:

1. Setup and Dial Procedure

Tune VHF radio to area or ground frequency relative to the aircraft position shown on the Jeppesen ARINC-1 and ARINC-2 charts. Monitor the network for several seconds to see if it is already in use.

- Each dial stroke is made by holding the key pressed for at least one-half second and leaving a one-half second pause interval between each key entry.

2. Five-Digit Calling Procedure

- The Company will configure and assign 5-digit dialing numbers for all ground party numbers that the customer designates.
- Push and hold the "Push to Talk" button on a DTMF equipped aircraft microphone.
- Carefully key in the three-digit airline code followed by the two-digit "call to" location number
- Press the # key within 20 seconds of the last digit entered to "launch" the call.
- Release the "Push to Talk" button after the five-digit and # tone sequence is transmitted.
- Monitor the frequency while the ground system dials the phone number and ground party answers.
- When the call is connected conduct that call like any simplex phone patch using normal radio telephony procedures.
- Press 0 # at the end of calls to terminate the call and release the network.

3. Assistance Notes

- If an error is made while dialing, press * to clear all previous digits entered.
- Call setup takes approximately 5-10 seconds.
- A three-tone signal is heard when the dialing sequence is unsuccessful.
- Press 0 # to disconnect all calls.
- The ground party may disconnect the call by 'hanging up'.

4. Radio Operator Assistance


- Operator assistance is available at all times by pressing the 0 # keys to terminate the existing call; initiate standard Domestic Voice Operations procedures to reach a Radio Operator.

5. Emergency Situation

- If using the direct dial feature on the Domestic VHF networks for an emergency situation, the message will not be logged by a Radio Operator. However, radio traffic audio will be recorded and retained for a minimum of 45 days.

2.6 SATCOM Voice Procedures


The Communications Centers are equipped to receive and originate SATCOM Voice calls from or to suitably equipped aircraft. SATCOM Voice messages can either be relayed by the Radio Operator or a call in progress can be connected to other phone lines (conferenced) through the telephone control system at each Communications Center.

 **Note:** When using SATCOM voice, continue to use standard radio telephony procedures. Using the SATCOM phone like a regular telephone can cause confusion.

2.6.1 Air/Ground Calling Procedures

Satellite Voice-equipped aircraft should direct calls to the appropriate Communications Center using either INMARSAT-assigned security phone numbers (ICAO short codes) or direct dial using the 10-digit PSTN phone number:

<i>Pacific Flights</i>	<i>Atlantic Flights</i>
SFO 436625	NYC 436623
1-925-371-3920	1-631-244-2492

 **Note:** These six-digit numbers are converted by the Ground Earth Station (GES) receiving the aircraft call announcement to the respective PSTN dial number for connection to the appropriate Communications Center. This only works on the INMARSAT satellite system.

2.6.2 Ground/Air Calling Procedures


The Communications Centers can originate calls to SATCOM Voice-equipped aircraft. The unique 8-digit Aeronautical Earth Station (AES) aircraft ID (OCTAL) code or direct dial phone number must be known to originate calls. The Communications Centers have a list of known codes and phone numbers available for reference; however, operators desiring callbacks using SATCOM Voice should provide the Radio Operator with the OCTAL code and/or phone number on initial call.

2.7 Communications Trouble Reporting

The Company strives to maintain full availability of all communications facilities to provide optimum performance and service; however, the facilities involved, such as remote transmitters and receivers are subject to degradation for various reasons. Any problems experienced, including failure to answer initial calls, inability to complete communications exchanges, noisy VHF networks, or any other problems deemed less than satisfactory by the flight crew, should be reported as soon as possible to the Communications Center or Centers involved. This should be reported by radio on the next successful call or via telephone after landing, time permitting. The non-published telephone numbers listed on page B-1 should be used for trouble reporting via telephone.

Each trouble report should include, if applicable:


- Radio frequency and nature of problem encountered
- Aircraft position, altitude and direction of flight at time of occurrence
- Time of occurrence

 **Note:** Customers will not be charged for contacts that are made solely to report communications problems.

3 Phone Patch Procedures

3.1 General

Phone patches are designed to provide direct voice communications between a flight crew and their company operational offices. Patches should only be used in cases of great urgency concerning nonroutine matters related to the operation of the aircraft including the crew, passengers and cargo.

 **Note:** Public correspondence (personal message traffic) to/from passengers or crew members is not permitted.

3.2 Phone Patch Connections

Phone patch connections to company operational offices to and from aircraft operating over the continental United States, Hawaii, Mexico and coastal areas of Alaska are made through VHF voice networks. Patches to and from aircraft operating on oceanic routes are accommodated on the HF Single Sideband (SSB) LDOCF frequencies. Each of the Communications Centers is equipped to switch telephone calls placed through the Center's non-published telephone number to applicable radio station equipment so that two-way communications can be exchanged between the aircraft and ground personnel.

Long distance calls to Communications Centers' phone patch numbers must be placed on a prepaid *station-to-station* basis; a collect call will not be accepted. The same procedure applies for calls made from the Communications Center to aircraft operators, except the associated toll charge is included in the Air/Ground message charge. (See Section 3.6 for contact information.)

3.3 Phone Patch Authorization

A list of company offices or personnel authorized to originate or receive phone patch calls is maintained by GLOBALink Voice Services Support (in Annapolis, MD) in the *Air/Ground Phone Patch and Routing Guide List* (APRL). This database is available to the NYC and SFO Communications Centers as a full-time reference through the Company Intranet. Communications Center personnel refer to this database to verify the authenticity of the office and telephone number when a request is received from an aircraft operator's ground personnel. A request for a ground-to-air connection that cannot be authenticated will be politely refused.

Communications Center personnel will honor a request for a phone patch to any telephone number provided by the flight crew, unless otherwise previously advised by the aircraft operator that phone patches are to be limited to numbers coordinated and listed on their Air/Ground Phone Patch Page.

3.4 Phone Patch Authorization – Verification and Changes

In the interest of safety, and to prevent unnecessary delays in completing a phone patch, it is imperative that the Communications Centers have current information for those aircraft operators that use this service. Changes, deletions or additions to an authorized user's phone patch list should be directed to GLOBALink Voice Services Support in Annapolis, MD:

Pat Guido


410-266-4264

hpg@arinc.com

For those with access to AviNet® send to mnemonic address HDQXGXA. Those customers that wish to verify their current phone patch authorization or message addressing/delivery procedures, or point-of-contact information may request a copy by phone, email or teletype by using the above information.

3.5 Phone Patch Operation

The Air/Ground radio channel is *one way* (send or receive) only; break-ins and interruptions are not possible. In the normal "at rest" condition, the ground party receives the aircraft transmission. When the ground party speaks, a voice-operated relay switches the radio channel from receive to transmit and the aircraft receives the ground party audio. The ground party should maintain a firm, even level of speech and avoid shouting. Each transmission by the ground party should be preceded with an "err" or "uhh" to allow the voice-operated relay to complete its switching function.

 **Note:** Each speaking party should indicate the end of a transmission with the words "over" or "go ahead".

3.5.1 Background Noise Affects Patches

A high background noise level in the office of the ground party may cause the voice-operated relay to remain open and prevent un-keying of ground station transmitters. This condition will prevent the aircraft from transmitting and the ground party from receiving audio. Speaker phones used for phone patches will magnify background noise; therefore, background noise must be kept to a minimum and speaker phones should never be used for a phone patch.

The radio operator monitoring a phone patch will ensure that the voice audio level of the telephone connection is sufficient to operate the voice-operated relay. If it is too low to operate the relay or is too noisy and is keeping the relay closed, the radio operator may request that the caller hang up and place the call again. The operator may also manually key the transmitter to enable the aircraft to receive the ground party's transmissions.

3.6 Ground/Air Connection Procedures

Ground personnel wishing to contact airborne aircraft should call the Communications Center (24 X 7) closest to the proximity of the aircraft. The 24 X 7 contact numbers for both NYC and SFO are listed in Appendix B.

For contacting aircraft utilizing the VHF domestic service, contact the SFO Communications Center. SFO personnel will answer the call by identifying themselves, for example, "San Francisco". In response, the caller should supply the following information:

- **SELCAL-Equipped Aircraft**
 - Company ID/Job Title
 - Authorized telephone number
 - Flight identification of the aircraft as filed in the ATC flight plan and SELCAL code (if equipped); if not SELCAL equipped state “Negative SELCAL”
 - Departure point, destination and approximate present location of the aircraft
- **ACARS/AFIS-Equipped Aircraft (operating within the contiguous U.S.)**
 - Company ID/Job Title
 - Authorized telephone number
 - Flight identification and/or aircraft tail number
 - Approximate geographic location of the aircraft

After authentication of the request, a radio operator will establish communications with the aircraft and inform the caller “Your flight is standing by, go ahead”. At the conclusion of this phrase, the connection between the telephone facilities and company equipment will be activated and the conversation can proceed.


At the conclusion of the conversation, the radio operator will deactivate the telephone and radio connection. The ground party should be familiar with and maintain proper radio discipline during phone patch connections.

4 Long Distance Operational Control Facility

4.1 General

The HF SSB LDOCF frequencies are designed to provide AOC voice communications via high frequencies to aircraft operating over oceanic areas beyond the coverage range of VHF facilities. Flight crews wishing to send a message to their operational offices using the LDOC frequencies may call the Communications Center in the proximity of the aircraft. See Section 6 of this handbook for a list of permissible communications.

The time of day and distance from the station will determine the most appropriate frequency to be used. In general, the higher the sun is, the higher the frequency. Some trial and error may be necessary to find the best frequency for the time of day, distance from LDOCF radio sites and propagation conditions existing at a given moment.

 **Note:** When an aircraft is operating on an ICAO MWARA enroute family of frequencies guarded by NYC or SFO Communications Center, the flight crew should request the optimum LDOC frequency currently in use from the Radio Operator.

4.2 LDOC Operation

Flight crews operating in the North Atlantic, South/Central American, Caribbean and Pacific areas will be expected to continue to pass routine Air/Ground messages on the ICAO MWARA enroute radio telephone HF or VHF networks. Therefore, aircraft operating on international routes in these areas of the world should maintain a listening watch or SELCAL guard on the appropriate ICAO MWARA frequencies.

Aircraft equipped with dual HF transceivers may wish to maintain watch on both ICAO MWARA and HF SSB LDOCF frequencies. Aircraft equipped with only one HF transceiver, and beyond the range of VHF communications will be expected to maintain watch on ICAO MWARA frequencies and to switch to HF SSB LDOCF frequencies only after coordination with the ICAO aeronautical station providing radio guard for the FIR/CTA in which the aircraft is operating.

4.2.1 Service Areas

Radio Operators at the New York and San Francisco Communications Centers guard dedicated LDOC frequencies in addition to ICAO MWARA frequencies. LDOC assignments, as well as general service areas are shown in Table C-1 in Appendix C and on the Jeppesen ARINC-3/4 charts.

Contact telephone numbers and mnemonic teletype addresses for the LDOCF stations are listed in Appendix B.

4.2.1.1 Polar Route Communications

Aircraft operating on Polar Routes can contact San Francisco on their LDOCF frequencies through the Barrow, Alaska remote site. Barrow LDOC frequencies are shown in Appendix C, Table C-1 and on the Jeppesen ARINC-4 and ARINC-8 coverage charts.

4.2.1.2 South America Communications

Aircraft operating in the South American and Central American areas can contact New York on their LDOCF frequencies through the Santa Cruz, Bolivia remote site. LDOC frequencies are shown in Appendix C, Table C-1 and on the ARINC-3 and ARINC-9 coverage charts.

4.2.1.3 Pacific Area Communications

Aircraft operating in the Western Pacific, South China Sea and Southeast Asia Regions can contact the San Francisco Communications Center on their LDOCF frequencies through the Guam LDOC and/or Hat Yai, Thailand LDOC remote sites. Frequencies for the Guam and Thailand LDOCFs are shown in Appendix C, Table C-1 and on the ARINC-7 coverage chart.

5 Selective Calling System (SELCAL)

5.1 Description of Service

The Selective Calling System, known as SELCAL, is a signaling method to alert an individual aircraft that a ground station wishes to communicate with it. SELCAL signals can be transmitted over HF or VHF radio telephone channels. A SELCAL transmission consists of a combination of four pre-selected audio tones whose transmission requires approximately two seconds. The tones are generated in the Communications Center's SELCAL encoder and are received by a decoder connected to the audio output of the aircraft receiver. Properly working SELCAL relieves the flight crew from maintaining a listening watch on assigned frequencies. This is especially useful on noisy HF channels.

5.2 Operation

Receipt of the assigned SELCAL codes activates a cockpit call system in the form of a light, chime signals, or both. On aircraft equipped with SELCAL, the flight crew has the capability to also maintain a conventional listening watch using headsets or cockpit speaker. Due to technical incompatibilities, the HF SSB suppressed carrier mode of operation will not be used to transmit SELCAL signals. Many aircraft HF SSB transceivers are designed to detect SELCAL signals transmitted in the full carrier mode even though the transceiver mode selector switch is in the suppressed carrier mode. Those transceivers *not* designed with this feature must have the selector switch in the full carrier mode of operation to reliably detect a SELCAL signal.

Caution: The mode selector switch must be restored to the suppressed carrier mode before making voice transmissions.

☞ **Note:** SELCAL codes are assigned to aircraft operators and not to individual aircraft. Aviation Spectrum Resources (ASRI) is the registrar of SELCAL codes worldwide. Contact ASRI for SELCAL code issuance or code changes of any nature by calling (410) 266-4800 or via email at info@asri.aero.

5.3 SELCAL Tones

SELCAL units are based on 16 tone/letter assignments and are generally shared with more than one aircraft. ASRI as the SELCAL registrar, attempts to minimize assignment of duplicate SELCAL codes. This is accomplished by tracking SELCAL code assignment to the geographical area of operation. However, with jet aircraft, it is not uncommon to have more than one aircraft with the same SELCAL operating in the same geographical area at the same time. Owners of older aircraft should notify the ASRI SELCAL registrar of any change in geographical areas of operation. There are currently no plans by ICAO to increase the number of available tones.

 **Note:** Flight crews of SELCAL-equipped aircraft should be alert for possible duplication of SELCAL codes; listen closely to the Flight Identification (ID), as well as SELCAL, to avoid taking a clearance or other instructions meant for another flight.

6 Permissible Communications

Rockwell Collins is authorized to operate aviation radio stations in the aeronautical enroute band. These frequencies provide AOC communications to aircraft operators. It is through these radio stations that the aforementioned services are provided. ICAO defines AOC communications as those “required for the exercise of authority over the initiation, continuation, diversion, or termination of a flight in the interest of the safety of the aircraft and the regularity and efficiency of a flight.” The operation of these stations is governed by rules contained in CFR part 87 (Aviation Services). Allowable communications on these stations is strictly enforced as outlined in the *Scope of Service* section contained in CFR 87.261(a), which states, “Aeronautical enroute stations provide operational control communications to aircraft along domestic or international air routes. Operational control communications include the safe, efficient and economical operation of aircraft, such as fuel, weather, position reports, aircraft performance and essential services and supplies. Public correspondence is prohibited.”

Specific types of permissible communications include those pertaining to the following:

- Communications relating to the initiation, continuation, diversion or termination of a flight
- Performance of the aircraft, including its components
- Aircraft servicing, including fueling, deicing and maintenance
- Information of value to a flight crew that will enable the safe and efficient completion of a flight
- Information of value to ground personnel concerned with the safe and efficient operation of a flight
- Information of value to other flights in the same area
- Information and corrections pertaining to weight, balance and passenger/cargo counts
- Urgent medical information
- Connections with other transportation (including ground transportation) and ongoing air transportation
- Provisioning of essential supplies and services

The following types of communications are unacceptable, except in an emergency situation:

- Public correspondence
- Personal messages to or from crew members or passengers
- All other communications that do not fall into the permissible communications category

Radio Operators monitor all phone patches and will ensure that only permissible message traffic is handled. They are instructed to discontinue phone patches that contain unacceptable communications, and concerned users will be contacted as follow-up to these procedures.

7 Communications Records

To ensure that Domestic and flag air carriers comply with FAR 121.711, all Company radio frequencies and facilities (including VHF enroute networks and all incoming/outgoing phone lines) are continuously recorded at each Communications Center. Where the two Communications Centers are on the same frequency or frequencies, recordings are made for each. The following apply to the recording and retention of such records:

1. Automatic backup and reassignment are provided if the main recording unit fails.
2. When a 24-hour day recording is complete at the end of the UTC day, it is placed into a cabinet/archive and retained for a minimum period of 45 days. Digital files relating to an accident or emergency (if requested by the FAA, air carrier, or both) are retained for a longer period, as necessary, until released by GLOBALink Voice Services.
3. An air carrier's or aircraft operator's authorized representative may request an audio recording and/or message files of their aircraft's communications with a Communications Center.
4. In the event of an emergency, potential emergency or unusual situation involving an aircraft, Communications Center personnel take additional steps to ensure satisfactory recorder coverage.
5. A full communications master log of messages is retained with the audio file for 45 days.

8 Appendix A Standard Message Text Identifiers

A.1 Standard Message Identifier (SMI)

AEP	Position Report with Weather Information
AGM	Miscellaneous A/G Message
ALR	Alert Message
ARR	Arrival Report
DEP	Departure Report
DLA	Flight Delay
ETA	Estimated Time of Arrival
GVR	Ground-Originated Voice Request
POS	Position Report without Weather Information

A.2 Text Element Identifier (TEI)

AD	Aerodrome of Concern or Arrival
AF	Able Flight Level
AL	Altitude or Flight Level
AN	Aircraft Number
BF	Boarded Fuel (in gallons unless otherwise indicated)
CP	Cargo Payload
CZ	Cruising Speed
DA	Aerodrome of Departure
DC	Delay Code
DS	Destination Station
DT	Communication Service Information
AD	Estimated Time of Departure
EN	Endurance
EO	Estimated Time Over
FB	Fuel on Board (in lbs. unless otherwise indicated)

FI	Flight Identification
IC	Icing
IN	In Time
LP	Logbook Page
MN	Maintenance
NP	Next Report Point
OF	Off Time
ON	On Time
OS	Other Supplementary Information
OT	Out Time
OV	Present Position Over
PB	Persons on Board
PL	Payload Fuel
RF	Request Flight Level
RI	Return in Time
RO	Return on Time
RT	Route Information
SK	Sky Conditions
SL	SELCAL Code
TA	Static Air Temperature
TB	Turbulence
WV	Wind Information (Direction xxx, Speed xxx)
WX	Weather with no Assigned TEI
ZW	Zero Fuel Weight (in lbs. unless otherwise indicated)

A.3 Message Examples

The following are examples of Air/Ground messages copied by Radio Operators along with decoded explanations.

Example— Departure Report:

```
QU JFKOOXX
SFOXGXA 121937
DEP
FI N1234/DA JFK/OT 1934/OF 1936/DS ORD 2145
DT SFO IH 121936 02
```

Decoded:

DEPARTURE REPORT FOR N1234, DEPARTED
KENNEDY (JFK) OUT OF BLOCKS 1934Z, OFF
1936, ESTIMATING DESTINATION STATION
O'HARE (ORD) AT 2145Z

Example—Int'l Position Report with Weather:

QU SFOOXX FAAOXA
SFOXGXA 122020
AEP
FI N1234/OV ALCOA 2016 F290/EO ABNER 2105/NP ADENI
TA MS40/WV 260010/SK CLR/TB SMTH
DT SFO VE A 122020 06

Decoded:

INTERNATIONAL POSITION REPORT FOR N1234, OVER FIX
ALCOA AT 2016Z, AT FL290, ESTIMATING OVER FIX ABNER
AT 2105Z, NEXT FIX ADENI, TEMPERATURE MINUS FORTY
DEGREES CELSIUS, WIND VELOCITY 260°AT 010 KNOTS, SKY
CLEAR, TURBULENCE SMOOTH.

9 Appendix B Contact Information

This appendix lists contact phone numbers and teletype addresses for the New York and San Francisco Communications Centers.

B.1 NYC and SFO Communications Centers – Radio Operations 24 X 7

Communications Centers' telephone numbers and radio room teletype addresses for relay of messages through our Radio Operators or for ground-originated phone patch requests are provided below. Ground parties desiring phone patch connections or other message services through Rockwell Collins should call the appropriate Communications Center for service.

Center	Phone #	IATA/ Teletype	ICAO/AFTN	Email	Call Sign
NYC	(631) 589-7272 (800) 645-1095	NYCXGXA	KNYCXAAG	nycradio@arinc.com	New York
SFO	(925) 292-8297 (800) 621-0140	SFOXGXA	KSFOXAAG	sforadio@arinc.com	San Francisco

B.2 Administrative Numbers - Normal Business Hours (0730-1630 local time)

Location	Mailing Address	Phone Number	Email
NYC	613 Johnson Ave. Bohemia, NY 11716	(631) 244-2480	nycmgr@arinc.com
SFO	6011 Industrial Way Livermore, CA 94550	(925) 294-8400	sfomgr@arinc.com
GLOBALink Voice Services	2551 Riva Road Annapolis, MD 21401	(410) 266-4264	hpg@arinc.com

B.3 Rockwell Collins Web Site

<http://www.arinc.com>


To download a copy of the current GLOBALink Voice Services Operating Procedures Handbook and copies of the referenced Jeppesen Charts, use the following link:

<http://www.arinc.com/resources/downloads/>

10 Appendix C LDOC Frequencies

Table C-1. HF SSB LDOC Frequencies Guarded (kHz)

HF LDOC Facility	3494	6640	8933	11342	13348	17925	21964
San Francisco	✓	✓	✓	✓	✓	✓	✓
New York	✓	✓	✓	✓	✓	✓	✓
Santa Cruz, Bolivia (Remote)	✓	✓	✓	✓	✓	✓	✓
Pacific-Guam (Remote)	✓	✓	✓	✓	✓	✓	✓
Barrow, AK (Remote)	✓	✓	✓	✓	✓	✓	✓
Hat Yai, Thailand (Remote)	✓	✓		✓	✓	✓	✓

 **Note:** Radio stations transmitting SELCAL signals on these frequencies will utilize SSB full carrier mode.

11


Appendix D North Atlantic HF SSB Families

Table D-1 and D-2 provide a guide for the operational use of North Atlantic HF radio telephone networks. The following is a description of NAT routes for use with Table D-1.

Northern NAT Routes	Generally the international air routes extending between North America and Europe, lying north of 60° N latitude.
Central NAT Routes	Generally the international air routes extending between North America and Europe, lying between 60° N and 4430° N latitude.
Southern NAT Routes	Those routes that enter the New York and Santa Maria FIRs between 4430° N and 18°N.

Table D-1. North Atlantic HF Radiotelephone Families

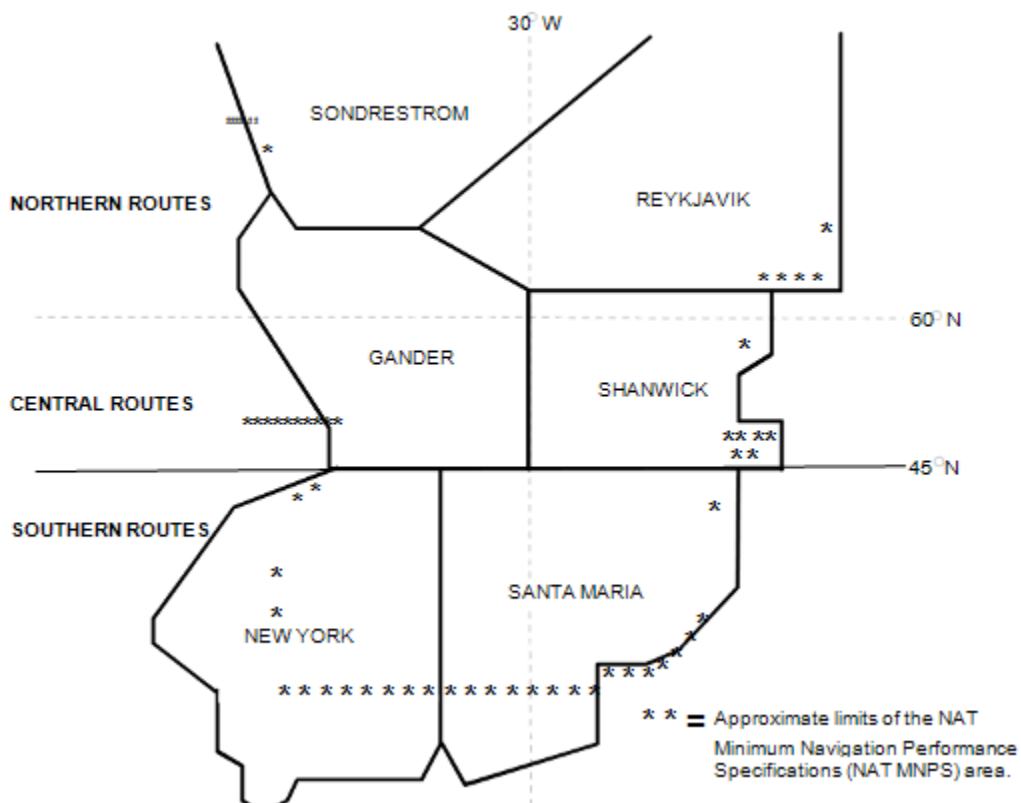
<i>Aircraft Registered West of 30W</i>		<i>Aircraft Registered East of 30W</i>	
NAT-A	Southern Routes	NAT-A	Southern Routes
NAT-B	Central and Northern Routes	NAT-C	Central and Northern Routes
NAT-D	Northern routes while flying Outside the NAT OTS	NAT-D	Northern routes while flying Outside the NAT OTS
NAT-E	Southern routes	NAT-E	Southern routes
NAT-F	Central routes	NAT-F	Central routes

 **Note:** Aircraft registered in Australia will use NAT HF families designated for use by aircraft registered east of 30° W.

The use of SSB (upper sideband) is compulsory for all communications on the civil aeronautical mobile Air/Ground high frequency channels as of February 1, 1982. See Figure D-1 for graphical presentation of NAT HF usage.

Table D-2. North Atlantic HF Radiotelephone Networks

<i>Networks North Atlantic HF Radiotelephone</i>	<i>NAT Routes Served by NAT Family Indicated</i>	<i>Availability of NAT HF Families Versus Hemisphere of Aircraft Registration</i>
NAT Family A	Southern NAT routes	Available for use by all aircraft
NAT Family B*	Northern and Central NAT routes	Available for use by aircraft registered in the hemisphere west of 30° W longitude
NAT Family C*	Northern and Central NAT routes	Available for use by aircraft registered in the hemisphere east of 30° W longitude
NAT Family D*	Northern NAT routes outside the NAT Organized Track System (OTS)	Available for use by all aircraft
NAT Family E	Southern NAT routes	Available for use by all aircraft
NAT Family F*	Central NAT routes	Available for use by all aircraft

**Figure D-1 North Atlantic Flight Information Region Boundaries**

12 Appendix E Jeppesen Services Coverage Charts

The charts mentioned in this document are produced and supplied by the Jeppesen Company and are copyright-protected. Requests for copies of the ARINC-1/2 (Domestic VHF/Intl VHF coverage), the ARINC-3/4 (International HF and VHF coverage), the ARINC-5/6 (MexNet), and the ARINC-7 (HF LDOC Coverage: Asia Area) should be referred directly to Jeppesen.

Because the coverage areas, frequencies and other information on these charts change frequently, Jeppesen has created a subscription service to provide updated charts and information on services direct to customers. The “ARINC Service” consists of an initial order setup containing all the pages depicting services coverage and the automatic distribution of changed pages as they occur. Call Jeppesen toll-free at 1-800-621-JEPP (5377).

 **Note:** These charts may also be downloaded from the Rockwell Collins website at

<http://www.arinc.com/resources/downloads>