



International Civil Aviation Organization

**FIFTEENTH MEETING OF THE
COMMUNICATIONS/NAVIGATION/SURVEILLANCE AND
METEOROLOGY SUB-GROUP (CNS/MET SG/15) OF APANPIRG**

Bangkok, Thailand, 25 – 29 July 2011

Agenda Item 4: Aeronautical Mobile Service (AMS)

2) discuss satellite voice communication

**NAT SPG/47 ON FIRST MEETING OF
INTER-REGIONAL SATCOM VOICE TAKS FORCE (IRSVTF)**

(Presented by the Secretariat)

SUMMARY

This paper provides information on the outcome Forty-Seventh Meeting of the North Atlantic Systems Planning Group (NAT SPG) held in Paris, France from 13 to 16 June 2011 on the report of the IRSVTF/1 meeting and other related activities. The version 0.4 of the Satellite Communications Voice Guidance Material is provided in the Attachment to this paper. Action by the meeting is at paragraph 3.1.

This paper relates to:

Strategic Objectives:

- A: **Safety** – Enhance global civil aviation safety
- C: **Environmental Protection and Sustainable Development of Air Transport** – Foster harmonized and economically viable development of international civil aviation that does not unduly harm the environment

Global Plan Initiatives:

- GPI-1 Flexible use of airspace
- GPI-5 RNAV and RNP (Performance-based navigation)
- GPI-7 Dynamic and flexible ATS route management
- GPI-9 Situational awareness
- GPI-12 Functional integration of ground systems with airborne systems
- GPI -21 Navigation systems
- GPI -22 Communication infrastructure

1. Introduction

1.1 The first meeting of ICAO Inter-Regional SATCOM Voice Task Force (IRSVTF) on SATCOM Voice was held on 25-27 January 2011, in Paris, France. It may be recalled that the IRSVTF was established by the North Atlantic Systems Planning Group (NAT SPG Conclusion 46/5) and Asia-Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG Conclusion 21/27) with the objective to produce a globally applicable SATCOM voice guidance material (SVGM) for air traffic service (ATS) communications.

1.2 The Forty-Seventh Meeting of the North Atlantic Systems Planning Group (NAT SPG) was held in the European and North Atlantic (EUR/NAT) Office of ICAO from 13 to 16 June 2011. The NAT SPG/47 meeting reviewed the outcome of the IRSVTF/1 meeting and other related activities.

2. Discussion

2.1 NAT SPG/47 was informed that the NAT SUPPs proposal for amendment on the use of SATCOM voice was formally approved by the President of the ICAO Council on 11 May 2011. It was emphasized that this was a very important milestone that would formally enable using the SATCOM voice in the NAT for all ATS communications. ANC requested that the EUR/NAT Regional Office include IFATCA and CANSO to the list of international organizations when circulating this type of amendment proposal, and also requested the Secretariat to develop related guidance material and to include the development of standards for the use of SATCOM voice in the agenda of the AN-Conf/12

2.2 In this respect it was noted the AIPs, NAT Doc 007 and NAT OPS Bulletins could serve as formal mechanisms for promulgating information on the use of SATCOM voice in the NAT region. The NAT SPG also noted that all matters related to MEL associated with the use of SATCOM voice would be a national regulatory issue.

2.3 The NAT SPG was provided information on the status of NAT SPG Conclusion 46/02 which had endorsed a draft proposal for amendment to the NAT SUPPs mandating Controller Pilot Data Link Communications (CPDLC) and Automatic Dependent Surveillance – Contract (ADS-C) in specified portions of the ICAO NAT Region. It was recalled that the draft proposal had been distributed for global consultation by the EUR/NAT Office of ICAO on 14 September 2010 (State Letter EUR/NAT 10-0691.TEC refers). A revised version of draft proposal for amendment to the NAT SUPP is provided in the Appendix C to the report of NAT SPG/47.

2.4 The NAT SPG was provided an update on the ICAO Inter-Regional Satellite Communications (SATCOM) Voice Task Force (IRSVTF) activities. It was recalled that the IRSVTF was established by the North Atlantic Systems Planning Group (NAT SPG) and Asia-Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) with the objective to produce a globally applicable SATCOM voice guidance material (SVGM) for air traffic service (ATS) communications. This work was scheduled for completion by December 2011.

2.5 The first meeting of IRSVTF was held from 25 to 27 January 2011, in Paris, France. 32 members from 11 States, 5 international organizations and industry, including an airline, aircraft manufacturers, communication service providers and satellite companies participated. The IRSVTF reviewed its terms of reference, status of implementation and available documentation and developed a work plan.

2.6 The latest revision of the SVGGM (version 0.4) was provided to the NAT SPG. It was noted that the SVGGM incorporated the NAT SATCOM voice trial guidance material, the material developed by the FAA PARC CWG SATCOM voice project, airworthiness certification and operational approval guidance by the FAA and the European Aviation Safety Agency (EASA).

2.7 The NAT SPG was informed that IRSVTF/1 reviewed a number of scenarios provided in its terms of reference (ToR) which included:

- a) Use of AMS(R)S voice for ATS communications via third party radio operator (No MEL relief considerations);
- b) Minimum Equipment List (MEL) relief 1 HF + 1 SATCOM;
- c) Use of portable SATCOM phones;
- d) 1 or 2 portables or installed satellite phones and no HF radio at all; and
- e) Use of SATCOM voice direct to controller communications.

2.8 The NAT SPG noted that in reviewing the scenarios described in the ToR, the IRSVTF concluded on the following principles:

- a) the guidance material would remain neutral on these scenarios;
- b) the guidance material would be developed within the global ICAO RCP framework to provide States with some flexibility to apply different standards for different uses, without implication to seamless operations;
- c) the guidance material would provide a basis for determining acceptability of any implementation, taking into account routine and emergency use, provision and use of SATCOM voice for ATS communications, procedures for the radio operator, controller and flight crew, performance specifications and qualification;
- d) the guidance on the use of portable SATCOM phones would merely indicate that their use was not advisable for ATS communications, as its use was not allowed by national regulations of many States, and any special applications on their use would not be addressed by this guidance material;
- e) the guidance material would not specifically address MEL matters, but could serve to facilitate State regulatory authorities in establishing policies in such matters; and
- f) the use of SATCOM technology alone (i.e. without any HF capability) would require study beyond the target date for completing the first edition of the guidance material. This scenario would therefore not be analyzed.

2.9 The NAT SPG agreed with the IRSVTF suggestion that the approval of the SATCOM voice as a long range communication system (LRCS) was instrumental to progress the implementation of SATCOM voice. It was felt that such recommendations could be a potential subject for discussion and decision at the ICAO Air Navigation Conference in 2012. The NAT SPG agreed to mandate the IRSVTF to prepare necessary input material to be presented at the GANIS in September 2011.

2.10 It was noted that the IRSVTF input might be useful in the form of recommendations which may include proposed amendments to ICAO SARPS. The NAT SPG supported the idea that such proposal for amendments be presented to the next meeting of the NAT IMG prior to transmission to the OPLINKP or ACP.

2.11 The NAT SPG noted that the next meeting of the IRSVTF is scheduled on 14-16 September 2011, Seattle WA USA in conjunction with PARC CWG/25 meeting. The IRSVTF plans to complete its work by the end of 2011 and present SVGM edition 1.0 to NAT SPG/48 for approval in June 2012. The ATM/AIS/SAR SG/22 and CNS/MET SG/16 are expected to review the guidance material and make recommendation for consideration by APANPIRG/23 in September 2012.

2.12 A teleconference of the Task Force was held to review and further update the Satellite Communications Voice Guidance Material on 29 June 2011, The working version 0.5 of the Guidance Material as the result of the teleconference is provided in the Attachments to this paper which includes the following:

- a) Draft SATCOM Voice Guidance Material v0.5TC (**Attachment 1**), which includes resolutions to comments, using "track changes" against v0.4.
- b) Master Comment Matrix (**Attachment 2**), which includes all comments received on the document; some comments are still open because their resolutions have not been incorporated into v0.5.

The most significant changes are as follows:

- a) New text and revisions in Chapter 3 regarding operational approvals; and
- b) Inclusion of material for RCP specifications provided in Appendix A.

2.13 Another virtual meeting (teleconference) of the Task Force is planned for 27th July to prepare for the next meeting of IRSVTF. The CNS/MET SG/15 meeting is expected to review the attached document. The participants of the meeting are requested to provide comments if any to the ICAO Regional Office for onward forwarding to next meeting of IRSVTF.

3. Action Required by the Meeting

3.1 The meeting is invited to:

- a) note the information provided in the paper;
- b) Review attached draft Satellite Communications Voice Guidance Material (Version 0.4); and
- c) Encourage the Member States of IRSVTF in the Asia and Pacific Regions to participate IRSVTF/2 meeting and provide input/comments for the SVGM.



Working Draft

Satellite Voice Guidance Material (SVGGM)

Version 0.5

Working Draft – 22-July 2011

International Civil Aviation Organization
Inter-Regional SATCOM Voice Task Force
(IR-SVTF)

Revision History

| Date | Description of changes | Version |
|-----------|--|---------|
| 13-Jul-10 | Initial working draft | |
| 26-Jan-11 | Added Joint working relationship with ICAO SATCOM Voice TF, added version control. | 0.1 |
| 27-Jan-11 | Added material from IRSVTF/1 meeting. First TF baseline. no track changes. | 0.2 |
| 31-Mar-11 | Added inputs since IRSVTF/1 meeting (See comment matrix for specific changes) | 0.3 |
| 1-Jun-11 | Added inputs from review on v0.3 (See comment matrix for specific changes) | 0.4 |
| 22-Jul-11 | Added inputs from review on v0.4 (See comment matrix for specific changes) | 0.5 |

Editor's note 1. — While editor's notes appear throughout, the entire document is a working draft and should be treated as such. Refer also to the master comment matrix, which includes open comments that may not have been resolved in this version. Comments and contributory material should be submitted to "Elkhan NAHMADOV" enahmadov@paris.icao.int, "Catherine DALY" cdaly@paris.icao.int, and "Tom KRAFT" tom.kraft@faa.gov.

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FOREWORD.

1. Historical background

1.1 The *Satellite Communications (SATCOM) Voice Guidance Material (SVGM)* is the result of a task force established at the request from the ICAO Air Navigation Commission (ANC) made during its 4th Meeting of the 183rd Session held on 21 January 2010..

1.2 Over the oceanic and remote continental areas, aeronautical communications have historically been conducted with high frequency (HF) radios due to the advantage of being able to transmit and receive air/ground communications for thousands of miles. Most competent authorities hence required two independent HF sets on-board.

1.3 In the early 1980s, civil aviation recognized the increasing limitations of the present communications, navigation, and surveillance (CNS) systems for air traffic management (ATM) and the need to make improvements to overcome them and meet the future needs. Thus the Council of ICAO established the Special Committee on future air navigation systems (FANS) to study new concepts and new technologies and to recommend a system that would overcome the present and foreseen problems. The Committee made an extensive study of existing systems and the applications of new technologies. It concluded that the limitations of the existing systems are intrinsic to the systems themselves and were so restrictive that the problems could not be overcome on a global scale except by the exploitation of satellite technology. Thus a new concept of air navigation based on satellite technology was developed and consequently endorsed by the Tenth Air Navigation Conference in September 1991

1.4 In 1995, the initial future air navigation system (FANS 1/A) provided an integrated airborne CNS package. In addition to required navigation performance (RNP) and global navigation satellite system (GNSS) capabilities, FANS 1/A includes controller pilot data link communications (CPDLC) and automatic dependent surveillance – contract (ADS-C) capabilities using SATCOM, VHF, and HF data links. CPDLC and ADS-C were seen as the normal or preferred means of ATS communications. However, voice communications would continue to be required in situations where data link was not suitable. At the same time, these aircraft became equipped with SATCOM voice capability.

1.5 In June 2001, the 37th Meeting of the NAT SPG (12-14 June 2001) agreed that a study would be initiated to assess the viability of using satellite voice communications for waypoint position reporting as an initial step. The study was accompanied by the NAT trials that had been successful and demonstrated that while there were costs associated with implementation and use, SATCOM voice could be an effective and reliable long range communication system to support ATS voice communications.

1.6 In 2003, the 39th NAT SPG Meeting (17-19 June 2003) agreed that the NAT SUPPs needed to be amended to clearly state the conditions under which SATCOM voice could be used. In 2008, the 44th Meeting of the NAT SPG (17-20 June 2008) agreed that the authorization to use SATCOM voice for all ATS communications would permit reduction in risk of communications failure, improve safety of operations, and alleviate HF congestion. However, guidance material would be needed to address a number of issues related to call setup times, security and system performance and capacity. It was further concluded that any decision regarding MEL relief of one HF radio was subject to approval by the appropriate authority.

1.7 Some State authorities have granted some operators time-limited MEL dispatch relief of one HF radio whereby the aircraft may be dispatched for a limited period (5 or 10 days) with only a single operational HF radio system and a single operational SATCOM voice system. Operators are now seeking

permanent MEL dispatch relief of one HF radio by demonstrating that either the Iridium or Inmarsat SATCOM voice system meets the long range communication system (LRCS) requirements.

1.8 In 2010, the ICAO ANC having reviewed the progress of the NAT SPG SATCOM voice studies, requested that an ICAO inter-regional task force would be established to develop a globally applicable guidance material *Satellite Voice Guidance Material* (SVGM) in support of the global implementation of aeronautical mobile satellite (route) communications systems (AMS(R)S).

1.9 This edition of the Satellite Voice Guidance Material (SVGM) provides for a comprehensive update of various regional and State guidance material to use SATCOM voice for ATS communications. This includes the incorporation of performance-based specifications and associated guidance on data collection, monitoring, and analysis. This guidance material may facilitate the appropriate authority in establishing its policies on MEL for some dispatch relief. However, it assumes that sufficient HF voice infrastructure must remain in service and that the aircraft must be equipped with at least one operational HF voice system.

2. Scope and purpose

2.1 The SVGM provides guidance and information concerning SATCOM voice communications for aeronautical use and is intended to facilitate the uniform application of Standards and Recommended Practices contained in Annex 2 — *Rules of the Air* and in Annex 11 — *Air Traffic Services*, the provisions in the *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444) and, when necessary, the *Regional Supplementary Procedures* (Doc 7030).

2.2 This guidance material is intended to maximize operational benefits in SATCOM voice operations by promoting seamless and interoperable SATCOM voice operations throughout the world. This edition limits itself to current and near term operations. Future editions are expected to incorporate guidance that applies to the planned expansion of SATCOM voice capability in the high-density continental areas.

2.3 The following principles were adhered to in the development of this guidance material:

a) build on the ICAO required communication performance (RCP) framework to provide States with flexibility to apply different standards for different uses, without implication to seamless operations and providing that the safety objectives are satisfied;

b) provide a basis for States in determining acceptability of any implementation within an ATS facility, a radio facility or aircraft equipage, taking into account routine and emergency use, the provision of ATS using SATCOM voice communications, procedures for the radio operator, controller and flight crew, performance specifications and qualification;

c) note that in-flight use of portable SATCOM phones for ATS communications is not allowed, according to many existing State operating regulations;

d) do not specifically address MEL matters, but serve to facilitate State authorities or Regional Safety Oversight Organizations (RSOOs) in establishing policies in such matters; and

e) do not address the use of SATCOM voice in isolation (i.e., HF voice capability remains available on board and in the ground infrastructure).

2.4 While directed primarily at air traffic services personnel and flight crews, the following personnel should be familiar with various aspects of its contents: regulators, airspace planners, aircraft operators, dispatchers, communication service providers and radio operators, training organizations,

central monitoring and reporting agencies, automation specialists at centers and radio facilities, and aircraft manufacturers and equipment suppliers.

2.5 The guidance will support the following activities:

a) the States' roles and responsibilities in relation to the following:

- 1) safety regulatory oversight of air navigation services;
- 2) operational approval, flight crew training and qualification;
- 3) airworthiness certification of aircraft SATCOM voice systems.

b) the development of agreements and/or contractual arrangements between air traffic service providers and aircraft operators and their respective communication service providers;

c) development of operational procedures; and

d) operational monitoring, analysis, and exchange of operational data among regions, States, RSOOs and communication service providers.

2.6 Guidance material and information concerning SATCOM data communications is not within the scope of this guidance material and can be found in the Global Operational Data Link Document (GOLD).

3. Status

3.1 This guidance may contain material that may eventually become Standards and Recommended Practices (SARPs), or PANS provisions when it has reached the maturity and stability necessary for adoption or approval. It may also comprise material prepared as an amplification of the basic principles in the corresponding SARPs, and designed particularly to assist the user in the application of the SARPs and PANS.

4. Implementation

4.1 The implementation of procedures is the responsibility of Contracting States; they are applied in actual operations only after, and in so far as, States have enforced them. However, with a view to facilitating their processing towards implementation by States, this complementary guidance material has been prepared in language which will permit direct use by air traffic services personnel and others associated with the provision of air traffic services to international air navigation.

5. Promulgation of information

5.1 Information relating to the establishment and withdrawal of and changes to facilities, services and procedures affecting aircraft operations should be notified and take effect in accordance with Annex 15 — Aeronautical Information Services.

6. References

Editor's note 2. — Revised from GOLD, need further review of references for applicability to SATCOM voice. Add missing references. Probably need to add FAA, EASA, RTCA/Eurocae references too.

6.1 The following references are cited in this document:

- a) ICAO Annex 1 — *Personnel Licensing*;
- b) ICAO Annex 2 — *Rules of the Air*;
- c) ICAO Annex 4 — *Aeronautical Charts*;
- d) ICAO Annex 6 — *Operation of Aircraft – Part I — International Commercial Air Transport — Aeroplanes*;
- e) ICAO Annex 10 — *Aeronautical Telecommunications – Volume II — Communication Procedures* including those with PANS status;
- f) ICAO Annex 10 — *Aeronautical Telecommunications – Volume III — Communication Systems*;
- g) ICAO Annex 11 — *Air Traffic Services*;
- h) ICAO Annex 15 — *Aeronautical Information Services*;
- i) *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, ICAO Doc 4444);
- j) *Regional Supplementary Procedures* (Regional SUPPs, ICAO Doc 7030);
- k) *Procedures for Air Navigation Services — ICAO Abbreviations and Codes* (PANS-ABC, ICAO Doc 8400);
- l) *Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services* (ICAO Doc 8585);
- m) *Aircraft Type Designators* (ICAO Doc 8643);
- n) *Manual on Airspace Planning Methodology for the Determination of Separation Minima* (ICAO Doc 9689);
- o) *Performance-based Navigation Manual* (PBN) (ICAO Doc 9613);
- p) *Manual on Required Communication Performance* (RCP) (ICAO Doc 9869);
- q) *Manual on the Aeronautical Mobile Satellite (Route) Service* (ICAO Doc 9925).
- r) European Commission Regulation (EC) No 859/2008 of 20 August 2008 amending Council Regulation (EEC) No 3922/91 as regards common technical requirements and administrative procedures applicable to commercial transportation by aeroplane (so called “EU-OPS” having replaced the former JAR OPS-1)

7. Changes to the document

This document is maintained as a regional document in coordination with all ICAO planning and implementation regional groups (PIRGs) providing data link services within their region. Each participating PIRG establishes a mechanism for submitting and administering change proposals.

Change proposals (CPs) can be submitted by any stakeholder participating in data link operations. The stakeholder should submit a Change Proposal to their ICAO regional office. The ICAO regional office will coordinate the change proposal within its own region, other regions, and ICAO HQ, to determine the acceptability of the change proposal. Once the ICAO regional office has completed coordination and the participating PIRGs accept the change proposal, the change is concluded by each of the PIRGs.

8. Amendments to the SVGGM

| Amendment | Source(s) | Subject(s) | Approved applicable |
|--------------------------------|--|--|---|
| 1 st Edition (2011) | Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/22 – 2011) North Atlantic Systems Planning Group (NAT SPG/48 – 2012) | <i>Satellite Voice Guidance Material (SVGGM)</i> | Applicable within participating Regions on 1 July 2012. |

Chapter 1. Definitions

Editor's note 3. — To be administratively updated just prior to completion. Terms generally will only be included if used in the document.

When the following terms are used in the present document they have the following meanings. Where the term has “(ICAO)” annotated, the term has already been defined as such in SARPs and/or PANS.

Term

ACC. The symbol used to designate area control centre. (ICAO)

ACP. The symbol used to designate actual communication performance.

ACTP. The symbol used to designate actual communication technical performance.

Aeronautical fixed telecommunication network (AFTN). A worldwide system of aeronautical fixed circuits provided, as part of the aeronautical fixed service, for the exchange of messages and/or digital data between aeronautical fixed stations having the same or compatible communications characteristics. (ICAO)

Aeronautical Information Publication (AIP). A publication issued by or with the authority of a State and containing aeronautical information of a lasting character essential to air navigation. (ICAO)

Aeronautical mobile satellite (route) service (AMS(R)S). Includes both voice and data. The use of AMS(R)S for voice communications is commonly referred to as SATCOM voice. This convention is maintained throughout this Document.

Aeronautical operational control (AOC). Communication required for the exercise of authority over the initiation, continuation, diversion or termination of flight for safety, regularity and efficiency reasons. (ICAO)

AFTN. The symbol used to designate aeronautical fixed telecommunication network. (ICAO)

AIDC. The symbol used to designate ATS interfacility data communications. (ICAO)

AIP. The symbol used to designate Aeronautical Information Publication. (ICAO)

Air navigation service provider (ANSP). An organization responsible for the provision of air traffic services.

Air traffic services provider (ATSP). An organization responsible for the provision of air traffic services.

Term

Air traffic control (ATC) service. A service provided for the purpose of:

- a) preventing collisions:
 - 1) between aircraft, and
 - 2) on the manoeuvring area between aircraft and obstructions; and
- b) expediting and maintaining an orderly flow of air traffic. (ICAO)

Air traffic management (ATM). The dynamic, integrated management of air traffic and airspace including air traffic services, airspace management and air traffic flow management — safely, economically and efficiently — through the provision of facilities and seamless services in collaboration with all parties and involving airborne and ground-based functions. (ICAO)

Air traffic service (ATS). A generic term meaning variously, flight information service, alerting service, air traffic advisory service, air traffic control service (area control service, approach control service or aerodrome control service). (ICAO)

Air traffic services unit (ATSU). A generic term meaning variously, air traffic control unit, flight information centre or air traffic services reporting office. (ICAO)

Aircraft active flight plan. (See flight plan).

Aircraft address. A unique combination of 24 bits available for assignment to an aircraft for the purpose of air-ground communications, navigation and surveillance. (ICAO)

Aircraft identification. A group of letters, figures or a combination thereof which is either identical to, or the coded equivalent of, the aircraft call sign to be used in air-ground communications, and which is used to identify the aircraft in ground-ground air traffic services communications. (ICAO)

Note 1.— *The aircraft identification does not exceed 7 characters and is either the aircraft registration or the ICAO designator for the aircraft operating agency followed by the flight identification.*

Note 2. *ICAO designators for aircraft operating agencies are contained in ICAO Doc 8585.*

Aircraft registration. A group of letters, figures or a combination thereof which is assigned by the State of Registry to identify the aircraft.

Note. *Also referred to as registration marking.*

Aircraft system availability (A_{AIRCRAFT}). The required probability of available capability on an aircraft with an average flight of 6 hours.

Note.— *The actual aircraft system availability is computed assuming that the service is available in the relevant airspace.*

AIREP. The symbol used to designate an air-report. (ICAO)

Term

Air-report. A report from an aircraft in flight prepared in conformity with requirements for position, and operational and/or meteorological reporting. (ICAO)

AMS(R)S. The symbol used to designate aeronautical mobile satellite (route) service. (ICAO)

ANSP. The symbol used to designate air navigation service provider. (ICAO)

AOB. The symbol used to designate aeronautical operational control. (ICAO)

Appropriate ATS authority. The relevant authority designated by the State responsible for providing air traffic services in the airspace concerned. (ICAO)

Appropriate authority.

a) Regarding flight over the high seas: The relevant authority of the State of Registry.

b) Regarding flight other than over the high seas: The relevant authority of the State having sovereignty over the territory being overflown. (ICAO)

Area control centre (ACC). A unit established to provide air traffic control service to controlled flights in control areas under its jurisdiction. (ICAO)

ATC. The symbol used to designate air traffic control. (ICAO)

ATC waypoint. A waypoint contained in Item 15 of the ICAO flight plan, or as amended by ATC.

Note.— A waypoint inserted by the flight crew for purposes of conducting flight operations such as points of no return are not ATC waypoints.

ATM. The symbol used to designate air traffic management. (ICAO)

ATS interfacility data communication (AIDC). Automated data exchange between air traffic services units, particularly in regard to co-ordination and transfer of flights. (ICAO)

ATSP. The symbol used to designate air traffic service provider.

ATS. The symbol used to designate air traffic service. (ICAO)

ATSU. The symbol used to designate ATS unit. (ICAO, sort of)

C for RCTP. The proportion of intervention messages and responses that can be delivered within the specified RCTP time for intervention.

Note.— For voice communications, continuity would take into consideration any dropped calls.

C for RCTP_{AS}. The proportion of intervention messages and responses that can be delivered within the specified RCTP_{AS} time for intervention.

Term

C for RCTP_{AS/AIR}. The proportion of intervention messages and responses that can be delivered within the specified RCTP_{AS/AIR} time for intervention.

Note.— For voice communications, continuity would take into consideration any dropped calls.

C for RCTP_{ATSU}. The proportion of intervention messages and responses that can be delivered within the specified RCTP_{ATSU} time for intervention.

C for RCTP_{CSP}. The proportion of intervention messages and responses that can be delivered within the specified RCTP_{CSP} time for intervention.

C for ~~TRN~~operational performance. The proportion of intervention messages and responses that can be delivered within the specified ~~TRN time~~operational performance time for intervention.

Note.— For voice communications, continuity would take into consideration any dropped calls.

Call performance. The operational portion of the transaction time to prepare the operational response, and includes the recognition of the instruction, and message composition during an interactive call between the Radio Operator and Flight Crew, e.g. flight crew/HMI for intervention transactions.

Note.— For voice communications, the call begins when the aircraft indicates an incoming call to the flight crew and ends when the callers operationally completes the call. The call includes any tasks for the radio operator to send the message to the ATSU.

Call sign. The designator used in air-ground communications to identify the aircraft and is equivalent to the encoded aircraft identification.

CNS. The symbol used to designate communications, navigation and surveillance. (ICAO)

CNS/ATM. The symbol used to designate communications, navigation and surveillance/air traffic management. (ICAO)

COM. The symbol used to designate communications, (ICAO)

Communication service provider (CSP). Any public or private entity providing communication services for general air traffic.

Note.— A radio facility is a CSP.

Communication services. Aeronautical fixed and mobile services to enable ground-to-ground and/or air-to-ground communications for safety and regularity of flight.

Compulsory reporting point. An ATC waypoint for which a position report is required by the aircraft.

Control area (CTA). A controlled airspace extending upwards from a specified limit above the earth. (ICAO)

Term

CSP. The symbol used to designate communication service provider.

CTA. The symbol used to designate control area. (ICAO)

Current flight plan. (See flight plan).

EMERG. The symbol used to designate emergency. (ICAO)

ETD. The symbol used to designate estimated time of departure or estimating departure. (ICAO)

FANS 1/A. The symbol used to designate the initial future air navigation system, as defined by RTCA DO-258A/EUROCAE ED-100A, or previous standards that defined the FANS 1/A capability.

Note.— *FANS 1/A generally means that the data link system on an aircraft, the ATSU ground system, and communication service provision comply with the standard. In certain cases, specific reference is made to a particular type of FANS 1/A aircraft as follows:*

a) FANS 1/A+ means that the aircraft completely complies with Revision A of the standard, which includes message latency timer; and

b) FANS 1/A ADS-C means that the aircraft complies with AFN and ADS-C applications, but does not include the CPDLC application.

FANS. The symbol used to designate future air navigation system.

FDPS. The symbol used to designate flight data processing system. (ICAO)

FIR. The symbol used to designate flight information region. (ICAO)

Filed flight plan. (See flight plan).

Flight identification. A group of numbers, which is usually associated with an ICAO designator for an aircraft operating agency, to identify the aircraft in Item 7 of the flight plan.

Flight information region (FIR). An airspace of defined dimensions within which flight information service and alerting service are provided. (ICAO)

Flight level (FL). A surface of constant atmospheric pressure which is related to a specific pressure datum, 1 013.2 hectopascals (hPa), and is separated from other such surfaces by specific pressure intervals. (ICAO)

Note 1.— *A pressure type altimeter calibrated in accordance with the Standard Atmosphere:*

a) when set to a QNH altimeter setting, will indicate altitude;

b) when set to QFE altimeter setting, will indicate height above the QFE reference datum;

c) when set to a pressure of 1 013.2 hPa, may be used to indicate flight levels.

Note 2.— *The terms “height” and “altitude”, used in Note 1 above, indicate altimetric rather than geometric heights and altitudes.*

Term

Flight plan. Specified information provided to air traffic services units, relative to an intended flight or portion of a flight of an aircraft. (ICAO)

A flight plan can take several forms, such as:

Current flight plan (CPL). The flight plan, including changes, if any, brought about by subsequent clearances. (ICAO)

Note 1.— When the word “message” is used as a suffix to this term, it denotes the content and format of the current flight plan data sent from one unit to another.

Filed flight plan (FPL). The flight plan as filed with an ATS unit by the pilot or a designated representative, without any subsequent changes. (ICAO)

Note 2.— When the word “message” is used as a suffix to this term, it denotes the content and format of the filed flight plan data as transmitted.

Aircraft active flight plan. The flight plan used by the flight crew. The sequence of legs and associated constraints that define the expected 3D or 4D trajectory of the aircraft from takeoff to landing. (RTCA/EUROCAE)

HF. The symbol used to designate high frequency (3-30 Mhz). (ICAO)

ICD. The symbol used to designate interface control document.

Maximum accumulated unplanned outage time (min/yr). Measured by accumulating *only* the duration times for unplanned outages greater than the unplanned outage duration limit during any 12-month period. The accumulation is performed separately for each relevant operational airspace or FIR.

Maximum number of unplanned outages. Measured separately for each relevant operational airspace or Flight Information Region (FIR) over any 12-month period.

MEL. The symbol used to designate minimum equipment list. (ICAO)

MET. The symbol used to designate meteorological or meteorology. (ICAO)

Minimum equipment list (MEL). A list which provides for the operation of aircraft, subject to specified conditions, with particular equipment inoperative, prepared by an operator in conformity with, or more restrictive than, the MMEL established for the aircraft type. (ICAO)

Monitored performance. The monitored combination of the time it takes to organize, prepare, dial and perform an interactive call plus the technical performance of the ground and air equipment.

Note.— For voice communications, monitored performance comprises RCTP_{AS/AIR}, queue/connect performance and call performance.

NOTAM. A notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations. (ICAO)

Term

Operational communication transaction. The process a human uses to initiate the transmission of an instruction, clearance, flight information, and/or request, and is completed when that human is confident that the transaction is complete. (GOLD)

Operational performance ~~(TRN)~~. The portion of the transaction time (used for intervention) that does not include the times for message composition or recognition of the operational response.

Note.— For voice communications, operational performance comprises RCTP, queue/connect performance and call performance.

PANS-ATM. The symbol used to designate Procedures for Air Navigation Services — Air Traffic Management (ICAO Doc 4444). (ICAO)

Queue/connect performance. The operational portion of the transaction time to organize and place the call either via a manual or automated dialing sequence depending on equipment at the RO facility.

Note.— For voice communications, queue/connect performance begins when the message from the ATSU via the network is sent to the queue and ends when the last digit of the dialing sequence is finished.

Required communication performance (RCP). A statement of the performance requirements for operational communication in support of specific ATM functions.

Required communication technical performance (RCTP). The portion of the (intervention) transaction time that does not include the human times for message composition, operational response, and recognition of the operational response.

Note.— For voice communications, RCTP comprises $RTCP_{ATSU}$, $RCTP_{AS}$, $RCTP_{AS/AIR}$ and $RCTP_{CSP}$.

RCP. The symbol used to designate required communication performance.

RCP availability (A). The required probability that an operational communication transaction can be initiated when needed.

Note.— For voice communications, this translates to any failure prohibiting the call to be initiated to include congestion (much like the analogy of a terrestrial mobile phone network). However this definition does not apply to a busy condition whereby the entity being called is already on the phone and does not have a way to put the existing call on hold or if able to, rejects the additional incoming call.

RCP continuity (C). The required probability that an operational communication transaction can be completed within the communication transaction time, either ET or TT 95%, given that the service was available at the start of the transaction.

Note.— For voice communications, this translates into 5 out of 100 calls not being able to conclude their voice transactions within the allotted time or the call could be disconnected for any reason, including aircraft maneuvers, switching satellites or any loss of service while on the call.

Term

RCP expiration time (ET). The maximum time for the completion of the operational communication transaction after which the initiator is required to revert to an alternative procedure.

RCP integrity (I). The required probability that an operational communication transaction is completed with no undetected errors.

Note 1.— Whilst RCP integrity is defined in terms of the “goodness” of the communication capability, it is specified in terms of the likelihood of occurrence of malfunction on a per flight hour basis, e.g. 10-5, consistent with RNAV/RNP specifications.

Note 2.— For voice communications, this translates to the ability to conduct the voice transaction with enough intelligibility to understand the verbal request. Additionally, this could also manifest in the crew executing an incorrect instruction because it was misunderstood. (It may not be clear at the time of this submittal, what type of error rate would reflect this condition, or if the read-back would mitigate or compound this).

RCP nominal time (TT 95%). The maximum nominal time within which 95% of operational communication transactions ~~is~~are required to be completed.

RCP specification. A specification (e.g. RCP 240) that provides the values assigned to RCP parameters for communication transaction time, continuity, availability and integrity, and allocations to ATSP, aircraft, CSP and operator.

RCTP. The symbol used to designate required communication technical performance.

RCTP_{AS}. The summed critical transit times for an ATC intervention message and a response message allocated to the Aero Station.

Note.— For voice communications, RCTP_{AS} includes two concurrent processes:

- a) the aircraft and aeronautical station technically disconnect the call; which is assumed. Operationally, the call is disconnected when the flight crew and radio operator complete the call; and*
- b) the aeronautical station sends the response to the to the ATSU via the ground-ground network; the performance is denoted by RCTP_{AS}.*

~~RCTP_{AS/AIR}~~. ~~The summed critical transit technical times for an ATC intervention message and a response message for the air-ground network and associated components to initiate a call, allocated to the aircraft system.~~

Note.— For voice communications, RCTP_{AS/AIR} begins when the last digit of the dialing sequence is finished and ends when the aircraft indicates an incoming call to the flight crew.

RCTP_{ATSU}. The summed critical transit times for an ATC intervention message and a response message, allocated to the ATSU system.

RCTP_{CSP}. The summed critical transit times for an ATC intervention message and a response message, allocated to the CSP system.

Term

Required communication performance (RCP). A statement of the performance requirements for operational communication in support of specific ATM functions. (ICAO)

Required communication technical performance (RCTP). The portion of the (intervention) transaction time that does not include the human times for message composition, operational response, and recognition of the operational response.

Required navigation performance (RNP). A statement of the navigation performance necessary for operation within a defined airspace. (ICAO)

Note.— *Navigation performance and requirements are defined for a particular RNP type and/or application.*

Responder performance criteria. The operational portion of the transaction time to prepare the operational response, and includes the recognition of the instruction, and message composition, e.g. flight crew/HMI for intervention transactions.

RGS. The symbol used to designate radio ground station.

RNAV. The symbol used to designate area navigation.

RNP. The symbol used to designate required navigation performance.

SARPs. The symbol used to designate Standards and Recommended Practices. (ICAO)

Satellite communication service provider. Typically provides the inter-working unit of the terrestrial sub-system which connects the satellite ground earth station, or Gateway, and the terrestrial network in support of AMS(R)S. Commonly referred to as SSP (see SSP definition).

Satellite network operations provider. Typically provides the satellite sub-system which includes the satellite(s) and may or may not include the ground earth stations or Gateway. Commonly referred to as SSP (see SSP definition)

Satellite service provider (SSP). An entity or group of entities that provide, via satellite, aeronautical fixed services and/or aeronautical mobile services at least from the signal in space to/from aircraft, to the attachment point of the ground earth station (GES) to the ground communication services network.

SATCOM. The symbol used to designate satellite communication. (ICAO)

SELCAL. The symbol used to designate selective calling system. (ICAO)

Service availability (A_{CSP}). The required probability that the communication service is available to all users in a specific airspace when desired.

SSP. The symbol used to designate satellite service provider.

Term

Terrestrial Network Service Provider. Typically provides the aviation centric terrestrial sub-system which provides connectivity to the end-users, such as ATS providers, airlines and flight departments. Commonly referred to as CSP (see CSP Definition).

~~**TRN.** The symbol used to designate monitored operational performance.~~

Unplanned outage duration limit (minutes). Time after the unplanned outage begins at which there is an operational impact. Measured from when an unplanned outage begins to when the ATSU receives notification that the service has been restored.

Unplanned outage notification delay (min). Notification to the ATSU of an unplanned outage. Measured from when the unplanned outage begins to when the ATSU receives notification.

VHF. The symbol used to designate very high frequency (30-300 Mhz). (ICAO)

Chapter 2. Overview of satellite voice communications

2.1 General

Editor's note 4. — Text previously in 2.1 was moved to Foreword, rephrased to be globally applicable, and augmented. Chapter 2 is intended to provide an overview of satellite voice communications, including system architecture and components.

2.2 Satellite Industry Overview

2.2.1 Satellite communication systems are defined by three different altitude orbits; low earth orbit (LEO), medium earth orbit (MEO) and geosynchronous earth orbit (GEO). The altitude of the orbit determines the area illuminated by the satellite. The higher the orbit the weaker the signal is from the satellite, but it has a much larger footprint. Propagation loss is overcome by increased complexity of the antenna systems along with higher transmitter power. Conversely, a LEO satellite's footprint is much smaller requiring a higher number of satellites to provide coverage, but the antennas used are much simpler along with reduced RF power requirement on the subscriber end. Also, the lifetime of a LEO satellite is less due to drag caused by the close proximity of earth.

2.2.2 Today there are ~~two successful~~ three satellite systems servicing the aeronautical market. Inmarsat and MTSAT ~~are~~ is a GEO and Iridium is a LEO satellite system. ~~Both~~ These satellite systems use AMS(R)S L-band frequencies reserved for aeronautical safety services. Inmarsat is currently replacing their older generation I-3 satellites with new technology I-4 satellites providing advanced services. That project is nearly complete. The end of life for Inmarsat I-3's is 2018. Iridium satellites current system was launched in the late 1990's and became operational in early 2000. The original life expectancy of Iridium's satellites was calculated to be seven plus years. Iridium is planning to design, build and launch their next generation satellite system call "Iridium Next" by the end of 2017. A recent study of their current system indicates that the original satellite system should last through 2017.

~~2.2.3 In recent years a number of other companies attempted to enter the satellite phone market. Notably they were Globalstar (Loral Space & Qualcomm), ICO Global Communications (Craig McGaw/Nextel), Odyssey Worldwide Services (TRW & Teleglobe) and Teledisc (Bill Gates).~~

~~2.2.4 In November 2010 a new company, LightSquared, targeting the United States 4G market, launched their first satellite and positioned it over North America. LightSquared will be a combination of thousands of terrestrial 4G base stations deployed in heavily populated areas and the use of satellite coverage, providing seamless 4G coverage, in less populated areas. Even though they are not currently targeting the aeronautical market they are planning to use Inmarsat AMS(R)S L-band frequencies that are adjacent to frequencies used for GPS. A study has been commissioned to determine the possible effect on GPS receivers from the terrestrial component of the LightSquared 4G network within the United States.~~

~~2.2.5 The US Global Positioning System (GPS) is comprised of 24 operational satellites in six orbital planes at an altitude of 12,550 miles (20,200 km). At that altitude, four satellites minimum are normally in view at any location on earth, at any time. The civilian L1 frequency block is centered at 1575.42 MHz and augmentation for aeronautical is provided within the adjacent Inmarsat L-band spectrum. Each GPS satellite contains two Rubidium and one Cesium atomic clocks that synchronized daily by the US Naval~~

~~Observatory (USNO). Each satellite transmits ranging information based on its own atomic standard that allows a GPS receiver to solve its position. Augmentation is used to improve altitude determination and quality of the position determination.~~

2.3 Iridium

2.3.1 Iridium uses a constellation of 66 satellites at an altitude of 780 km (450 miles) in six orbital planes, with eleven satellites in each orbital plane, providing global coverage. Additionally there are a number of spare satellites to replace any in-orbit failures. At that altitude each satellite covers a circular area of 4700 km (2900 miles) and is in-view to a location on the ground for approximately 9 minutes. Using a small amount of overlap in coverage between each satellite, the Iridium network hands-off the call to the next satellite coming into view to the ground location. This is similar to a GSM cellular telephone system where the subscriber moves from one cell site to another except that the satellite is the moving vehicle. The speed of the aircraft appears almost stationary compared to the speed the satellite moves.

2.3.2 Iridium uses a combination of both frequency and time multiplexing along with 48 spot beams developed by the phased array antenna from each satellite. The frequency band used by subscribers are within L-band AMS(R)S 1616 MHz to 1626.5 MHz block. Iridium transmits and receives on this single block by multiplexing time slots to control the direction of the signal. This L-band connection from the satellite to the mobile subscriber is cross-linked via inter-satellite connectivity using Ka-band frequencies. Each satellite connects to the satellite in front, behind and to each side on Ka-band. This inter-satellite Ka-band connection is routed within the satellite constellation to the ground station gateway in Tempe Arizona. Connectivity in Tempe is also on the Ka-band. Iridium's reliability is affected by rain fade on Ka-band to the Tempe gateway. A second ground earth station is being considered.

2.4 Inmarsat

2.4.1 The Inmarsat network of satellites is in geosynchronous orbit directly above the earth equator at an altitude of 35,786 km (22,236 miles). At that altitude above earth, each satellite's spot beam covers approximately 120 degrees of the earth at the equator and to approximately 82 degrees North and 82 degrees South latitude. The orbital period of each satellite is exactly the same as the rotation period of earth so each satellite appears to remain in the same position.

2.4.2 There are three new I-4 and four older I-3 satellites providing aviation services, including PSTN voice. L-band frequencies allocated for aviation AMS(R)S are split between a transmit block and a receive block with a guard band in between.. This allows the subscriber unit using a frequency duplexer to receive and transmit simultaneously. Inmarsat's primary transmit frequency allocation is adjacent to Iridium's allocation used for both transmit and receive; this can cause interference to the secondary Iridium receive allocation when the aircraft operator desires both satellite services.

2.4.3 Swift Broadband users of Inmarsat I-4 satellites have available Voice over Internet Protocol (VoIP) capability. The ground user network interface doesn't exist as yet but should evolve in time. Iridium's Next satellite system has indicated the possible availability of these VoIP services.

2.5 MTSAT

2.4.42.5.1 MTSAT is a GEO satellite system. The specification is equivalent to that of I-3 except for the footprint which is limited to the Asia and the Pacific Ocean. MTSAT is interoperable with I-3 so that the subscriber unit can seamlessly carry out the handover between MTSAT and I-3 (and legacy communication module of I-4).

2.5.2.6 Public Switched Telephone Networks and Dialing Systems Used

2.5.12.6.1 Current offerings by both Inmarsat and Iridium for voice communication services use the Public Switched Telephone Network (PSTN) or leased telephone lines from the appropriate gateway to the ground party. In instances where the reliability of the ground telephone network is poor consideration should be given for a satellite link to the ground party. The telephone number country codes for both satellite systems are provided by the ITU and are designated as Global Mobile Satellite Systems (GMSS). Inmarsat uses a Single Network Access Code (SNAC) and switches the call automatically to the correct Inmarsat earth station where the aircraft is logged into. Iridium employs telephone number ITU sub-blocks and optionally a US-based telephone number. The various options available can have significant cost incurred to the ground calling party due to various tariffs applying.

Chapter 3. Administrative provisions related to satellite voice operations

3.1 ATSP and aero radio service provision

3.1.1 When providing SATCOM voice services, ANSPs and aero radio facilities should provide these services consistent with voice communication procedures, regardless of the technology used.

3.1.2 System validation

- 3.1.2.1 Provide updated aircraft SATCOM telephone lists to ANSP.
- 3.1.2.2 Provide a reliability and availability factor of at least 99.9%.
- 3.1.2.3 Provide security provisions IAW SVTF findings (ie - CLI/PIN).
- 3.1.2.4 Provide service outage/return to service reports.
- 3.1.2.5 Provide ATSP priority level.
- 3.1.2.6 Provide acceptable timely call establishment and connectivity (Current connection times exceed 1 minute)

3.1.3 Aeronautical information, notifications, and interfacility agreements

3.1.3.1 The ATSP should notify operators of SATCOM voice services using the AIP or NOTAM. Notification includes:

- a) Procedures for publishing contact information, that is associated with current airspace boundaries, e.g. specific SATCOM voice numbers for applicable facilities; and
- b) Requirements for use, e.g., criteria for when to contact the ATC facility or aero radio; and
- c) Flight plan form and submission requirements.

3.1.4 Requirements, privileges and obligations of communication service provider (CSP)

Editor's note 5. — Need definition for CSP (Chapter 1). CSP is considered to include both satellite and network service providers.

Editor's note 6. — The following areas need to be addressed.

1. Approval by whom?
2. It's envisioned that each state would not need to approve every CSP.
3. Current EASA rules imply that a state of residence of the CSP (in this case a satellite) is to be responsible for its approval and certification, as well as on going oversight and audits. (check IMO approval processes for CSP). This is just an example.
4. Are the current Annex 10 provisions adequate? Additional questions relating to Annex 10 and other guidance material.
 - a) Do they ensure inoperability?
 - b) Will the interface to the end users be the same regardless of which CSP is used?
 - c) Compatible and interoperability security requirements and automation.
 - d) Questions were raised about the OPLINKP and SARPS amendment timeframes and processes to allow progressing upgrade of SATCOM voice.

3.1.4.1 Requirements for CSP

3.1.4.1.1 The CSP should ensure that the SATCOM voice service meets the performance criteria, in **Appendix A**. (i.e. RCP 400 with a safety objective of 10^{-3} per flight hour).

Editor's note 7. — MM - Ch 2/Ch 4 Group - These times in Appendix A were challenged in Paris and are still questionable and need agreement.

3.1.4.1.2 For those situations when a CSP cannot continue to provide SATCOM voice communications, it should inform the involved ATSPs and operators and/or, if appropriate, the providers of Aeronautical Information Services, in accordance with coordination procedures established in writing.

3.1.4.1.3 The CSP shall be under safety oversight either by:

- a) an air traffic service provider (ATSP) or a commercial air operator, when contracted by at least one of them; or
- b) directly by the competent aviation authority established by the State on a national or regional basis, when allowed or prescribed by applicable law.

3.1.4.1.4 In the case of provision of additional SATCOM services, e.g. as those which may be required by NextGen or SESAR, for which a safety objective more severe than $10E-3$ is postulated, an authorized service provider should demonstrate to the competent authority the compliance with the applicable requirements. ~~Additional guidance on the establishment of the safety objectives for SATCOM is provided in Appendix D.~~

3.1.4.2 Contracted COM services

3.1.4.2.1 The principle of certification and subsequent continued surveillance (or “oversight”) of aviation operators is established in two Annexes to the Chicago Convention: Annex 6 Part I for Commercial Air Transport operators and 14 for aerodrome operators.

3.1.4.2.2 Annex 11 (Air Traffic Services) does not necessarily require certification of the air traffic service provider (ATSP) but requires States to establish a State Safety Programme (SSP) further described in Attachment D therein, which clarifies that States shall establish effective mechanisms to inspect and audit ATSPs in order to ensure effective safety oversight. In other words the requirement for States to oversee safety exists even in the absence of certification or approval of a certain type of aviation operators or service providers.

3.1.4.2.3 Chapter 2 (i.e. Administrative provisions for the international telecommunication service) of Volume II of Annex 10 also contains standards for the “supervision” of the COM service by a responsible authority designated by the State. Note 2 to par. 2.27.4 of Annex 11 clarifies that, when COM services are directly provided by an ATSP, their oversight is through the SSP and the Safety Management System (SMS) established by the ATSP. Same Note clarifies that if COM services are contracted to an entity other than the ATSP, the SMS requirement still applies, but only to those services with direct operational implications (e.g. communications used for ATS purposes).

3.1.4.2.4 In any case therefore, an aviation organization (commercial air transport operator, aerodrome operator, ATSP) shall be, according to specific ICAO standards, under safety oversight by the competent aviation authority. Organizations under safety oversight should take responsibility for the safe, regular and efficient conduct of operations, including for the services provided by any contractors. For instance, this latter ICAO provision is transposed in the EU by so called “EU-OPS” –in respect of commercial air transport operators and by so called “common requirements ” for ATSPs.

3.1.4.2.5 In this possible business model (e.g. an ATSP or air operator contracting COM services from a different organisation), depicted in Figure 3.X below, the contracting organization does not only take responsibility to demonstrate to the competent authority that proper mechanisms exist to oversee the contracted CSP, but also inevitably attracts on itself some liability also for the contracted COM service.

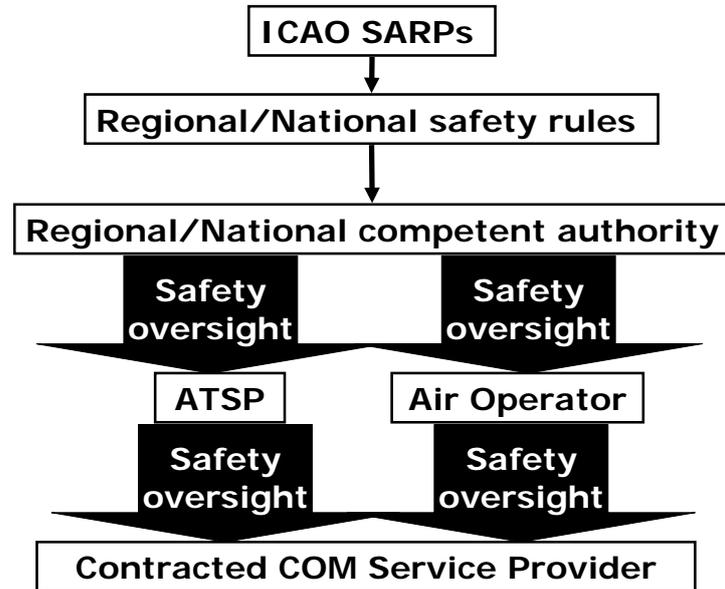


Figure 3-1. Radio operator contracted by organizations (e.g. ATSP or commercial air operator) under oversight by a competent authority

3.1.4.3 Direct certification of the CSP

3.1.4.3.1 Present wording of paragraph 2.4.1 in Volume II of Annex 10, leaves open the possibility of direct oversight by the competent authority of the communication service provider (CSP). This possibility, in fact applied e.g. in the European Union (EU), where CSPs “unbundled” from ATSPs can be certified, is illustrated in Figure 3.Y.

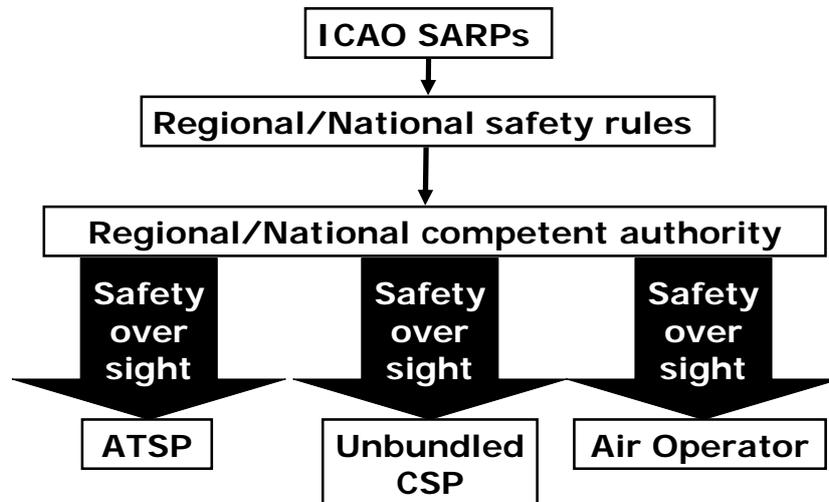


Figure 3-2. Unbundled communication service provider (CSP) directly under oversight by a competent authority

3.1.4.3.2 Even in this case agreements for the quality of the COM service (e.g. Service Level Agreements) and other contractual arrangements can be established between the ATSP (or the air operator) and the CSP, but the contracting entity takes no responsibility for safety oversight of the CSP. Such a responsibility, and therefore the corresponding liability, is transferred to the competent authority.

3.1.4.4 Privileges and obligations of authorized CSPs

3.1.4.4.1 Law applicable in the States should establish which organizations are eligible to be authorized as SATCOM CSPs (either directly by law or through a process of acceptance or certification or approval by a competent authority). For instance, in the EU, the Regulations of the “single European sky” and the EASA Basic Regulation require SATCOM and all other mobile or fixed aeronautical COM services, to be under the managerial responsibility of a certified CSP (bundled or unbundled). In the USA the FAA, as ATS provider, is authorized to contract third parties providing communication services.

3.1.4.4.2 Law adopted on a regional or national level should specify the privileges and obligations of the authorized CSPs.

3.1.4.4.3 Typical privileges may include, but are not limited to:

- a) offer SATCOM services within the limits of the authorization;
- b) sign declarations or statements of conformity or of verification ;
- c) operate and maintain the SATCOM system;
- d) release to service new or repaired constituents of the system;
- e) restore the service after any outage;

f) manage any change, including development of associated risk assessments and possibly direct approval of minor changes.

3.1.4.4.4 Typical obligations may include, but are not limited to:

- a) work according to the terms of authorization, contract, certification or approval and possibly to accepted manuals or procedures;
- b) verify the system or constituents prior to signing any declaration, statement or release to service;
- c) maintain records;
- d) establish an internal scheme for occurrence reporting and analysis, including reporting to other involved stakeholders (e.g. manufacturers of avionics) and competent authority;
- e) impose requirements on contractors and verify their actual implementation.

3.1.5 Radio facility considerations

3.1.5.1 To provide SATCOM voice radio services at a full operational level, the radio facility should be able to accept or place a SATCOM voice call given the necessary infrastructure to handle the expected SATCOM voice traffic demand and in accordance with prescribed performance specifications. Additionally, radio facility providers must ensure that adequate resources are available in the event that SATCOM voice services are disrupted.

3.1.5.2 When supporting satellite voice communications, radio facilities should establish procedures that:

- a) Enable operators to register SATCOM voice capabilities and means to contact the aircraft. (only applies to MEL relief)
- b) Ensure ANSPs and radio operators receive the relevant information needed to establish two-way communications with the aircraft.
- c) Maintain, on a 28-day update cycle, INMARSAT's and Iridium's master aircraft phone number list as new SATCOM radio facilities become operational.
- d) Ensure users are notified when service conditions change, i.e., service outages, degraded performance, restoration of service.

3.1.5.3 When supporting satellite voice communications, radio facilities should provide automation support that allow the radio operator to provide SATCOM voice services for the intended operations in accordance with performance specifications provided in **Appendix A**. The automation support should include capabilities that allow the radio operator to:

- a) Place and receive SATCOM telephone calls to either the INMARSAT or Iridium access points.
- b) Obtain the correct authorization Personal Identification Number (PIN) for both INMARSAT and Iridium networks to place authorized ATC calls.
- c) Answer and route incoming SATCOM voice calls to the appropriate SATCOM/radio operator.
- d) Auto-dial capability to enable faster call setup times.
- e) Accept a new call from a flight crew as a participant of an existing SATCOM voice communication already in progress, e.g., the new caller should be able to hear the transmission already in progress and standby for an opportunity to intervene. (This is an example of "Conference", ...)
- f) To exchange air traffic control information with ATC.

- g) Provide for the ability to prioritize, preempt and establish precedence on outgoing calls.

3.1.6 Satellite voice service

3.1.6.1 The following criteria apply to the voice satellite service:

- a) The ground earth station should be capable of preventing unauthorized calls to aircraft;
- b) The satellite service should enable ATIS access to the aircraft voice channel when required regardless if the flight crew are engaged in another call of a lower priority. If passenger services are also provided on the same system used by the flight crew, passenger calls should be preempted if calls of a higher priority are placed to the flight deck.
- c) The SATCOM voice system should provide Caller ID with PIN security information for display to the receiving party.

Editor's note 8. — The note that follows contains "must" and "will require," which is not appropriate for notes. Furthermore, the guidance material should be performance-based and not based on any specific technology. Description of operation should be considered for inclusion in Chapter 2. Guidelines should be provided to support requirements of Annex 10 or elsewhere. Reference comment SV3-0100.

Note.— This guidance material supports both Iridium and INMARSAT communications. INMARSAT systems typically support several levels of SATCOM voice communications. Iridium systems are typically single channel or dual channel voice systems dedicated for flight deck communications. Iridium based systems will require additional infrastructure in the Ground Earth Station to implement the necessary priority services needed for ATC voice communications.

3.1.7 Monitoring system operations

3.1.7.1 The ATSP and its CSP(s) should retain records for at least 30 days to allow for accident/incident investigation purposes. The ATSP and CSPs should make these records available for air safety investigative purposes on demand. These recordings should allow replaying of the situation and identifying the SATCOM voice communications between the radio operator/controller and the flight crew.

3.2 Operator eligibility

3.2.1 Operational authorization to use satellite voice communications

3.2.1.1 Pilots holding an instrument rating (and where necessary a type rating) have the privilege to fly an aircraft under Instrument Flight Rules (IFR): e.g. en-route following a series of VOR (VHF Omni-Range) stations in the domain of navigation or using on-board radio equipment to liaise with Air Traffic Control in the domain of communication. Granting to pilots privileges linked to possess of a valid licence and proper ratings, is the normal way used by States to "authorize" aviation operations, without

requiring additional administrative processes. However the meaning of “authorization”, although this word is widely used in Annex 6, is not defined.

3.2.1.2 Attachment E to Annex 6 Part I clarifies that an “approval” is an active response by the competent aviation authority established by State(s) to a matter submitted for its review, constituting a finding or determination of compliance with the applicable standards. An approval will be evidenced by the signature by the approving official, the issuance of a document or certificate, or some other formal action (e.g. a letter). Same Attachment explains that an “acceptance” does not necessarily require an active response by the authority to a matter submitted for its review. In other words this is a form of “silent approval”, unless the authority specifically rejects all or a portion of the matter under review, usually after some defined period of time after submission.

3.2.1.3 Hence in this guidance material the word “authorization” refers to a privilege granted by the applicable rules to persons holding the required licences or certificates and enjoying the related privileges (no additional administrative process). The word “approval” indicates an administrative procedure based on an application and an explicit written reply by the competent authority. The word “acceptance” means that a certified organisation (e.g. a commercial air operator) submits a document (e.g. a change to the operations manual) to the competent authority and, if the latter does not object within a given time, the change is in fact accepted.

3.2.1.4 Authorizations and approvals may be applied also to general aviation. On the contrary, since in most ICAO Contracting States an Air Operator Certificate (AOC) is not required for general aviation, the “acceptance” process does not apply to this segment of aviation.

3.2.1.5 From the point of view of air operators, the authorization (i.e. no additional administrative procedures) is normally preferred in comparison to the approval (i.e. written application followed by written reply by the authority).

3.2.1.6 The general principle of granting to properly rated pilots the authorization to use on board radio equipment, as part of their privileges, is however implicitly based on several underlying assumptions, such as:

a) the aircraft, including its avionics, has an airworthiness approval covering the type of envisaged IFR operations (e.g. long range) and a radio licence;

b) the complexity of using radio equipment, including SATCOM, does not present particular challenges;

c) the concept and systems upon which the operation will be carried out are mature enough (= not “new”), which is the case of SATCOM voice;

d) the risk associated with improper operation (including for third parties in the air or on the ground) is tolerable, which is the case for SATCOM voice since the transmission, if unclear can be repeated, and for which, a totally independent long range communication system (i.e. HF) exists;

e) availability and continuity of SATCOM voice is ensured, under responsibility of a Service Provider as explained in previous paragraph 3.1.4;

f) appropriate standards for quality and management are established;

g) accuracy and integrity of the address data base is ensured;

h) appropriate training and checking standards and procedures for using SATCOM equipment exist and are implemented mainly for pilots; and

i) provision of information (e.g. MMEL and training requirements) from holders of Type Certificates (TC) to air operators, throughout the life cycle of the aircraft is ensured.

3.2.1.7 Should one or more of the requirements listed above not be substantiated, then the competent authority at national or regional level, should assess whether rules and procedures for an explicit approval are necessary. Historically this has been the case in several instances in the navigation domain, but it has almost never been considered necessary in the communication domain.

3.2.2 Radio equipment to be carried on board

3.2.2.1 Competent authorities also establish the minimum number of long range radio equipment to be carried on board. For instance, in the European Union (EU) the competent regional authority (i.e. EASA) has proposed that, at the level of legally binding rules (See references) aeroplanes shall be equipped with the radio communication equipment required by the applicable airspace requirements. Radio communication equipment shall include at least two independent radio communication systems necessary under normal operating conditions to communicate with an appropriate ground station from any point on the route, including diversions. This means that in principle one set of SATCOM and one set HF could be approved in regions where both services are available.

3.2.2.2 The possible acceptance of one set of SATCOM and one set of HF on long range routes, is further clarified by proposed EASA Acceptable Means of Compliance (AMC) clarifying that:

a) An HF - system is considered to be long range communication equipment;

b) Other two-way communication systems may be used if allowed by the relevant airspace procedures.

3.2.2.3 The proposed EASA rules mentioned above, would hence allow national authorities in the EU Member States to accept, as normal communication equipment used by aircraft on long range routes, one set of SATCOM voice and only one set of HF radio. These rules are expected to enter into force in 2012.

Editor's note 9. — It would be nice to insert examples from other continents.

~~3.2.1.13.2.2.4~~ 3.2.2.4 If changes to the Minimum Equipment List (MEL) are desired to allow dispatch with one satellite voice communication system and only one HF radio system, the operator should obtain operational approval or acceptance authorization from the State of the Operator or State of Registry.

Editor's note 9.—Editor's note 10. — What about CPDLC for MEL considerations? MM - This is for another forum and out of scope of this Task Force.

3.2.3 Criteria for aircraft operators

~~3.2.1~~3.2.3.1 Aircraft operators should meet the following criteria:

a) Distribute advisory information within the flight operations department to ensure that all personnel concerned are aware of SATCOM concepts and procedures associated with the use of SATCOM for routine ATC communications (i.e. phraseology).

b) Assess operational requirements, establish policy and procedures, and incorporate them in appropriate documents, including:

1) Procedures to ensure that each participating aircraft is registered with their communication service provider;

2) Flight crew responsibilities for establishing and maintaining HF/VHF voice communications (SELCAL) with the appropriate OCA/FIR's;

3) Procedures on use of SATCOM voice in accordance with ATC communication procedures and guidance material provided in **Chapter 5**, including its use in relationship to other means of communication on the specific aircraft, e.g., CPDLC/ADS-C, FMS WPR, Oceanic clearance;

4) Contact information for the Aero Radio/ATS unit;

Editor's note 10.—Editor's note 11. — For contact information, change to read ANSP. Just an idea. MM - No leave as is. Some use different ATC and Comms providers.

5) Procedures when SATCOM voice fails;

6) Procedures for reporting problems associated with SATCOM voice to appropriate monitoring agencies.

3.2.3.2.4 Aircraft equipage

Editor's note 11.—Editor's note 12. — Need to remove FAA-specific references.

~~3.2.2~~3.2.4.1 The installations should be approved by the State of Registry or State of the Operator in accordance with FAA AC 20-150 (or equivalent), and verified to comply with the following:

a) RTCA DO-210D, Minimum Operational Performance Standards for Geosynchronous Orbit Aeronautical Mobile Satellite Services (AMSS)

b) RTCA DO-262A, Minimum Operational Performance Standards for Avionics Supporting Next Generation Satellite Systems (NGSS)

c) ARINC 741, Aviation Satellite Communication System.

- d) ARNIC 761(Iridium & Inmarsat-2G)
- e) ARINC 781 (Inmarsat-3G)

Note.— The above criteria apply only to the SATCOM voice installation when used for ATC communications. The communication equipment requirements as prescribed for the airspace operated in or by the State of Registry or State of the Operator are beyond the scope of this document.

3.2.3.2.5 Maintenance and in-service difficulties

3.2.3.2.5.1 The operator should establish procedures to report any problems its flight crews and dispatchers have with SATCOM voice operations in accordance with normal reporting practices.

3.2.3.2.5.2 The operator should establish procedures to ensure its flight crews and dispatchers are notified of significant degradation of SATCOM service, e.g., outage.

Editor's note 12.—Editor's note 13. — Maybe include some guidance on managing SIM cards during maintenance and other relevant information

3.3 Flight planning

3.3.1 The operator should ensure that the proper information is included in the ICAO flight plan. Until Amendment 1 to the PANS/ATM becomes valid in November 2012 the following procedures should be followed.

- a) Insert in item 10, Equipment, the letter “Z” to denote “other equipment”.
- b) Insert in item 18, Other information, the text “COM/” followed by the word SATVOICE, followed by further identification of the type of equipment such as INMARSAT or IRIDIUM.

Example:

```
(FPL-ACA101-IS
-B773/H-SHXWZ/SD
-EGLL1400
-N0450F310 L9 UL9 STU285036/M082F310 UL9 LIMRI
52N020W 52N030W 50N040W 49N050W
-CYQX0455 CYYR
-EET/EISNN0026 EGGX0111 020W0136 CYQX0228 040W0330
050W0415 REG/CFIUV SEL/FQHS COM/SATVOICE INMARSAT
CODE/C0173E)
```

3.3.2 After Amendment 1 becomes valid, the appropriate indication(s) should be inserted in item 10, namely “M1” for an INMARSAT RTF capability, “M2” for an MTSAT RTF capability and/or “M3” for an Iridium RTF capability.

Example:

(FPL-ACA101-IS
-B773/H-SHXWM1M3/S
-EGLL1400
-N0450F310 L9 UL9 STU285036/M082F310 UL9 LIMRI
52N020W 52N030W 50N040W 49N050W
-CYQX0455 CYYR
-EET/EISNN0026 EGGX0111 020W0136 CYQX0228 040W0330
050W0415 REG/CFIUV SEL/FQHS CODE/C0173E)

3.3.3 When the necessary information for establishing contact with the aircraft can be derived from the ICAO 24-bit address, that information should be included in item 18 using the “CODE” indicator as shown in the above examples.

Chapter 4. Controller and radio operator procedures

Editor's note 13.—Editor's note 14. — Text taken from Kevin Stevens and Radio Operator – Aero radio procedures2 documents. Needs work, some inconsistencies and overlap.

4.1 General

4.1.1 The underlying SATCOM voice technology (duplex mode/open mic) lends itself to a conversational mode of communications. Therefore, such use can create misunderstanding and confusion. When using SATCOM voice, normal RTF conventions must be followed in accordance with standard ICAO phraseology, as defined in Annex 10, Volume II, Chapter 5 and Doc. 8400.

4.1.2 On establishing SATCOM voice contact, care should be taken to ensure positive identification of the aircraft.

4.1.3 If unable to contact the aircraft via SATCOM voice then reversion to any alternative means of communication medium should be followed, including HF, VHF, and Datalink.

4.1.4 Even if there is an automated identification capability, the radio operator or controller must address the aircraft by its identification code Reg # and/or Flight ID for flight safety reasons. Additionally, manufacturers must take into account the human factors elements for ease of use when designing systems.

4.2 Controller procedures

Editor's note 14.—Editor's note 15. — To be updated after the next version of Radio Operator procedures is finalized. We will either create a complementary procedure for Controllers or integrate it into the Radio Operator procedures.

4.3 Radio operator procedures

4.3.1 Outgoing calls – Radio operator initiated (ground-to-air)

4.3.1.1 **Figure 4-1** provides a flow chart for SATCOM voice calls initiated by the radio operator to the flight crew. **Table 4-1** provides descriptions associated with each number flowchart item.

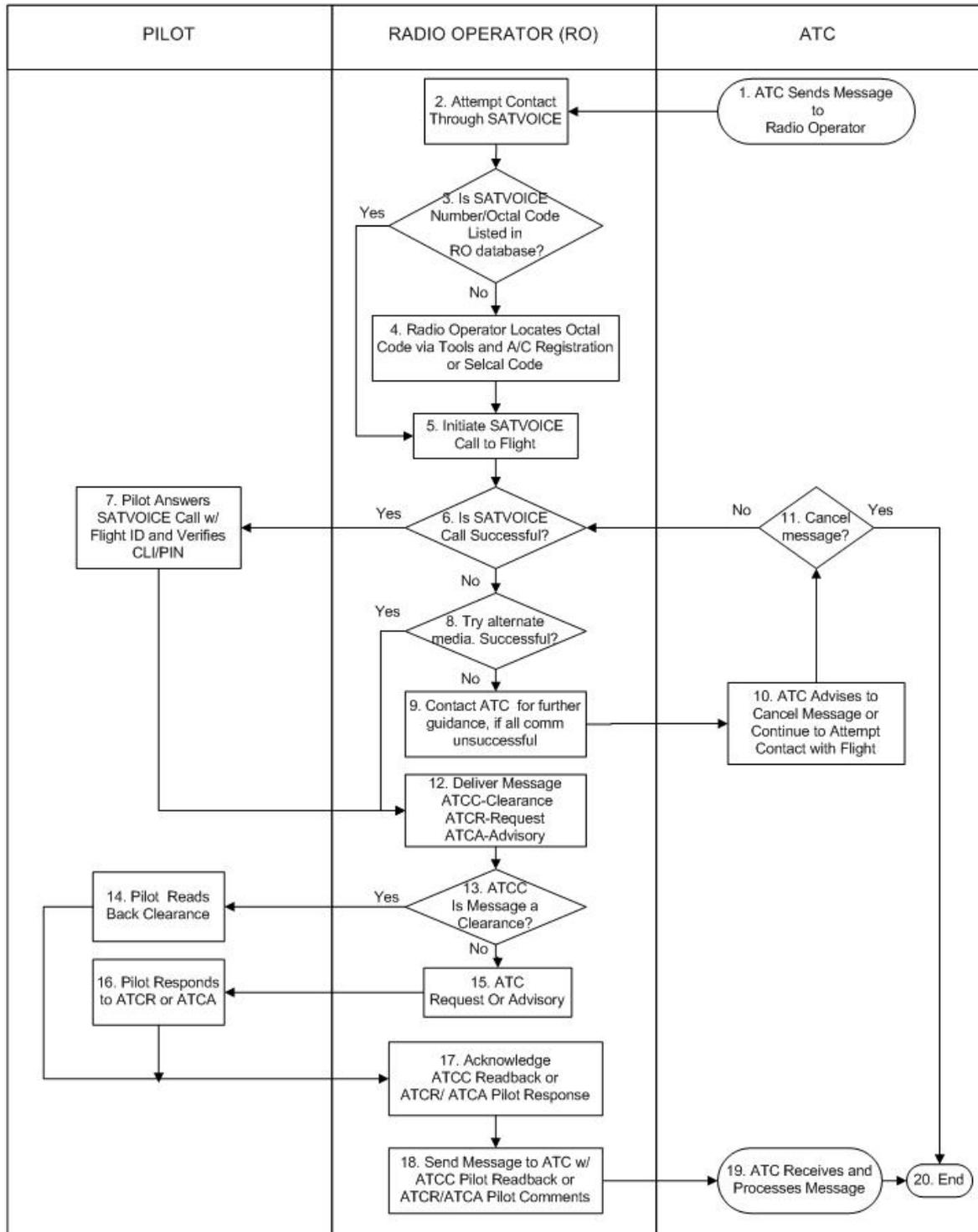


Figure 4-1. Ground to air (radio operator to flight crew) SATCOM voice flowchart

Table 4-1. Ground to air (radio operator to flight crew) SATCOM voice flow chart descriptions

| Ref | Ground to Air Communication Process | What is done |
|-----|--|---|
| 1 | ATC sends message to Radio Operator | ANSP/ATC inputs a message via ground network to Radio Operators within ATC agency or to their CSP. |
| 2 | Attempt contact through SatVoice | Radio Operator attempts SatVoice call if numbers are quickly available. |
| 3 | Is SatVoice number/octal code listed in RO database? | If SatVoice number is not previously available to Radio Operator, then he/she checks database for octal code or SatVoice number. |
| 4 | Radio Operator locates octal code via tools and A/C registration or Selcal code. | If SatVoice number is not readily available, other tools may be queried to cross reference Aircraft registration number and/or Selcal code. |
| 5 | Initiate SatVoice call to flight | Once the Satcom number is available, the Radio Operator will initiate a call to the aircraft. |
| 6 | Is SatVoice call successful? | Decision point – is the SatVoice call to the aircraft successful? |
| 7 | Yes: Pilot Answers SatVoice call w/ Flight ID and Verifies CLI/PIN. | This branch indicates that the SatVoice call was successfully answered by the pilot, stating the Flight ID and verifying the CLI and PIN, which is displayed to the pilot. |
| 8 | No: Try alternate media. Successful? | Decision Point - Radio Operator tries another means of communication (such as reattempting SatVoice, trying HF, VHF, or other means). Is it successful now? |
| 9 | No: Contact ATC for further guidance, if all comm unsuccessful | If other means of communication are unsuccessful, then the Radio Operator will contact ATC to report failed communication attempt and obtain further ATC guidance. |
| 10 | ATC advises to cancel message or continue to attempt contact with flight. | Given previous status report to ATC by the Radio Operator, ATC will provide additional guidance on message delivery – either to cancel the message or to continue attempted delivery. |
| 11 | Cancel message? | Decision Point - Did ATC advise the Radio Operator to cancel any further message attempts? Continue through Yes (End Message) or No (Reattempt Delivery) options. |
| 12 | Yes: Deliver Message: ATCC – Clearance ATCR – Request ATCA - Advisory | With the successful contact either via SatVoice or alternate media, the Radio Operator will deliver one of the 3 types of messages – clearance, request or advisory. |
| 13 | ATCC – Is message a clearance? | Decision Point – Is the current message a Clearance message? |
| 14 | Yes: Pilot reads back clearance | If the current message is a Clearance, then the pilot will readback the Clearance verbatim to the Radio Operator. The Radio Operator is closely monitoring to ensure pilot readback is correct. |
| 15 | No: ATC Request or Advisory | Since the current message is not a Clearance, then it is determined to be a Request or Advisory. |

| Ref | Ground to Air Communication Process | What is done |
|-----|--|--|
| 16 | Pilot responds to ATCR or ATCA | Since the current message is a Request or Advisory, it is not necessary for the pilot to read it back; therefore, he simply responds to it. |
| 17 | Acknowledge ATCC Readback or ATCR/ATCA Pilot Response. | The Radio Operator will acknowledge the message as appropriate. If it is a Clearance, the RO acknowledges the pilot's readback. However, if it is a Request or Advisory, the RO will just acknowledge the pilot's response for documentation back to ATC. |
| 18 | Send message back to ATC w/ ATCC Pilot Readback or ATCR/ATCA Pilot Comments. | Since this message activity started with an ATC Clearance, Request or Advisory, the Radio Operator is completing the communication back to ATC with the pilot's response – either documenting the pilot's readback to the Clearance or providing any comments from the pilot to the Request or Advisory. |
| 19 | ATC receives and processes message. | ATC receives the message sent from the Radio Operator with the pilot's response. ATC processes the message/information as appropriate. |
| 20 | End | End communication either due to successful delivery or cancellation direction by ATC. |

4.3.1.2 The method of establishing ground initiated calls will be dependent on the technical/operational implementation at each one of the radio stations. However, some steps should be common to each station regardless of the technical/operational methodology employed. These are:

- a) Identify the Inmarsat 8 digits short code of the aircraft from radio operator database;
- b) Initiate the dialing sequence ensuring CLI/PIN and security measures are in place;
- c) Wait for the flight crew to answer the call;
- d) confirm the aircraft call sign prior to delivering the clearance or message;
- e) Initiate the conversation; and
- f) Terminate the call after the dialog is finished.

Example:

Radio operator <Initiates call and line rings in flight deck>

Flight crew Gander Radio, Air France 465 go ahead.

Note.— The pilot will be able to identify the caller and address the facility accordingly.

Radio operator Air France 465, Gander Radio, <message>

Flight crew Gander Radio, Air France 465, <read back message>

Radio operator Air France 465, Gander Radio, readback correct, out

4.3.1.3 In cases where an ATC message is urgent or delivery time is critical, the most expeditious means of communications should be utilized.

4.3.2 Incoming calls – radio operator receives calls (air-to-ground)

4.3.2.1 **Figure 4-2** provides a flow chart for SATCOM voice calls received by the radio operator from the flight crew. Table x-x provides descriptions associated with each number flowchart item.

DRAFT

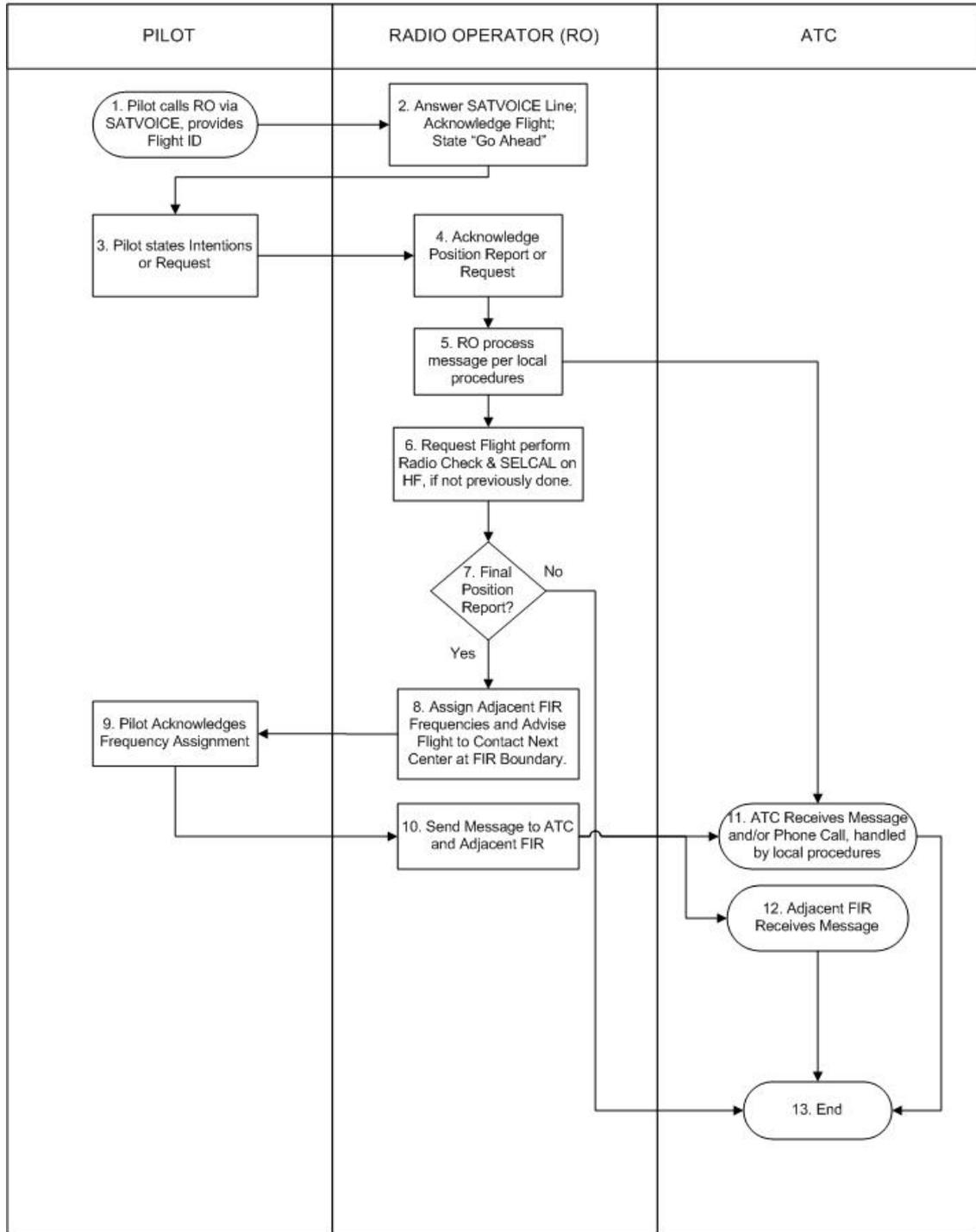


Figure 4-2. Air-ground (flight crew to radio operator) SATCOM voice flowchart

Table 4-2. Air-ground (flight crew to radio operator) SATCOM voice flowchart descriptions

| Ref | Ground to Air Communication Process | What is done |
|------------|--|---|
| 1 | Pilot calls RO via SatVoice, provides Flight ID | Pilot from an oceanic flight calls the Radio Operator via SatVoice. Pilot provides Flight ID. |
| 2 | Answer SatVoice line; acknowledge Flight; State "Go Ahead" | Radio Operator answers the SatVoice line and acknowledges the flight's call, stating "Go Ahead". |
| 3 | Pilot states intentions or Request | Pilot states his/her intentions for placing the SatVoice call, which could be an Initial Check-in, a Guard Change, a Pilot Request, or provides a Position Report |
| 4 | Acknowledge Position Report or Request | Radio Operator acknowledges the pilot's Position Report or his/her Request |
| 5 | RO process message per local procedures | Radio Operator relays Position Report or Request to ATC per local procedures. |
| 6 | Request Flight perform Radio Check & SELCAL on HF, if not previously done | After obtaining flight information for a new flight contact, the Radio Operator will request an HF Radio Check and SELCAL with the aircraft, which they will perform as soon as possible. Depending upon the configuration of communications assets within the Radio room, the SELCAL could be with the same Radio Operator who is on the SatVoice call, or the pilot could be transferred to another Radio Operator, handling those HF frequencies and radio assets. |
| 7 | Final Position Report? | Decision Point – Is this the pilot's final Position Report? This may determine activity with an adjacent FIR. |
| 8 | Yes: Assign Adjacent FIR Frequencies and advise Flight to contact next center at FIR Boundary. | When this is the pilot's final Position Report in the Radio Operator's FIR responsibility, then the Radio Operator provides the adjacent FIR frequencies to the pilot and advises the aircraft to contact the next center at the FIR boundary. |
| 9 | Pilot acknowledges Frequency Assignment. | Pilot acknowledges the HF or VHF Frequency Assignment for the next FIR boundary from the Radio Operator. |
| 10 | Send Message to ATC and Adjacent FIR | Radio Operator sends a message to ATC and the Adjacent FIR about flight status and/or pending entry into next FIR. |
| 11 | ATC Receives message and/or phone call, handled by local procedures | ATC will receive the Position Report or the Pilot Request from the Radio Operator. The Radio Operator may also call ATC depending upon local procedures. |
| 12 | Adjacent FIR Receives Message | The Adjacent FIR will receive the Position Report and flight status, in preparation of handling the flight as it enters their FIR. |
| 13 | End | End communication flow due to completion of communications activities, such as delivery of pilot Position Report or Request, and handoff to adjacent FIR, if appropriate, and/or updating of Radio Operator's flight information database. |

4.3.2.2 For SATCOM voice calls made to a radio station, the radio operator should:

- a) confirm the identification of the calling flight;
- b) acknowledge message; read back the message or selected contents, as required; and;
- c) if not already completed, provide primary and secondary HF frequencies and ensure flight establishes HF/VHF and SELCAL check, where required by the regulatory authority

Example:

<line rings at aero radio>
 Flight crew <Initiates call and line rings at aero radio>
 Radio operator Flight calling Shanwick Radio, GO AHEAD
Note.— Radio operator does not need to know who is calling.
 Flight crew Shanwick Radio, Speedbird 255, <message>
 Radio operator Speedbird 255, Shanwick Radio <read back message>
 Flight crew Shanwick Radio, Speedbird 255, ROGER
 Radio operator Shanwick Radio OUT

4.3.2.3 If the initial call from the flight crew to a radio station is made on SATCOM, the radio operator should:

- a) receive and read-back the message, if required; and
- b) allocate the primary and secondary HF frequencies and perform a SELCAL check on HF.

Editor's note 15.—Editor's note 16. — (input from Guidance Material for SATCOM Voice Trial in NAT Airspace, May 2007) follows:

Editor's note 16.—Editor's note 17. — TK – This text may be duplicate of text in Chapter 5 for flight crew procedures.

4.4 (Deleted)

4.5 Communication failures and emergencies

4.5.1 Loss of SATCOM Voice Connection

4.5.1.1 If the SATCOM voice connection is lost during a communication, the radio operator should:

- a) attempt to contact the aircraft on HF (SELCAL) or VHF or relay through another flight;
- b) deliver the clearance or receive the message as appropriate; and
- c) if connection fails advise the aircraft to revert to HF voice procedures.

4.5.2 Airspace emergencies – loss of controller or radio facility capabilities

4.5.2.1 In situations where the controller or radio facility loses capabilities, then the radio operator should use whatever means are available to provide information on the emergency situation and any directives, for example:

- a) HF broadcast capability – Radio operators will transmit a voice broadcast on HF radio of emergency situation and any directives.
- b) SATCOM voice broadcast capability – future development; and
- c) Volmet broadcasts, if available.

Chapter 5. Flight crew procedures

5.1 General

5.1.1 Operators with data link equipped aircraft (CPDLC, ADS-C, and FMC WPR) operating in airspace where data link services are provided should use data link as their normal means of communications. Some normal ATC communications and most non normal communications will require use of voice communications. The flight crew ~~may should~~ use either SATCOM or HF voice at their discretion. ~~, for ATC communications, including position reports, negotiations and requests, when deemed appropriate.~~ Urgency, type of message being communicated, current atmospheric conditions, and company standard operating procedures are all factors in determining which voice system to use.

5.1.2 Although the underlying technology lends itself to a conversational mode of communications, such use can create misunderstanding and confusion. Therefore, when using SATCOM voice, normal RTF conventions must be followed identical to HF communications in accordance with standard ICAO phraseology, as defined in Annex 10, Volume II, Chapter 5 and Doc 4444 chapter 12 and Doc. 8400.

5.1.3 On initial contact with a radio station, the flight crew should provide flight identification and request frequency assignment and perform a SELCAL check on HF. After a successful SELCAL check, all subsequent communications with that radio station may be performed via SATCOM Voice or HF voice based on regulatory requirements and company policies.

5.1.4 The flight crew should normally make calls to the radio station facility serving the airspace in which the aircraft is flying. If oceanic airspace has not been entered, the radio station serving the first oceanic centre should be contacted. If communications are lost with the current aero radio station, the flight crew should attempt contact with any other aero radio station to relay.

5.1.5 If a HF SELCAL check is required before or after entering a FIR, the flight crew should contact the radio operator and complete a HF SELCAL check. A check of the SATCOM voice system similar to a HF SELCAL is not required because the system will alert the crew if the system is not working properly.

5.2 Flight crew initiated

5.2.1 SATCOM short codes are published in State AIPs and some charts. Short codes may be stored in SATCOM avionics for easy access by the flight crew.

5.2.2 When contacting ATC crews should utilize the appropriate safety priority.

Example:

<line rings at aero radio>

Flight crew Arctic Radio, Continental 99, position report

Radio operator Continental 99 Arctic Radio, go ahead

Flight crew Arctic Radio, Continental 99, <message>
Radio operator Continental 99, Arctic Radio, <read back message>
Flight crew Arctic Radio, Continental 99 out

5.3 Flight crew receives call

5.3.1 The flight crew should visually confirm the priority of the incoming call and verify that it is an ATC priority call. Reply to calls utilizing standard phraseology (see **paragraph 5.1.2**)

5.3.2 The flight crew should not act on ATC instructions from SATCOM calls with other than ATC priority calls, and if in doubt terminate the call and initiate a new call for confirmation.

5.4 Oceanic clearances

5.4.1 Coordination of oceanic clearances should be in accordance with state AIPs.

5.5 Contingencies

5.5.1 SATCOM busy signal or no answer

5.5.1.1 Normally, when initiating a SATCOM voice call to a radio facility that supports SATCOM voice services, the flight crew should receive an answer. When a SATCOM voice call returns a busy signal or there is no answer, the flight crew should use alternative means of communications.

5.5.2 SATCOM Failure

5.5.2.1 If the aircraft SATCOM voice equipment has malfunctioned or for any other reason the SATCOM voice system is unavailable the flight crew should:

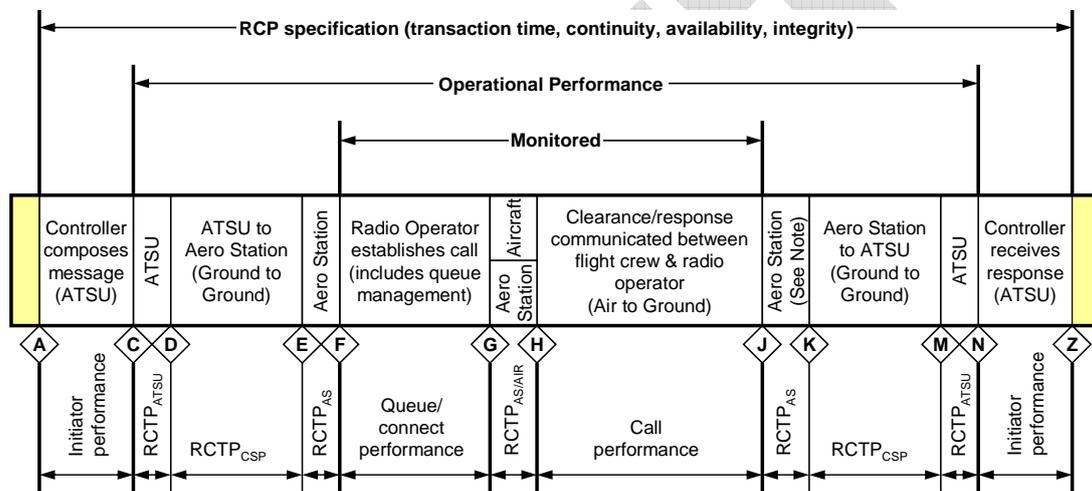
- a) revert to an alternate means of communication; and
- b) notify the radio station of the SATCOM voice failure.

Appendix A – RCP 400 specification – allocations for radio operator satellite voice communications

This appendix provides a supplement to the RCP 400 specification provided in the First Edition of the Global Operational Data Link Document (GOLD). The supplement includes the RCP allocations for radio operator satellite voice communications, consistent with RCP 400 “top sheet.”

A.1 Terms and definitions

Refer to GOLD, Appendix B, paragraph B.1 for general terms and definitions applicable to RCP specifications. This section provides additional terms and definitions to describe the RCP allocations for radio operator satellite voice communications.



Note: The (J to K) component includes two concurrent processes:
 (1) the aircraft and aeronautical station technically disconnect the call; which is assumed. Operationally, the call is disconnected when the flight crew and radio operator complete the call; and
 (2) the aeronautical station sends the response to the network for delivery to the ATSU; its performance is denoted by RCTP_{AS}.

Figure A- 1. Typical voice communication transaction allocation – controller initiated via a radio operator using satellite voice communication allocation

Editor's note 18. — SK/TK – The definitions that follow were taken from GOLD, 1st Edition and commented with Ed Notes for further resolution.

Editor's note 19. — SK/TK – The safety requirements for this specification currently refer to the GOLD, Appendix B. These safety requirements still need to be reviewed for their applicability in the RCP allocations for voice communications.

| <u>RCP specification</u> | |
|--|---|
| <u>Term</u> | <u>Description</u> |
| <u>Operational communication transaction</u> | The process a human uses to initiate the transmission of an instruction, clearance, flight information, and/or request, and is completed when that human is confident that the transaction is complete. |
| <u>Required communication performance</u> | A statement of the performance requirements for operational communication in support of specific ATM functions. |
| <u>RCP specification</u> | A specification (e.g. RCP 400) that represents the values assigned to RCP parameters for communication transaction time, continuity, availability and integrity, and allocations to ATSP, aircraft, CSP and operator. |
| <u>RCP expiration time (ET)</u> | The maximum time for the completion of the operational communication transaction after which the initiator is required to revert to an alternative procedure. |
| <u>RCP nominal time (TT 95%)</u> | The maximum nominal time within which 95% of operational communication transactions are required to be completed. |
| <u>RCP continuity (C)</u> | <p>The required probability that an operational communication transaction can be completed within the communication transaction time, either ET or TT 95%, given that the service was available at the start of the transaction.</p> <p><u>Voice communications:</u> This translates into 5 out of 100 calls not being able to conclude their voice transactions within the allotted time or the call could be disconnected for any reason, including aircraft maneuvers, switching satellites or any loss of service while on the call.</p> |

| <u>RCP specification</u> | |
|-----------------------------|--|
| <u>Term</u> | <u>Description</u> |
| <u>RCP availability (A)</u> | <p><u>The required probability that an operational communication transaction can be initiated when needed.</u></p> <p><u>Voice communications:</u> <u>This translates to any failure prohibiting the call to be initiated to include congestion (much like the analogy of a terrestrial mobile phone network). However this definition does not apply to a busy condition whereby the entity being called is already on the phone and does not have a way to put the existing call on hold or if able to, rejects the additional incoming call.</u></p> |
| <u>RCP integrity (I)</u> | <p><u>The required probability that an operational communication transaction is completed with no undetected errors.</u></p> <p><i><u>Note.— Whilst RCP integrity is defined in terms of the “goodness” of the communication capability, it is specified in terms of the likelihood of occurrence of malfunction on a per flight hour basis, e.g. 10^{-5}, consistent with RNAV/RNP specifications.</u></i></p> <p><u>Voice communications:</u> <u>This translates to the ability to conduct the voice transaction with enough intelligibility to understand the verbal request. Additionally, this could also manifest in the crew executing an incorrect instruction because it was misunderstood. (It may not be clear at the time of this submittal, what type of error rate would reflect this condition, or if the read-back would mitigate or compound this).</u></p> |

| <u>/V transaction time</u> | |
|---|---|
| <u>Term</u> | <u>Description</u> |
| <p><u>Operational Performance</u></p> <p><i><u>Editor’s note 20. — TK – Should revise GOLD term to remove “monitored.” Operational performance whether voice or data should be same defined points from an operational perspective.</u></i></p> | <p><u>The portion of the transaction time (used for intervention) that does not include the times for message composition or recognition of the operational response.</u></p> <p><u>Voice communications:</u> <u>Operational Performance (C to N) = RCTP+ Queue/Connect Performance (F to G) + Call Performance (H to J)</u></p> |

| <u>/V transaction time</u> | |
|--|--|
| <u>Term</u> | <u>Description</u> |
| <u>Required Communication Technical Performance (RCTP)</u> | <p>The portion of the (intervention) transaction time that does not include the human times for message composition, operational response, and recognition of the operational response.</p> <p>Voice communications: $RCTP = RTCP_{ATSU} + RCTP_{AS} + RCTP_{AS/AIR} + RCTP_{CSP}$</p> |
| <u>Monitored Performance</u> | <p>The monitored combination of the time it takes to organize, prepare, dial and perform an interactive call plus the technical performance of the ground and air equipment.</p> <p>Voice communications: $\text{Monitored Performance (F to J)} = RCTP_{AS/AIR} + \text{Queue/Connect Performance (F to G)} + \text{Call Performance (H to J)}$</p> |
| <u>Call Performance</u> | <p>The operational portion of the transaction time to prepare the operational response, and includes the recognition of the instruction, and message composition during an interactive call between the Radio Operator and Flight Crew, e.g. flight crew/HMI for intervention transactions.</p> <p>Voice communications: $\text{Call Performance} = (H \text{ to } J)$, where “H” denotes when the aircraft indicates an incoming call to the flight crew and “J” denotes when the callers operationally completes the call. (H to J) includes any tasks for the radio operator to send the message to the ATSU.</p> |
| <u>Queue/Connect Performance</u> | <p>The operational portion of the transaction time to organize and place the call either via a manual or automated dialing sequence depending on equipment at the RO facility.</p> <p>Voice communications: $\text{Queue/Connect Performance} = (F \text{ to } G)$, where “F” denotes when the message from the ATSU via the network is sent to the queue, and “G” denotes when the last digit of the dialing sequence is finished.</p> |
| <u>$RCTP_{ATSU}$</u> | <p>The summed critical transit times for an ATC intervention message and a response message, allocated to the ATSU system.</p> <p>Voice communications: $RCTP_{ATSU} = (C \text{ to } D) + (M \text{ to } N)$</p> |
| <u>$RCTP_{CSP}$</u> | <p>The summed critical transit times for an ATC intervention message and a response message, allocated to the CSP system.</p> <p>Voice communications: $RCTP_{CSP} = (D \text{ to } E) + (K \text{ to } M)$</p> |

| <u>/V transaction time</u> | |
|------------------------------|--|
| <u>Term</u> | <u>Description</u> |
| <u>RCTP_{AS/AIR}</u> | <p><u>The technical time for the air-ground network and associated components to initiate a call.</u></p> <p>Voice communications: <u>RCTP_{AS/AIR} = (G to H), where “G” denotes when the last digit of the dialing sequence is finished and “H” denotes when the aircraft indicates an incoming call to the flight crew.</u></p> |
| <u>RCTP_{AS}</u> | <p><u>The summed critical transit times for an ATC intervention message and a response message allocated to the Aero Station.</u></p> <p>Voice communications: <u>RCTP_{AS} = (E to F) + (J to K), where (J to K) includes two concurrent processes:</u></p> <ul style="list-style-type: none"> <u>a) the aircraft and aeronautical station technically disconnect the call; which is assumed. Operationally, the call is disconnected when the flight crew and radio operator complete the call; and</u> <u>b) the aeronautical station sends the response to the ATSU via the ground-ground network; the performance is denoted by RCTP_{AS}.</u> |

| <u>Continuity</u> | |
|--------------------------------------|--|
| <u>Term</u> | <u>Description</u> |
| <u>C for operational performance</u> | <p><u>The proportion of intervention messages and responses that can be delivered within the specified operational performance time for intervention.</u></p> <p>Voice communications: <u>Continuity would take into consideration any dropped calls.</u></p> |
| <u>C for RCTP</u> | <p><u>The proportion of intervention messages and responses that can be delivered within the specified RCTP for intervention.</u></p> <p>Voice communications: <u>Continuity would take into consideration any dropped calls.</u></p> |
| <u>C for RCTP_{ATSU}</u> | <p><u>The proportion of intervention messages and responses that can be delivered within the specified RCTP_{ATSU} for Intervention.</u></p> |
| <u>C for RCTP_{CSP}</u> | <p><u>The proportion of intervention messages and responses that can be delivered within the specified RCTP_{CSP} for Intervention.</u></p> |

| <u>Continuity</u> | |
|------------------------------------|--|
| <u>Term</u> | <u>Description</u> |
| <u>C for RCTP_{AS/AIR}</u> | <p><u>The proportion of intervention messages and responses that can be delivered within the specified RCTP_{AS/AIR} for Intervention.</u></p> <p><u>Voice communications:</u> <u>Continuity would take into consideration any dropped calls.</u></p> |
| <u>C for RTCP_{AS}</u> | <u>The proportion of intervention messages and responses that can be delivered within the specified RCTP_{AS} for Intervention.</u> |

| <u>Availability</u> | |
|---|--|
| <u>Term</u> | <u>Description</u> |
| <u>Service availability (A_{CSP})</u> | <u>The required probability that the communication service is available to all users in a specific airspace when desired.</u> |
| <u>Unplanned outage duration limit (minutes)</u> | <u>Time after the unplanned outage begins at which there is an operational impact. Measured from when an unplanned outage begins to when the ATSU receives notification that the service has been restored.</u> |
| <u>Maximum number of unplanned outages</u> | <u>Measured separately for each relevant operational airspace or Flight Information Region (FIR) over any 12-month period.</u> |
| <u>Maximum accumulated unplanned outage time (min/yr)</u> | <u>Measured by accumulating <i>only</i> the duration times for unplanned outages greater than the unplanned outage duration limit during any 12-month period. The accumulation is performed separately for each relevant operational airspace or FIR.</u> |
| <u>Unplanned outage notification delay (min)</u> | <u>Notification to the ATSU of an unplanned outage. Measured from when the unplanned outage begins to when the ATSU receives notification.</u> |
| <u>Aircraft system availability (A_{AIR})</u> | <p><u>The required probability of available capability on an aircraft with an average flight of 6 hours.</u></p> <p><i>Note.— The actual aircraft system availability is computed assuming that the service is available in the relevant airspace.</i></p> |

A.2 RCP 240 specification

Refer to GOLD, Appendix B, paragraph B.2 for RCP 240 specification.

A.3 RCP 400 specification

| RCP Specification | | | |
|--|---|-------------------------|---|
| RCP type specification | | RCP 400 | |
| Airspace specific considerations | | | |
| Interoperability | Specify interoperability criteria, e.g. FANS 1/A, satellite voice communications . | | |
| ATS Function | Specify ATS function(s), e.g. applicable separation standard | | |
| Application | Specify controller-pilot ATC communication intervention capability, e.g. CPDLC application per ICAO Doc 4444, and RTCA DO-306/EUROCAE ED-122, Annex A, satellite voice communications per SVGGM . | | |
| RCP parameter values | | | |
| Transaction time (sec) | Continuity (C) | Availability (A) | Integrity (I) |
| ET = 400 | C(ET) = 0.999 | 0.999 | Malfunction = 10^{-5} per flight hour |
| TT 95% = 350 | C(TT 95%) = 0.95 | | |
| RCP monitoring and alerting criteria | | | |
| Ref: | Criteria | | |
| MA-1 | The system shall be capable of detecting failures and configuration changes that would cause the communication service to no longer meet the RCP type specification for the intended function. | | |
| MA-2 | When the communication service can no longer meet the RCP type specification for the intended function, the flight crew and/or the controller shall take appropriate action. | | |
| Notes | | | |
| <i>Note 1.</i> — Rationale for the criteria provided in this specification can be found in ICAO Annex 11, ICAO Doc 4444, ICAO Doc 9689, and RTCA DO-306/ED-122. | | | |
| <i>Note 2.</i> — The values for transaction times are to be applied to transactions that are representative of communication capability for the controller to intervene with a specific operator, aircraft type, and aircraft identification. | | | |
| <i>Note 3.</i> — If changes are made to the system capacity limits, as specified by the airspace requirements, and the changes cause the system to perform below the RCP type specification, this would be considered a change in system configuration. | | | |

A.3.1 RCP 400/D allocations

Refer to GOLD, Appendix B, paragraph B.3.1 for RCP 240/D allocations applicable to CPDLC.

A.3.2 RCP 400/3V allocations

The RCP 400/3V allocations are applicable controller-initiated communications via a to radio operator using satellite voice communications.

DRAFT

A.3.2.1 Air traffic service provider (ATSP)

| RCP communication transaction time and continuity criteria | | | |
|--|--|-----------------------------|---|
| Specification: RCP 400/V | Application: Controller intervention (GTA), Satellite voice | | Component: ATSP |
| Transaction Time Parameter | ET (sec) C = 99.9% | TT (sec) C = 95% | Compliance Means |
| Transaction Time (A to Z) | 400 | 275 | Analysis, CSP contract/service agreement. See also paragraph A.3.2.2. |
| <i>Editor's note 21. — TK - 95% value is based on presentation from ARINC at PARC CWG/19 and reasonable G-G network latency; however for satellite voice, the value is less than value if the communication were performed by data link. All values are proposed and further validation is expected.</i> | | | |
| RCP Time Allocations | | | |
| Initiator (A to C) + (N to Z) | 30 | 20 | Analysis, simulations, safety and human factors assessments |
| Operational Performance (C to N) | 370 | 255 | Monitored, CSP contract/service agreement. See also paragraph A.3.2.2. |
| Operational Performance Time Allocations | | | |
| Monitored Performance (F to J) | 352 | 245 | Initially, by analysis, simulations, safety human factors assessments Post-implementation monitoring |
| RCTP $(\text{RCTP}_{\text{ATSU}} + \text{RCTP}_{\text{CSP}} + \text{RCTP}_{\text{AS}} + \text{RCTP}_{\text{AS/AIR}})$ | 25 | 15 | Monitored, estimated, CSP contract/service agreement. See also paragraph A.3.2.2 |
| RCTP Time Allocation | | | |
| RCTP_{ATSU} (C to D) + (M to N) | 4 | 2 | Pre-implementation demonstration |

| <u>RCP availability criteria</u> | | | | |
|---|-------------------|--|--|------------------------|
| <u>Specification: RCP 400/V</u> | | <u>Application: Controller intervention (GTA), Satellite voice</u> | | <u>Component: ATSP</u> |
| <u>Availability parameter</u> | <u>Efficiency</u> | <u>Safety</u> | <u>Compliance means</u> | |
| <u>Service availability (A_{CSP})</u> | N/A | 0.999 | Contract/service agreement terms. <i>Note.— For guidelines to aid in the development of the contract/service agreement with the CSP, see paragraph A.3.2.2, RCP 400/D allocation to CSP for RCP availability criteria.</i> | |

| <u>RCP integrity criteria</u> | | | |
|---------------------------------|---|--|-------------------------|
| <u>Specification: RCP 400/V</u> | | <u>Application: Controller intervention (GTA), Satellite voice</u> | <u>Component: ATSP</u> |
| <u>Integrity parameter</u> | <u>Integrity value</u> | | <u>Compliance means</u> |
| <u>Integrity (I)</u> | <i>Note.— RCP integrity criteria related to RCP 400/D are the same as those related to RCP 240/D. See GOLD, paragraph B.2.1.1.</i> | | |

| <u>RCP monitoring and alerting criteria</u> | | | |
|---|---|--|-------------------------|
| <u>Specification: RCP 400/V</u> | | <u>Application: Controller intervention (GTA), Satellite voice</u> | <u>Component: ATSP</u> |
| <u>Ref:</u> | <u>Criteria</u> | | <u>Compliance means</u> |
| All | <i>Note.— RCP monitoring and alerting criteria related to RCP 400/D are the same as those related to RCP 240/D. See GOLD, paragraph B.2.1.1.</i> | | |

| <u>RCP related safety requirements</u> | | | |
|--|------------------------------|--|------------------------|
| <u>Specification: RCP 400/V</u> | | <u>Application: Controller intervention (GTA), Satellite voice</u> | <u>Component: ATSP</u> |
| <u>Ref</u> | <u>Related RCP Parameter</u> | <u>Safety requirement</u> | |
| All | A, C, I | <i>Note.— Safety requirements related to RCP 400/D are the same as those related to RCP 240/D. See GOLD, paragraph B.2.1.1.</i> | |

A.3.2.2 Communication service provider (CSP)

| <u>RCP communication transaction time and continuity criteria</u> | | | |
|--|--|-----------------------------------|--|
| <u>Specification: RCP 400/V</u> | <u>Application: Controller intervention (GTA), Satellite voice</u> | | <u>Component: CSP</u> |
| <u>Transaction Time Parameter</u> | <u>ET (sec)</u> <u>C =</u> <u>99.9%</u> | <u>TT (sec)</u> <u>C = 95%</u> | <u>Compliance means</u> |
| <u>RCTP Time Allocation</u> | | | |
| <u>RCTP_{CSP}</u> <u>(D to E) + (K to M)</u> | <u>10</u> | <u>6</u> | <u>Contract/service agreement terms</u> |
| <u>RCTP_{AS}</u> <u>(E to F) + (J to K)</u> | <u>4</u> | <u>2</u> | <u>Contract/service agreement terms</u> |
| <u>RCTP_{AS/AIR}</u> <u>(G to H)</u> | <u>7</u> | <u>5</u> | <u>Contract/service agreement terms</u> <i>Note: Criteria are shared between aircraft system, ground system and air-ground network.</i> |
| <u>Queue/connect performance</u> <u>(E to G)</u> | <u>75</u> | <u>60</u> | <u>Monitored, estimated, CSP contract/service agreement.</u> |
| <i>Editor's note 22. — TK - 95% value of call performance based on ARINC presentation at PARC CWG/19, ARINC has a goal of delivering 94% of all calls answered in 1 minute or less.</i> | | | |
| <u>Call performance</u> <u>(H to J)</u> | <u>270</u> | <u>180</u> | <u>Initially, by analysis, simulations, safety human factors assessments</u> <u>Post-implementation, monitored, estimated</u> |
| <i>Editor's note 23. — TK - 95% value of call performance based on ARINC presentation at PARC CWG/19, ARINC has a goal of delivering 95% of all ATC clearances in 3 minutes or less.</i> | | | |

| <u>RCP availability criteria</u> | | | |
|---|--|--|---|
| <u>Specification: RCP 400/V</u> | | <u>Application: Controller intervention (GTA), Satellite voice</u> | <u>Component: CSP</u> |
| <u>Availability parameter</u> | | <u>Efficiency</u> | <u>Safety</u> |
| <u>Service availability (A_{CSP})</u> | | <u>N/A</u> | <u>0.999</u> |
| <u>Unplanned outage duration limit (min)</u> | | <u>N/A</u> | <u>20</u> |
| <u>Maximum number of unplanned outages</u> | | <u>N/A</u> | <u>24</u> |
| <u>Maximum accumulated unplanned outage time (min/yr)</u> | | <u>N/A</u> | <u>520</u> |
| <u>Unplanned outage notification delay (min)</u> | | <u>N/A</u> | <u>10</u> |
| <u>Compliance means</u> | | | |
| | | | <u>Contract/service agreement terms</u> |

| <u>RCP integrity criteria</u> | | |
|---------------------------------|---|--|
| <u>Specification: RCP 400/V</u> | | <u>Application: Controller intervention (GTA), Satellite voice</u> |
| | | <u>Component: CSP</u> |
| <u>Integrity parameter</u> | <u>Integrity value</u> | <u>Compliance means</u> |
| <u>Integrity (I)</u> | <p><u>Note.— RCP integrity criteria related to RCP 400/D are the same as those related to RCP 240/D. See GOLD, paragraph B.2.1.2.</u></p> <p><u>Editor's note 24. — SK - It may not be clear at the time of this submittal, what type of error rate would reflect this measure.</u></p> | |

A.3.2.3 Aircraft system

| <u>RCP communication transaction time and continuity criteria</u> | | | |
|---|--|-----------------------------------|--|
| <u>Specification: RCP 400/V</u> | <u>Application: Controller intervention (GTA), Satellite voice</u> | | <u>Component: Aircraft system</u> |
| <u>Transaction Time Parameter</u> | <u>ET (sec)</u> <u>C = 99.9%</u> | <u>TT (sec)</u> <u>C = 95%</u> | <u>Compliance Means</u> |
| <u>RCP Time Allocation</u> | | | |
| <u>Operational Performance Time Allocation</u> | | | |
| <u>Call performance (H to J)</u> | 270 | 180 | <u>Human-machine interface capability, pre-implementation demonstration</u> |
| <u>RCTP Time Allocation</u> | | | |
| <u>RCTP_{AS/AIR} (G to H)</u> | 7 | 5 | <u>Pre-implementation demonstration</u> <i>Note: Criteria are shared between aircraft system, ground system and air-ground network.</i> |

| <u>RCP availability criteria</u> | | | |
|----------------------------------|--|---------------|---|
| <u>Specification: RCP 400/V</u> | <u>Application: Controller intervention (GTA), Satellite voice</u> | | <u>Component: Aircraft system</u> |
| <u>Availability parameter</u> | <u>Efficiency</u> | <u>Safety</u> | <u>Compliance means</u> |
| <u>A_{AIR}</u> | N/A | 0.999 | <u>Analysis, architecture, design, pre-implementation demonstration</u> |

| <u>RCP integrity criteria</u> | | |
|-----------------------------------|---|-------------------------|
| <u>Specification: RCP 400/V</u> | <u>Application: Controller intervention (GTA), Satellite voice</u> | |
| <u>Component: Aircraft system</u> | | |
| <u>Integrity parameter</u> | <u>Integrity value</u> | <u>Compliance means</u> |
| <u>Integrity (I)</u> | <i>Note.— RCP integrity criteria related to RCP 400/D are the same as those related to RCP 240/D. See GOLD, paragraph B.2.1.3.</i> | |

| <u>RCP monitoring and alerting criteria</u> | | |
|---|--|-----------------------------------|
| <u>Specification: RCP 400/V</u> | <u>Application: Controller intervention (GTA), Satellite voice</u> | <u>Component: Aircraft system</u> |
| <u>Ref:</u> | <u>Criteria</u> | <u>Compliance means</u> |
| All | <i>Note.— RCP monitoring and alerting criteria related to RCP specification 400/D are the same as those related to RCP 240/D. See GOLD, paragraph B.2.1.3.</i> | |

| <u>RCP related safety requirements</u> | | |
|--|--|---|
| <u>Specification: RCP 400/V</u> | <u>Application: Controller intervention (GTA), Satellite voice</u> | <u>Component: Aircraft system</u> |
| <u>Ref</u> | <u>Related RCP Parameter</u> | <u>Safety requirement</u> |
| All | A, C, I | <i>Note.— Safety requirements related to RCP 400/D are the same as those related to RCP 240/D. See GOLD, paragraph B.2.1.3.</i> |

A.3.2.4 Aircraft operator

| <u>RCP communication transaction time and continuity criteria</u> | | | |
|---|--|-----------------------------------|--|
| <u>Specification: RCP 400/V</u> | <u>Application: Controller intervention (GTA), Satellite voice</u> | | <u>Component: Aircraft operator</u> |
| <u>Transaction Time Parameter</u> | <u>ET (sec)</u> <u>C = 99.9%</u> | <u>TT (sec)</u> <u>C = 95%</u> | <u>Compliance Means</u> |
| <u>RCP Time Allocations</u> | | | |
| <u>Operational Performance Time Allocations</u> | | | |
| <u>Call performance (H to J)</u> | 270 | 180 | <u>Procedural capability, flight crew training and qualification in accordance with safety requirements.</u> |
| <u>RCTP Time Allocation</u> | | | |
| <u>RCTP_{AS/AIR} (G to H)</u> | 7 | 5 | <u>CSP contract/service agreement, Aircraft type design approval, maintenance.</u> |

| <u>RCP availability criteria</u> | | | | | |
|---|--|--|---------------|---|--|
| <u>Specification: RCP 400/V</u> | | <u>Application: Controller intervention (GTA), Satellite voice</u> | | <u>Component: Aircraft operator</u> | |
| <u>Availability parameter</u> | | <u>Efficiency</u> | <u>Safety</u> | <u>Compliance means</u> | |
| <u>A_{AIR}</u> | | <u>N/A</u> | <u>0.999</u> | <u>Aircraft type design approval, maintenance, properly configured user-modifiable software, e.g. ORT</u> | |
| <u>Service availability (A_{CSP})</u> | | <u>N/A</u> | <u>0.999</u> | <u>Contract/service agreement terms.</u> <i>Note.— For guidelines to aid in the development of the contract/service agreement with the CSP, see paragraph A.3.2.2, RCP 400/D allocation to CSP for RCP availability criteria.</i> | |

| <u>RCP integrity criteria</u> | | | | | |
|---------------------------------|--|---|--|-------------------------------------|--|
| <u>Specification: RCP 400/V</u> | | <u>Application: Controller intervention (GTA), Satellite voice</u> | | <u>Component: Aircraft operator</u> | |
| <u>Integrity parameter</u> | | <u>Integrity value</u> | | <u>Compliance means</u> | |
| <u>Integrity (I)</u> | | <i>Note.— RCP integrity criteria related to RCP 400/D are the same as those related to RCP 240/D. See GOLD, paragraph B.2.1.4.</i> | | | |

| <u>RCP monitoring and alerting criteria</u> | | | | | |
|---|---|--|--|-------------------------------------|-------------------------|
| <u>Specification: RCP 400/V</u> | | <u>Application: Controller intervention (GTA), Satellite voice</u> | | <u>Component: Aircraft operator</u> | |
| <u>Ref:</u> | <u>Criteria</u> | | | | <u>Compliance means</u> |
| <u>All</u> | <i>Note.— RCP monitoring and alerting criteria related to RCP 400/D are the same as those related to RCP 240/D. See GOLD, paragraph B.2.1.4.</i> | | | | |

| <u>RCP related safety requirements</u> | | |
|--|------------------------------|--|
| <u>Specification: RCP 400/V</u> | | <u>Application: Controller intervention (GTA), Satellite voice</u> |
| | | <u>Component: Aircraft operator</u> |
| <u>Ref</u> | <u>Related RCP Parameter</u> | <u>Safety requirement</u> |
| <u>All</u> | <u>C, I</u> | <i>Note.— Safety requirements related to RCP 400/D are the same as those related to RCP 240/D. See GOLD, paragraph B.2.1.4.</i> |

Attachment 2 to CNS/MET SG/15-WP/28

WP28_ICAO Att 2 SCV GM_v02_Master Comments_22-Ju_11 Revised

Page 1

Legend for Cat Column:

- E Editorial
- R Review
- C Confusing, clarification, erroneous information, inconsistency, or invalid argument
- A Additional material
- S Serious – resolution of comment requires special attention (includes regional difference with potential operational impact)

Legend for Status Column

[TBD]

Comments and contributions received from the following. Initials are used throughout the comment matrix.

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| 0_General | SV1-0013 | TK | <p>COMMENT: FAA offers FAA policies on High Frequency (HF) Communications MMEL Requirements when taking account of SATCOM voice, as a reference to consider in formulating global SATCOM voice guidance material.</p> <p>SUGGESTED CHANGE:</p> | R | 12-Jan-11-TK – See attached file beginning with <comment number>. | |
| 0_General | SV1-0014 | TK | <p>COMMENT: FAA offers Draft AC 20-150A, which provides acceptable means of compliance to applicable airworthiness requirements for the installation of SATCOM voice equipment in aircraft. SATCOM Voice TF is invited to use this material as a reference to consider in formulating global SATCOM voice guidance material. In addition, we solicit comments on the document.</p> <p>SUGGESTED CHANGE:</p> | R | 12-Jan-11-TK – See attached file beginning with <comment number>. | |
| 0_General | SV1-0015 | JC1/EN | <p>COMMENT: There are two documents that may be useful for the work of the Task Force; I don't have a electronic copy only a paper copy. The documents are:</p> <p>-RTCA/DO-222 "GUIDELINES ON AMS(R)S NEAR-TERM VOICE IMPLEMENTATION AND UTILIZATION"</p> <p>-RTCA/DO-231 "DESIGN GUIDELINES AND RECOMMENDED STANDARDS FOR THE IMPLEMENTATION AND USE OF AMS(R)S VOICE SERVICES IN A DATALINK ENVIRONMENT"</p> <p>SUGGESTED CHANGE:</p> | R | 12-Jan-11-TK – These documents are only available in hard copy for fee from RTCA. They were developed by SC-165 in 1994 and 1996. | |
| 0_General | SV4-0125 | IM | <p>COMMENT: Some thoughts re the development of the SCV Guidance material.</p> <p>Currently as far as I can see, we don't have an ATS Use section that spells out for ATCs and pilots just when and</p> | | 29-Jun-11-IR-SVTF – There may be a misconnection here. We are developing criteria for use of SATCOM voice against performance-based criteria that would be equivalent to HF voice capability based on how it is used in current | |

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| | | | <p>where SCV can and cannot be used. Any separation standard requires the combination of CNS elements and all most remain in place for the standard to apply. For example, the RNP 4 separation standard requires either CPDLC or direct (VHF) coms and SCV, through a third party, is not acceptable in any circumstances (except of course, emergency). This point seems to have been overlooked or not appreciated in a lot of the comments that I see for the manual. This was one of the major reasons why SCV was rejected by ICAO and the aviation community in the early 1990s as it cannot be used (in its present form) to reduce (oceanic) separation standards below RNP10.</p> <p>The bottom line is that the current intent is to approve SCV as a substitute for a single HF - ie for purposes that HF is currently used (only). It is certainly not a substitute for CPDLC.</p> <p>Without these limitations been documented, we can expect to see the inappropriate use of SCV across the globe - with the significant potential of loss of separation events. We have already seen attempts at such use in the Australian FIR.</p> <p>SUGGESTED CHANGE: Introduce an ATS (Use?) Section</p> | | <p>applications. No intent to use SATCOM voice as a replacement to CPDLC.</p> <p>ACTION: Ian to propose text on intended uses. Group will review any proposed text provided for document.</p> | |
| 0_General | SV4-0137 | PR | <p>COMMENT: SAT Voice may well be the medium of the future, but it's very difficult to get access let alone for the controllers to determine who they can call and via what ;>)</p> <p>The global manual should include contact details for those folks controlling access to INMARSAT/MTSAT/MTSAT and whatever SAT that we as ANSP can call to get access.</p> | A | 22-Jul-11-TK – Maybe a new Appendix, equivalent to what we have in GOLD, Appendix E | |

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| | | | SUGGESTED CHANGE: | | | |
| 0_General | SV4-0138 | TK | <p>COMMENT: Guidance is suggested on post-implementation monitoring and analysis on the performance of SATCOM voice for ATS use, similar to what we have for data link in GOLD, Apx D.</p> <p>SUGGESTED CHANGE: Include an Appendix that provides guidance on post implementation monitoring and analysis of SATCOM voice.</p> | A | | |
| 0_General Foreword 2.5.b) and 2.5.d) Also relevant to Draft Guidance, para 3.1.4 onwards, and to Editor's Notes 4 and 5. | SV2-0034 | BP | <p>COMMENT: The guidance should not determine contractual arrangements as suggested by 2.5.b); rather, it should focus upon operational and functional matters.</p> <p>The role, capability and responsibility of "communication service provider" will vary according to "who" this is – ie satellite network operators (Inmarsat, MTSAT, Iridium, others in the future), ground earth station or gateway operators (Stratos, Vizada, Iridium, and possible others), or ARINC/SITA.</p> <p>In addition, CNS are sub-systems or functions within the ATN overall; the regulatory framework in the EU includes a list of systems for ANS of which the European ATM Network includes eight separate classes of systems, of which "Communications systems and procedures..." is only one of these eight.</p> <p>There is a need for a clear definition of the CSP which takes into account all stages of the link from the controller or radio operator, to the flight crew, and recognizes the diversity of sub-systems, technologies, and participants, and yet remains technology-neutral.</p> <p>GOLD doesn't define the CSP, but there are definitions in other documents, which refer to (for example) the</p> | C | <p>28-May-11-TK – this language is same as per the GOLD. The paragraph doesn't say that the guidance will determine contractual arrangements. However, the operational, functional, and performance are within scope and may be considerations for ATSPs and Operators in negotiating their service agreements and/or contracts.</p> <p>Satellite network operators should not be considered CSPs. We still need an agreed to definition for CSP.</p> <p>The guidance material is intended to be globally applicable, taking into consideration European laws and definitions.</p> <p>Agree on need for definition of CSP. See proposals and submit specific comments on what is proposed.</p> <p>We do need to provide clarity, within the regulatory framework, which includes aircraft certification, ops approvals and ANSPs "approvals." The CSP is a link to either the operator or ANSP, recognizing indirect links to satellite network providers and satellite operators via the CSP.</p> | |

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| | | | <p>“Satellite Communications Service Provider”, the “Satellite Network Operations Provider”, the “Terrestrial Network Service Provider”, etc. The AMSRS Manual Part 1 includes diagrams 2-1 and 2-2a which also illustrate this; the CSP link is shown to have more than one permutation in these definitions and diagrams.</p> <p>Similarly, Document 9869 (on RCP), diagram on p38, shows the “Communications Service” as the link between the “Ground System” and the “Aircraft System”, these in turn being separate “systems” from the crew and controller HMIs.</p> <p>There are essentially three categories of user to whom the Draft Guidance is primarily directed; the controller, radio operator, and flight crew, and the “CSP” is therefore the collective and respective system and network operators and service providers, in their various permutations, which link these users.</p> <p>The draft guidance does not need to address matters relating to approval as these are already addressed elsewhere, however it might be appropriate for the Guidance to note that there may be a need for new categories of RCP to be developed to support Satcom voice services, taking into account the end-to-end definition of the “CSP” and the components of this.</p> <p>NB Draft Guidance 3.1.4.1 and 3.1.4.2; Appendix A at A1 appears consistent with this: “C-M” is several stages.</p> <p>SUGGESTED CHANGE: Delete 2.5.b).</p> <p>It is possible to develop a definition of “communication service provider” which refers to the relationship between this collective entity and the relationship with</p> | | <p>29-Jun-11-IR-SVTF – ACTION: Filippo will develop some words in paragraph 3.2 to clarify “operational approval” not to mean a specific ops spec.</p> <p>There is some apparent disagreement among the group on the scope of the document. Should this document be directed solely at the use or include guidance to support approvals by States. ACTION: All. Prepare proposals to clarify the scope of GM at subsequent meetings.</p> <p>22-Jul-11-TK – See comment SV4-0135, for completion of Filippo action item to clarify operational approvals.</p> | |

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| | | | <p>the three categories of “user”, and a definition which itself includes additional definitions for the sub-systems and their operators and providers, such as “Satellite Communication Service Provider”, “Satellite Network Operations Provider,” “Terrestrial Network Service Provider” etc, using definitions in other relevant published documents such as the AMSRS Manual.</p> <p>As diagrams are used in other documents, then there may be increased clarity to be gained from the inclusion of a simple “strip” diagram (as in Appendix at A1) to show examples of the relationship between the entities which may constitute the “CSP” and their relationship to the users, a similar diagram exists on page 38 of Document 9869 on Required Communications Performance.</p> | | | |
| 0_General Foreword 6 References | SV4-0127 | EN | <p>COMMENT: I suggest that the references on this list kept at the level of ICAO and industry standardization bodies. National references should be avoided.</p> <p>SUGGESTED CHANGE: Delete Para 6 r)</p> | [Opt] | | |
| 1 Definitions | SV3-0114 | TP | <p>COMMENT: Insert additional definition for an ANSP</p> <p>SUGGESTED CHANGE: ANSP = Aeronautical Navigational Services Provider</p> | A | <p>1-Jun-11-TK – I’ve added a definition and the acronym. The document currently uses air traffic service provider (ATSP). In the GOLD, there was some debate between ANSP and ATSP. ICAO Montreal preferred the term ATSP, so that is what we used. Can we be consistent? Do we need both terms? What is the difference between one term over the other?</p> <p>The term “ANSP” currently is not used anywhere in the document and all terms not used in the final document will be removed in the final editing of the document.</p> <p>29-Jun-11-IR-SVTF – Guidance material will use</p> | |

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| | | | | | ATSP. ACTION: Elkhan will define terms ATSP, CSP and SSP. SSP will interface CSP, CSP will interface ATSP. SSPs today do not follow business models where they would provide service direct to ATSP and have no plans for changing the model. 22-Jul-11-TK – See comment | |
| 2.5 (Page 2-3) | SV3-0076 | ML | COMMENT: This section could be extended with typical examples of use by ATC centers to call an aircraft by using INMARSAT and Iridium (is the A/C can be contacted directly using a public phone number?) SUGGESTED CHANGE: | A | 1-Jun-11-TK – Need additional material. | |
| 2.5.1 | SV3-0086 | BC | COMMENT: Good background material but let’s not scare them. Basically you need to ensure you are using a reliable two stage dialing system. We should also mention that there are appropriate security measures available to protect against unintended calls. SUGGESTED CHANGE: | | 1-Jun-11-TK – Need additional material and suggested changes. Chapter 2 is intended to be an overview of the system. Guidance material, i.e., containing “should” will be placed in appropriate Chapters 3, 4, 5, or specifications in Apx A. | |
| 3.1.2 | SV3-0115 | TP | COMMENT: Change the title SUGGESTED CHANGE: Replace existing text to read “Functional requirements for SATCOM voice” | R | 1-Jun-11-TK – 3.1.2 and its subordinates probably needs fair consideration beyond comments provided on 3.1.2 and its subordinate paragraphs. The intent is to provide guidance for the ANSP/ATSP in managing their communication services. The SSPs are overseen by ANSPs or CSPs. The guidance material should be clear on allocated requirements to each of these entities if necessary. Paragraph 3.1.4 is intended to provide the requirements for the CSP/SSP or at least considerations for contractual/service agreement arrangements. Paragraph 3.1.2 is intended to provide the requirements for the ANSP/ATSP in validation. How will this guidance material be invoked? Once we agree to that, I think Chapter 3 | |

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| | | | | | needs work. SVTF discussion needed | |
| 3.1.2.1 | SV3-0116 | TP | <p>COMMENT: In every sub-paragraph use new text to precede the word “Provide”</p> <p>SUGGESTED CHANGE: Introduce each sub-para with the phrase “The SSP should provide.....”</p> | A | 1-Jun-11-TK – See resolution status to comment SV3-0115. Here the intent is that the ANSP should validate that the SSP or CSP provides ... | |
| 3.1.2.1 | SV3-0117 | TP | <p>COMMENT: Delete ANSP</p> <p>SUGGESTED CHANGE: Replace ANSP with “CSP”</p> | E | 1-Jun-11-TK – See resolution status to comment SV3-0115. | |
| 3.1.2.5 (Page 3-1) | SV3-0077 | ML | <p>COMMENT: “Provide ATSP priority level”. Question: is this priority level definition as per AC 20-150?</p> <p>SUGGESTED CHANGE:</p> | A | 1-Jun-11-TK – See resolution status to comment SV3-0115. | |
| 3.1.2.6 | SV3-0088 | BC | <p>COMMENT: Refer to, “Provide acceptable timely call establishment and connectivity (Current connection times exceed 1 minute”</p> <p>SUGGESTED CHANGE: Employ the use of an auto-dialer system that correlates the updated SATCOM telephone list with the flight number/tail number combination held in the FDP.</p> | | 1-Jun-11-TK – See resolution status to comment SV3-0115. | |
| 3.1.2.7 | SV3-0118 | TP | <p>COMMENT: Insert an additional Functional Requirement</p> <p>SUGGESTED CHANGE: New text to read “The SSP should provide either handshaking or a “keep-alive” signal to retain connectivity between the aircraft and CSP after an initial “log-on” is successfully established.</p> | A | 1-Jun-11-TK – See resolution status to comment SV3-0115. | |
| 3.1.3.1 | SV3-0089 | BC | <p>COMMENT: Do we need to add a note to remind folks to make these SATCOM procedures consistent with HF voice? Where to contact, when to contact,,, no need to SELCAL on SATCOM.</p> | | 1-Jun-11-TK – Covered in paragraph 3.1.1, 4.1.1 and 5.1.2. As for where to contact, when to contact,,, no need to SELCAL on SATCOM, this sounds like guidance material for the flight crew in Chapter 5. | |

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| | | | SUGGESTED CHANGE: | | | |
| 3.1.4 | SV3-0090 | BC | <p>COMMENT: This whole section concerns me. We need to ensure interoperability otherwise the system will not work. And we are not about to start certifying CSPs.</p> <p>SUGGESTED CHANGE:</p> | | <p>1-Jun-11-TK – See also comment SV2-0038. See resolution status to comment SV3-0115.</p> <p>29-Jun-11-IR-SVTF – Scope of document issue. ACTION: All. Prepare to discuss further at subsequent meetings with proposed changes to document.</p> | |
| 3.1.4 onwards, and Editor’s Notes 4 and 5. Also relevant to Foreword, 2.1.1 and 2.1.3. | SV2-0038 | BP | <p>COMMENT: See also the Comments and Suggested Change for Foreword, 2.1.1 and 2.1.3 above.</p> <p>Is it appropriate for operational guidance to include guidance on approval and implementation?</p> <p>If so, then the Guidance should state that there are existing approval mechanisms within ICAO and should note that these have already been applied to certain systems for AMSRS.</p> <p>ICAO has already verified Inmarsat, MTSAT and Iridium for AMSRS. Whilst additional regional and national procedures for conformity assessment in some cases also apply, it would probably be inappropriate to list these here, and would be burdensome upon ICAO (Secretariat) to try to maintain an up-to-date and exhaustive list, and so it is appropriate simply to note that these additional regional and national procedures may apply (and should also be published in SUPPs).</p> <p>International mutual recognition of certificates and licenses is referred to in the CICA 1944.</p> <p>IMO “recognition” process is unique to satellite systems used in the GMDSS, is not applied to other systems and services, and doesn’t look at end-to-end performance, and so would not be appropriate for the evaluation of the</p> | | <p>1-Jun-11-TK – See also comment SV3-0090. See resolution status to comment SV3-0115.</p> | |

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| | | | <p>CSP as it is proposed to be defined here, or in the context of other documents.</p> <p>SUGGESTED CHANGE: Editor’s Note 4 can be addressed with the definition of “CSP” as discussed above, including definitions of the operators and providers of subsystems and functions, and their relationships to each other and to the users/</p> <p>Unless this section 3.1.4 is removed as being inappropriate for the guidance to include approval and implementation procedures as well as operational guidance, then as discussed in Comments and Suggested Changes for Foreword, 2.1.1 and 2.1.3 above, and consequential to those changes:</p> <p>Editor’s Note 5.1: Approval means different things at different levels – ICAO already has requirements and verification processes for systems in general. Individual aircraft equipment installations are approved (and licensed) by the state of registry. Fixed infrastructure such as ground earth stations and gateways are also licensed generally according to where they are located.</p> <p>Editor’s Note 5.2: As long as the satellite component meets the overall ICAO requirements, this individual element or sub-system should not need approval by each state; the CSP overall (as it is proposed to be defined here) may be subject to particular regional or domestic requirements, but these should be published in SUPPs and addressed domestically through national aircraft operator licensing, and airworthiness and certification requirements, and associated administrative procedures; the principle of mutual recognition should apply.</p> <p>Editor’s Note 5.3: As there are several permutations of</p> | | | |

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| | | | <p>subsystems which might make up a CSP, and as these are likely to be both multinational and international, the “approval” of these will be necessarily fragmented. In the case of a satellite network, there are international (ITU) procedures in place, as well as domestic compliance and licensing for the satellite network and its operator. Ground earth stations and gateways (and other fixed infrastructure) are assumed to be licensable according to their location (similarly, VHF or HF installations are the responsibility of the state in which they are located, aircraft installations are the responsibility of the state of registry.</p> <p>Editor’s Note 5.4.a): “Interoperability” between the different elements of the CSP is the responsibility of the CSP itself and may occur at different points in the CSP chain overall.</p> <p>Editor’s Note 5.4.b): This is a matter for the HMI equipment manufacturer and their customer (controller, radio operator, aircraft operator); the implication of different interfaces becomes a matter for the customer to address through training etc.</p> <p>See also Comment on Editor’s Note 9, associated with 3.1.5 onwards, below.</p> <p>Editor’s Note 5.4.c): Security concerns were raised in the meeting 27-29 January. These are already addressed in the AMSRS Manual and so there is no need for additional material here; if any reference is necessary, reference to the Manual should be sufficient; it is for individual facilities to ensure they have adequate security provisions in place.</p> <p>Editor’s Note 5.4.d): Administrative and Secretarial</p> | | | |

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| | | | matter – No comment or suggested change. | | | |
| 3.1.5.2 a) | SV3-0092 | BC | <p>COMMENT: Refer to, “Enable operators to register SATCOM voice capabilities and means to contact the aircraft. (only applies to MEL relief)</p> <p>SUGGESTED CHANGE: Why only MEL relief?</p> | | 1-Jun-11-TK – Operators may opt to not provide SATCOM phone number, but still use SATCOM voice capability, as is done today by some operators. They could not get MEL relief in this case. They may not want MEL relief in this case, but they might want the SATCOM voice capability. | |
| 3.1.5.2 c) | SV1-0010 | FR | <p>COMMENT: This may not be practicable from an ANSP's perspective. Currently in Canada the telephone number is not picked up from field 18 but the process is automated through the comparison of aircraft registration of the flight plan against the master aircraft phone number list</p> <p>SUGGESTED CHANGE:</p> | | 1-Jun-11-TK – SVTF discussion needed. | |
| 3.1.5.2 c) | SV3-0093 | BC | <p>COMMENT: Refer to, “Maintain, on a 28-day update cycle, INMARSAT’s and Iridium’s master aircraft phone number list as new SATCOM radio facilities become operational.”</p> <p>SUGGESTED CHANGE: Where is the section that describes the process for maintain the master lists.</p> | | 1-Jun-11-TK – SVTF discussion needed. 29-Jun-11-IR-SVTF –ACTION: Joe and Brad will develop a proposal for guidance material to ATSP, CSP and SSP on maintaining phone numbers. | |
| 3.1.5.2.c) 3.1.5.3.b) Also relevant to Editor’s Note 9 and 3.3.3 | SV2-0039 | BP | <p>COMMENT: 3.1.5, 3.1.6 and 3.2.1 suggest general problems about security and how the contact information is protected. Compare with ITU-R’s “MARS” database?</p> <p>Does the PIN mean the radio operator/controller PIN?</p> <p>Master update list provided every 28 days might be insufficient by itself; additional identifiers (such as IMEI, or aircraft call-sign, might also be needed, and a means of adding newly-commissioned terminals.</p> <p>As well as master lists of numbers, equipment identifiers</p> | | 1-Jun-11-TK – SVTF discussion needed. | |

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| | | | <p>and eg SIMs (and PINs?), it is possible for aircraft identifiers (however defined – call-sign, address, registration-mark etc) to be cross-referred to these by a look-up table, and update and amendment of this can be done automatically and in real-time or near-real-time.</p> <p>However, where SIMs are removable, then the management of this must be addressed by the operator – problems with this should become almost immediately apparent to the body responsible for service activation for the terminal or SIM.</p> <p>SUGGESTED CHANGE: Note also the definitions of “Aircraft Identifier” in GOLD, and other identifiers (call-sign, address, registration mark).</p> | | | |
| 3.1.5.3.e | SV2-0053 | MM | <p>COMMENT: This paragraph should be removed entirely as I believe it reduces the Safety Case and also introduces the possibility of mis-interpretation and potential callsign confusion. To have this facility would need extensive trials and Safety Case reviews. (Comment by Irish Aviation Authority).</p> <p>Refer to “Accept a new call from a flight crew as a participant of an existing SATCOM voice communication already in progress, e.g., the new caller should be able to hear the transmission already in progress and standby for an opportunity to intervene. (This is an example of “Conference”, ...)”</p> <p>SUGGESTED CHANGE: Delete item.</p> | S | 1-Jun-11-TK – SVTF discussion needed. | |
| 3.1.5.3.e) | SV2-0040 | BP | <p>COMMENT: Is this a “requirement” or is only “desirable”? If this is a “requirement” (and so, new) then it will need to be examined and defined separately.</p> <p>SUGGESTED CHANGE: Remove text.</p> | S | 1-Jun-11-TK – SVTF discussion needed. | |
| 3.1.6 | SV3-0100 | JK | <p>COMMENT:</p> | | 1-Jun-11-TK – Except for the first sentence, tthe | |

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| | | | <p>Under the <i>Note</i>.- Additional sentence required.</p> <p>SUGGESTED CHANGE: Iridium must meet the requirement for Quick Dial Access in Air to Ground and Ground to Air.</p> | | <p>contents of the whole note is misplaced. Some may be appropriate for Chapter 2 in overview, other parts may be the basis for formulating performance-based guidance material. The specific text in the comment is one way to meet a performance requirement for establishing a call, measured from the time it shows up in the radio operators queue to when the flight crew answers the call. SVTF discussion needed.</p> | |
| 3.1.6.1, <i>Note in italics</i> | SV2-0044 | BP | <p>COMMENT: The text in the <i>italicized note</i> is not entirely accurate but to clarify it in this document would require reference to both technology and techniques, and so would introduce too much detail for Guidance.</p> <p>SUGGESTED CHANGE: Remove text; Refer to SARPs and associated Manuals if at all.</p> | | <p>1-Jun-11-TK – Accept comment. Resolution deferred and will be addressed by resolution and closure to comment SV3-0100. SVTF discussion needed.</p> | |
| 3.1.6.1.a) | SV2-0041 | BP | <p>COMMENT: Not solely the responsibility (or capability) of the GES/Gateway, but the functionality/capability will exist at some point in the communications chain between the controller/radio operator and the flight deck, and the emphasis should be on the existence of the capability and the ability to implement or exercise it.</p> <p>SUGGESTED CHANGE: Restate so that the requirement is that the “CSP” should have this capability, having regard to the definition of CSP and the permutations of possible components and participants, as proposed above; it need not be stated exactly where in the CSP this capability, or the ability to exercise it, may be.</p> | C | <p>31-Mar-11-TK – If this a CSP requirement, then it should be moved to 3.1.4.</p> <p>1-Jun-11-TK – For this particular guideline, all the vulnerabilities should be assessed and appropriate measures put in place, including the GES, network, radio facility, etc. Paragraphs 3.1.4, 3.1.5, and 3.1.6 are all related to CSP. Chapter 3 structure needs to be revisited. SVTF discussion needed.</p> | |
| 3.1.6.1.b) | SV2-0042 | BP | <p>COMMENT: This must be reconciled with the “conference” capability described in 3.1.5.3.e), and should be addressed under the same circumstances, separately to this draft guidance.</p> | | <p>1-Jun-11-TK – SVTF discussion.</p> | |

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| | | | SUGGESTED CHANGE: Remove text. | | | |
| 3.1.6.1.c) | SV1-0011 | FR | <p>COMMENT: I am not sure that this is achievable since the call is not made directly to the aircraft but to a central unit prior to be dispatched to the aircraft, or vice-versa. Furthermore most ATC unit block off their phone ID for lines of that nature.</p> <p>SUGGESTED CHANGE:</p> | | 1-Jun-11-TK – SVTF discussion. | |
| 3.1.6.1.c) (Also, Editor’s Note 9?) | SV2-0043 | BP | <p>COMMENT: Caller ID can be done but from discussions it is not clear what the “ID” used should actually be (beyond “not a string of numbers”), nor whether they need to reflect radio-telephony convention.</p> <p>GOLD shows some examples within particular message formats, but these might not be perfectly compatible with radio-telephony voice conventions.</p> <p>As noted above it is also possible for these various user, terminal, aircraft and other identifiers to be maintained in a look-up table in the terminal as well as in master directories, and for these different identifiers to be selected by the user for display on their terminal, and subjected to security measures.</p> <p>SUGGESTED CHANGE: State that it is possible for a unique and unambiguous identifier to be used to identify the caller to the recipient, and that there are options for what sort of identification is used, and that it is possible for the recipient terminal operator to select a preferred “identifier” for display on their terminal from systems using a cross-reference or look-up table.</p> | | 1-Jun-11-TK – SVTF discussion. | |
| 4 | SV2-0047 | AL | <p>COMMENT: Suggested changes to Chapter 4.</p> <p>SUGGESTED CHANGE:</p> | | <p>30-Mar-11-TK – See attached file beginning with <comment number>.</p> <p>31-Mar-11-TK – Note paragraph reference may have changed as comment made on v0.2. Defer to</p> | |

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| | | | | | Ch 2/Ch4 Group for resolution. | |
| 4.1.3 | SV3-0103 | AL | <p>COMMENT: Refer to, “4.1.3 If unable to contact the aircraft via SATCOM voice then reversion to any alternative means of communication medium should be followed, including HF, VHF, and Datalink.”</p> <p>SUGGESTED CHANGE: It’s unlikely that an aircraft will be using SATCOM voice when datalink or VHF is available.</p> | | | |
| 4.2 | SV1-0012 | FR | <p>COMMENT: I can only speak for the Montreal ACC (actually all ACCs in Canada except Gander) which doesn't have radio operators but have procedures in place for controllers to use SATCOM. The controller can, from the control position or the supervisor desk, query the system to determine if the A/C he/she needs to talk to is SATCOM equipped and if the system "finds the A/C it will do the dialling automatically and let the controller talk to the crew directly. I think efforts should be made to develop controller procedures as well, which in my view are not much different than those for the radio operators.</p> <p>SUGGESTED CHANGE:</p> | A | <p>12-Jan-11-TK – See also attached file beginning with <comment number>.</p> <p>31-Mar-11-TK – Note paragraph reference may have changed as comment made on v0.1. Defer to Ch 2/Ch4 Group for resolution.</p> <p>18 May 11 – MM Team – Chapter 4 team agrees with need to develop Controller procedures. We are first focusing on Radio Operators procedure, then we will either integrate the Controller procedures or create a separate set of Controller procedures as appropriate.</p> | |
| 4.3.1.2 a) | SV3-0080 | SK/GC | <p>COMMENT: The term “Short Code” is mis-interpreted. A “Short Code” replaces the International Direct Dial (IDD) PSTN format. Ie: an aircraft can enter the 6 Digit Short Code of eg: “123456” as a replacement to the long format IDD number of “00-33-1-55-55-55” for a French number. <u>Short codes are used to “Dial the ground”.</u></p> <p>An “Octal Code” is the 8 digit equivalent of an aircraft’s 24 bit ICAO unique assigned address. <u>Octal codes are used to “Dial an aircraft”.</u></p> <p>Lastly, since this document is supposed to be Satellite</p> | C | <p>1-Jun-11-TK – It would seem that ground initiated calls procedurally should be via call sign or aircraft registration. Octal codes are an implementation means and should be linked to ACID.</p> <p>22-Jul-11-TK – Where does ICAO define the 8-digit ICAO code (octal) of the aircraft? Is that the aircraft address in octal?</p> | |

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| | | | operator independent, suggest also, to remove the word "Inmarsat". Ref: SVTF/1 WP/6 Section 2.2.1a) & b) refers to this topic. SUGGESTED CHANGE: 4.3.1.2 a) Identify the 8 digit ICAO code (octal) of the aircraft from the radio operator database. | | | |
| 4.5.1.1 | SV3-0082 | SK/GC | COMMENT: If in the odd chance the existing call to the aircraft is disconnected for any reason, one should do what we do on the for our mobile phones and that is to re-dial the aircraft using the exact same method at least one more time, before trying HF/VHF? SUGGESTED CHANGE: Add a step prior to the existing a) with the following: a) Attempt to re-dial the aircraft as was done previously on SATCOM and repeat the message. Failing this further attempt, try the following... 2 Then re-number the other sub-bullets... | S | 1-Jun-11-TK – I agree. At least list SATCOM Voice retry as an option and leave it to radio operator/controller discretion, e.g., "the radio operator should: a) attempt to contact the aircraft using any means at their discretion, e.g., SATCOM retry, HF (SELCAL), VHF or relay through another flight." | |
| 4.5.1.1 a) | SV3-0107 | AL | COMMENT: Refer to: "a) attempt to contact the aircraft on HF (SELCAL) or VHF;" Unlikely to be on satcom voice when in VHF coverage. SUGGESTED CHANGE: | | 1-Jun-11-TK – Never know with Corporate or may be inbound into VHF coverage. Does it matter? Could radio operator possibly try again on SATCOM? Item c) seems like it has an odd condition. If SATCOM voice is lost and "if the connection fails???" What does that mean and by what means would they advise to revert to HF voice? Would it be HF voice? Please clarify. | |
| Z_Next Comment | SV5-0139 | | COMMENT: | | | |

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| | | | SUGGESTED CHANGE: | | | |
| 0_General | SV4-0122 | EN | <p>COMMENT: SATCOM voice vs AMS(R)S. I propose to use AMSRS once in the Foreword (maybe in the title too) then add in the brackets “commonly referred as SATCOM voice” and continue as is.</p> <p>SUGGESTED CHANGE:</p> | | <p>29-Jun-11-IR-SVTF- AMS(R)S includes both voice and data, so when referring to AMS(R)S, the term should be qualified with AMS(R)S voice.</p> <p>Title of document – Group prefers to keep it as is. ACTION: Elkhan will develop some language in Foreword and/or Chapter 1 to address relationship between SATCOM voice and AMS(R)S.</p> <p>22-Jul-11-TK – Action completed. See resolution to comment SV4-0130. Close.</p> | C |
| 0_General | SV1-0008 | AL | <p>COMMENT: If the intention is to allow clearances via SATCOM voice then if the aircrew have any doubt with a clearance they have received on SATCOM voice, standard procedure should be that they call the ground station to confirm such. Pilot and controllers procedures need to be as near to real world HF operations as possible and not over complicated. KISS theory.</p> <p>If these draft procedures can be consolidated into a more useable format that are easily understood it is more importantly that they will be complied with by aircrew and ground stations alike</p> <p>SUGGESTED CHANGE:</p> | R | <p>12-Jan-11-TK – See also attached file beginning with <comment number>.</p> <p>29-Jun-11-IR-SVTF- Agree. For further consideration, provide specific comments. Close.</p> | C |
| 0_General Foreword | SV2-0017 | EN | <p>COMMENT: Produced draft Foreword to document</p> <p>SUGGESTED CHANGE:</p> | A | <p>30-Mar-11-TK – See attached file beginning with <comment number>.</p> <p>31-Mar-11-TK – Incorporated text into v0.3. Close</p> | C |

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| 0_General Foreword 1.2 | SV2-0019 | FT | <p>COMMENT: Paragraph 1.2, suggest to add sentence</p> <p>SUGGESTED CHANGE: 1.2 Over the oceanic and remote continental areas, flights have historically been conducted with high frequency (HF) radios due to the advantage of being able to transmit and receive air/ground communications for thousands of miles. Most competent authorities hence required two independent HF sets on-board.</p> | C | 31-Mar-11-TK – Incorporated text into v0.3. Close | C |
| 0_General Foreword 1.2 | SV2-0032 | BP | <p>SUGGESTED CHANGE: Insert the word “communications” after the word “flight”. See also comment about para 2.1.1 of the Draft Guidance (below)</p> | C | 31-Mar-11-TK – Revise to “... aeronautical communications have historically been conducted with high frequency (HF) radios...” Close | C |
| 0_General Foreword 1.4 | SV3-0094 | JK | <p>COMMENT: Last para would indicate all aircraft became equipped.</p> <p>SUGGESTED CHANGE: From that time some aircraft became equipped with SATCOM voice capability.</p> | | 28-May-11-TK – Accept comment. The last sentence is referring to FANS 1/A aircraft discussed in the previous sentences. Revise to, “At the same time, these aircraft became equipped with SATCOM voice capability.” Close | C |
| 0_General Foreword 1.4 | SV2-0020 | FT | <p>COMMENT: Paragraph 1.4, suggest to insert “airborne.”</p> <p>SUGGESTED CHANGE: In 1995, the initial future air navigation system (FANS 1/A) provided an integrated airborne CNS package.</p> | C | 31-Mar-11-TK – Incorporated into v0.3. Close | C |
| 0_General Foreword 1.5 | SV3-0095 | JK | <p>COMMENT: This last sentence needs additional wording.</p> <p>SUGGESTED CHANGE: It was noted that the use of SATCOM voice had proven to be very useful during periods of HF blackout. Although the cost implications and the delay in Set Up times were unknown to the wider users.</p> | | 28-May-11-TK – Accept comment. The comment is more relevant to paragraph 1.6 where further discussions took place at NAT SPG/44. In review of paragraphs 1.6 against the NAT SPG/44 report, the following apply: 2.4.22 The main conclusions from the SVTF are summarised as follows: a) the trials were successful in proving that the radio operators and crew procedures defined in the trials Guidance Material for the use of SATCOM | C |

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| | | | | | <p>voice for routine communications were adequate; b) the security measures defined in the trials Guidance Material were adequate for the use of SATCOM voice for routine ATS communications; c) the call setup times needed to be improved to allow quicker access to the communication media by ATS providers; d) the priority Q12 should be reserved for ATS usage by CSPs that supply the service and this should become mandatory and globally implemented; and e) network and ground systems capacity needed to be tested and implemented as required and related costs needed to be recovered.</p> <p>NAT SPG Conclusion 44/13 That, considering that the migration to the use of SATCOM voice for routine communications was endorsed, the NAT Implementation Management Group (NAT IMG):</p> <p>a) develop an implementation plan which: i) would take account of the need to amend documentation; ii) could be adapted for global use; and iii) identified dependencies; and b) report to NAT SPG/45.</p> <p>2.5.9 The NAT IMG should also consider the question of HF Minimum Equipment List (MEL) relief. It was acknowledged that any decision regarding MEL relief was contingent on the decision to use SATCOM voice for routine ATS communications (paragraph 2.4.23 above refers) and it was recognised that any MEL relief was subject to approval by State authorities.</p> | |

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| | | | | | <p>Revised para 1.5, 1.6 and beginning of 1.7 as follows:</p> <p>1.5 In June 2001, the 37th Meeting of the NAT SPG (12-14 June 2001) agreed that a study would be initiated to assess the viability of using satellite voice communications for waypoint position reporting as an initial step. The study was accompanied by the NAT trials that had been successful and demonstrated that while there were costs associated with implementation and use, SATCOM voice could be an effective and reliable long range communication system to support ATS voice communications.</p> <p>1.6 In 2003, the 39th NAT SPG Meeting (17-19 June 2003) agreed that the NAT SUPPs needed to be amended to clearly state the conditions under which SATCOM voice could be used. In 2008, the 44th Meeting of the NAT SPG (17-20 June 2008) agreed that the authorization to use SATCOM voice for all ATS communications would permit reduction in risk of communications failure, improve safety of operations, and alleviate HF congestion. However, guidance material would be needed to address a number of issues related to call setup times, security and system performance and capacity. It was further concluded that any decision regarding MEL relief of one HF radio was subject to approval by the appropriate authority.</p> <p>1.7 Some regulatory authorities have granted some operators MEL dispatch relief for a limited time whereby the aircraft may be ...</p> <p>Close</p> | |
| 0_General Foreword | SV3-0096 | JK | COMMENT: Editorial change required in 2 nd sentence..... | | 28-May-11-TK – Accept comment. Deleted the two sentences, as they are out of place in the | C |

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| 1.6 | | | <p>SUGGESTED CHANGE: In some cases (not most cases).....</p> | | <p>sequence of background information and no longer accurate, since flight crews can use SATCOM voice for routine use:</p> <p>Since then, flight crews are using SATCOM voice instead of HF voice for urgent communications or when HF voice was not operational due to atmospheric conditions. The involved aircraft have three systems on board for long range communications (2 HF + 1 SATCOM).</p> <p>See also resolution to comment SV3-0095. Close.</p> | |
| 0_General Foreword 1.6 | SV3-0097 | JK | <p>COMMENT: Last sentence needs additional wording for clarification and accuracy of report....</p> <p>SUGGESTED CHANGE: Therefore,to support all ATS communications but with noted deficiencies as outlined in the SVTF Report, namely, Set-Up delays, Single Channel use and Cost implications.</p> | | <p>28-May-11-TK – Accept comment. See resolution to comment SV3-0095. Close.</p> | C |

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| 0_General Foreword 1.6 | SV2-0021 | FT | <p>COMMENT: Paragraph 1.6, suggest revisions.</p> <p>SUGGESTED CHANGE: 1.6 In 2003, the 39th NAT SPG Meeting (17-19 June 2003) agreed that the NAT SUPPs needed to be amended to clearly state the conditions under which SATCOM voice could be used. Since then, flight crews are using SATCOM voice instead of HF voice for urgent communications or when HF voice was not operational due to atmospheric conditions. In most cases the involved aircraft have hence today on-board three systems for long range communications (2 HF + 1 SATCOM). In 2008, the 44th Meeting of the NAT SPG (17-20 June 2008) agreed that the authorization to use SATCOM voice for all ATS communications would permit reduction in risk of communications failure, improve safety of operations, alleviate HF congestion and, without detriment to the safety objectives, provide for MEL relief by removing a requirement to carry the second HF radio. Therefore, another series of trials were carried out with participation of the NAT airspace users, ANS and communications service providers that demonstrated that SATCOM voice is an effective and reliable long range communication system to support all ATS communications.</p> | C | 31-Mar-11-TK – Incorporated into v0.3. Close | C |
| 0_General Foreword 1.7 | SV3-0098 | JK | <p>COMMENT: This para is exaggerated in the extreme. I propose to delete the sentence (In the interest.....requirements) Also delete the last sentence (These capabilities.....)</p> <p>There is no evidence that costs are lowered, if anything they are higher. Does not streamline efficiency. It is much slower and time consuming. Does not provide better comms tools. All it does is add additional options for comms. Aircraft operators are not turning to SATCOM Voice,</p> | | <p>28-May-11-TK – Accept comment. Revised paragraph 1.7 as follows:</p> <p>“1.7 Some State authorities have granted some operators time-limited MEL dispatch relief of one HF radio whereby the aircraft may be dispatched for a limited period (5 or 10 days) with only a single operational HF radio system and a single operational SATCOM voice system. Operators are now seeking permanent MEL dispatch relief of one HF radio by demonstrating that either the Inmarsat or Inmarsat SATCOM voice system meets the long</p> | C |

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| | | | <p>Quite the contrary in fact based on NAT usage. There is little or no usage of SATCOM voice and some of the bigger airline operators instruct crews not to use it. Evidence available.</p> <p>SUGGESTED CHANGE: Delete relevant section.</p> | | <p>range communication system (LRCS) requirements.”</p> <p>Close</p> | |
| 0_General Foreword 1.9 (Page vi) | SV3-0071 | ML | <p>COMMENT: " ... SATCOM voice as a standalone LRCS for ATS..."</p> <p>This sentence has to be clarified. Does “standalone LRCS” mean: without any HF at all?</p> <p>In addition, the scope of the document could be clarified. Does it consider the use of SATCOM in regions where only one HF is required? Or is the scope only to consider the use of SATCOM where 2 HFs are required.</p> <p>SUGGESTED CHANGE:</p> | C | <p>28-May-11-TK – Accept comment. Revise last sentence as follows:</p> <p>This guidance material may facilitate the appropriate authority in establishing its policies on MEL for some dispatch relief. However, it assumes that sufficient HF voice infrastructure must remain in service and that the aircraft must be equipped with at least one operational HF voice system. It does not at this time provide guidance on the use of SATCOM voice as a stand alone LRCS for ATS purposes as standards for this use have not yet been developed.</p> <p>Close.</p> | C |
| 0_General Foreword 1.9 | SV3-0099 | JK | <p>COMMENT:</p> <p>The reference in this para.....(as an alternative to the carriage of one HF radio) should not be included in this para as we had decided that MEL was outside our remit and in any case it contradicts 2.3 (d) in section 2 and 3.2.1.1 in Section 3.2..</p> <p>SUGGESTED CHANGE: Delete relevant section.</p> | | <p>28-May-11-TK – See resolution to comment SV3-0071.</p> <p>Close</p> | C |

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| 0_General Foreword 1.9 | SV2-0018 | IM | <p>COMMENT: One comment on the Foreword draft. My understanding is that the TF came to the clear conclusion that SCV is not yet ready to be approved as a stand alone LRCS and more work needs to be done by OPLINK P etc. However, until you read 2.3 e) this is not stated at all. Having already had one airline, who heard of our involvement with the TF apply for such use, then I suggest a more up front statement in Section 1.</p> <p>SUGGESTED CHANGE: Some words to paragraph 1.9: This edition of the Satellite Voice Guidance Material (SVGM) provides for a comprehensive update of various regional and State guidance material to use SATCOM voice for ATS communications as an alternative to the carriage of one HF radio. It does not at this time provide guidance on the use of SATCOM voice as a stand alone LRCS for ATS purposes as standards for this use have not yet been developed. The manual includes the incorporation of performance-based specifications and associated guidance on data collection, monitoring, and analysis.</p> | C | <p>31-Mar-11-TK – Accept comment, except transposed last two sentences. Revised to,</p> <p>“This edition of the <i>Satellite Voice Guidance Material</i> (SVGM) provides for a comprehensive update of various regional and State guidance material to use SATCOM voice for ATS communications as an alternative to the carriage of one HF radio. This includes the incorporation of performance-based specifications and associated guidance on data collection, monitoring, and analysis. It does not at this time provide guidance on the use of SATCOM voice as a stand alone LRCS for ATS purposes as standards for this use have not yet been developed.”</p> | C |
| 0_General Foreword 2.2 | SV2-0022 | FT | <p>COMMENT: Paragraph 2.2, suggest revisions.</p> <p>SUGGESTED CHANGE: Correct spelling error, “high-desity” to “high-density.”</p> | E | 31-Mar-11-TK – Incorporated into v0.3. Close | C |
| 0_General Foreword 2.3.a) | SV2-0023 | FT | <p>COMMENT: Paragraph 2.3.a), suggest revisions.</p> <p>SUGGESTED CHANGE: a) build on the ICAO required communication performance (RCP) framework to provide States with flexibility to apply different standards for different uses, without implication to seamless operations and providing that the safety objectives are satisfied;</p> | E | 31-Mar-11-TK – Incorporated into v0.3. Close | C |

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| 0_General Foreword 2.3.d) | SV2-0024 | FT | <p>COMMENT: Paragraph 2.3.d), suggest revisions.</p> <p>SUGGESTED CHANGE: d) do not specifically address MEL matters, but serve to facilitate State or sub-regional regulatory authorities in establishing policies in such matters; and</p> | E | 31-Mar-11-TK – Revise to “...to facilitate State regulatory authorities or Regional Safety Oversight Organizations (RSOOs)...” Close | C |
| 0_General Foreword 2.3.e) | SV2-0025 | FT | <p>COMMENT: Paragraph 2.3.e), suggest revisions.</p> <p>SUGGESTED CHANGE: e) do not address the use of SATCOM voice in isolation (i.e., HF voice capability remains available on board and in the ground infrastructure).</p> | E | 31-Mar-11-TK – Incorporated into v0.3. Close | C |
| 0_General Foreword 2.3b) | SV3-0085 | BC | <p>COMMENT: Refer to</p> <p>b) provide a basis for States in determining acceptability of any implementation, taking into account routine and emergency use, the provision of ATS using SATCOM voice communications, procedures for the radio operator, controller and flight crew, performance specifications and qualification;</p> <p>SUGGESTED CHANGE: Not sure what this is saying. Can we make it more clear? We are also providing guidance on how to add SATCOM voice to the existing radio facilities.</p> | | 28-May-11-TK – Accept comment. Revise to, “b) provide a basis for States in determining acceptability of any implementation within an ATS facility, a radio facility or aircraft equipage, ... Close. | C |
| 0_General Foreword 2.3c) (Page vi) | SV3-0072 | ML | <p>COMMENT: “The following principles were adhered to in the development of this guidance material: c) do not address the subject of the in-flight use of portable SATCOM phones as this is not allowed”</p> <p>SUGGESTED CHANGE: I would precise: SATCOM phones <u>in the cockpit</u></p> | C | 28-May-11-TK Accept comment, revise to “c) note that in-flight use of portable SATCOM phones for ATS communications is not allowed, according to many existing State operating regulations;” Close. | C |

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| 0_General Foreword 2.5.a) | SV2-0026 | FT | <p>COMMENT: Paragraph 2.5.a), suggest revisions.</p> <p>SUGGESTED CHANGE: Change “operational authorizations” to “operational approval.” Change “design approval” to “airworthiness certification.”</p> | E | 31-Mar-11-TK – Incorporated into v0.3. Close | C |
| 0_General Foreword 2.5.a) 3) | SV2-0033 | BP | <p>COMMENT: Existing and near-future systems have already been designed, according to current ICAO requirements (inc. SARPs etc).</p> <p>SUGGESTED CHANGE: Insert the word “future” so sentence would read “design approval of future aircraft SATCOM voice systems”.</p> | E | 28-May-11-TK – Not accepted. It would be inappropriate in this context. Certification includes airworthiness directives and if unsafe condition is determined on aircraft already certified, previously certified installations may require modification. Also, if previously certified aircraft do not meet criteria, their use will need to be limited by some mechanism. Close. | C |
| 0_General Foreword 2.5.d) | SV2-0027 | FT | <p>COMMENT: Paragraph 2.5.d), suggest revisions.</p> <p>SUGGESTED CHANGE: Revise to, “d) operational monitoring, analysis, and exchange of operational data among regions, Regional Safety Oversight Organisations (RSOOs), States, and communication service providers.</p> | E | 31-Mar-11-TK - Revise to “...among regions, States, RSOOs and communication service providers...” Close | C |
| 0_General Foreword 4 | SV2-0028 | FT | <p>COMMENT: Paragraph 4, suggest new paragraph.</p> <p>SUGGESTED CHANGE: 4.2 Although this material does not apply to SATCOM data, the latter could be implemented following the same approach for the definition of the safety objectives.</p> | E | 31-Mar-11-TK – No change. Data link is already being addressed in GOLD and not within scope of this document. 28-May-11-TK – Added new paragraph 2.6, “Guidance material and information concerning SATCOM data communications is not within the scope of this guidance material and can be found in the Global Operational Data Link Document (GOLD).” Close. | C |

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| 0_General Foreword 6 | SV2-0029 | FT | <p>COMMENT: Paragraph 6, suggest new item.</p> <p>SUGGESTED CHANGE: r) European Commission Regulation (EC) No 859/2008 of 20 August 2008 amending Council Regulation (EEC) No 3922/91 as regards common technical requirements and administrative procedures applicable to commercial transportation by aeroplane (so called “EU-OPS” having replaced the former JAR OPS-1).</p> | E | 31-Mar-11-TK – Incorporated into v0.3. Close | C |
| 1 Definitions | SV4-0128 | EN | <p>COMMENT: I propose to align and re-use Abbreviations and Definitions from ICAO Doc 9925</p> <p>SUGGESTED CHANGE: Add: Satellite Communications Service Provider. Typically provides the inter-working unit of the terrestrial sub-system which connects the satellite ground earth station, or Gateway, and the terrestrial network in support of AMS(R)S. Commonly referred to as SSP (see SSP definition)</p> <p>Satellite Network Operations Provider. Typically provides the satellite sub-system which includes the satellite(s) and may or may not include the ground earth stations or Gateway. Commonly referred to as SSP (see SSP definition)</p> <p>Terrestrial Network Service Provider. Typically provides the aviation centric terrestrial sub-system which provides connectivity to the end-users, such as ATS providers, airlines and flight departments. Commonly referred to as CSP(see CSP Definition)</p> | | 22-Jul-11-TK – Accept. Incorporated definitions in Chapter 1. Close. | C |
| 1 Definitions | SV4-0129 | EN | <p>COMMENT Use of CSP and SSP is not described in Doc 9925. This is an interesting situation as we use CSP and SSP all the time.</p> | | 22-Jul-11-TK – See resolution to comment SV4-0128. Close. | C |

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| | | | SUGGESTED CHANGE See the line above | | | |
| 1 Definitions | SV4-0130 | EN | COMMENT: ICAO term for SATCOM is AMS(R)S. Understanding that changing that everybody got used to, suggest to add in the Definitions list AMS(R)S once and add “commonly referred to as SATCOM voice” SATCOM SUGGESTED CHANGE: Add AMS(R)S Aeronautical mobile satellite (route) service. Includes both voice and data, The use of AMS(R)S for voice communications is commonly referred to as SATCOM voice. This convention is maintained throughout this Document, | | 1-Jul-11-EN - See also SV4-0122 22-Jul-11-TK – Accept. Incorporated term in Chapter 1. Close. | C |
| 1 (definitions) | SV3-0084 | FT | COMMENT: Editor suggested definition for CSP in Chapter 1. Three definitions are hence proposed SUGGESTED CHANGE: <ul style="list-style-type: none"> • Communication services (COM) Aeronautical fixed and mobile services to enable ground-to-ground and/or air-to-ground communications for safety and regularity of flight; • Communication Service Provider (CSP) Any public or private entity providing COM services for general air traffic; • Satellite Communication Service Provider (SAT CSP) A CSP providing, via satellite, aeronautical fixed services and/or aeronautical mobile services at least from the signal in space to/from aircraft, to the attachment point of the Ground Earth Station (GES) to the ground COM network. | A | 1-Jun-11-TK – Accept. Included definitions, with minor edits to third one: A CSP is usually referred to as the entity for which operators and ANSPs hold contracts or service agreements in the provision of communication services. An SSP services other elements, such as land mobile and maritime, and typically will provide satellite services to CSPs that service ANSPs and operators and are not themselves CSPs. Satellite service provider. An entity or group of entities that provide, via satellite, aeronautical fixed services and/or aeronautical mobile services at least from the signal in space to/from aircraft, to the attachment point of the ground earth station (GES) to the ground communication services network. Close. | C |

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| 1 as an additional “Definition” | SV3-0112 | TP | COMMENT: Additional item needed SUGGESTED CHANGE: Insert the acronym “SSP” to indicate that SATCOM voice will be transported by a “Satellite Service Provider” | A | 1-Jun-11-TK – Accept. See also resolution to comment SV3-0084. Close | C |
| 1 Under “CSP” in Definitions | SV3-0113 | TP | COMMENT: Insert a “Note” after CSP to indicate that a CSP may also include a “radio facility” SUGGESTED CHANGE: | C | 1-Jun-11-TK – Accept. Added “Note.— A radio facility is a CSP.” Close. | C |
| 1 | SV2-0070 | TK | COMMENT: Add definitions. SUGGESTED CHANGE: | A | 31-Mar-11-TK – Incorporated a starting point into v0.3. Close | C |
| 2 | SV4-0123 | EN | COMMENT: I think we should describe MTSAT to the same extent as Inmarsat and Iridium. I am thinking to invite our Bangkok or Japanese colleagues to provide a couple of paragraphs on this. SUGGESTED CHANGE: | | 1-Jul-11-EN - Deleted. See SV4-0132. Close. | C |
| 2 | SV4-0124 | EN | COMMENT: There are a few paragraphs mentioning other satellite systems which I think we should remove. In particular Lightsquared, this one turns out a bit messy. SUGGESTED CHANGE: | | 1-Jul-11-EN - Deleted. See SV4-0131. Close. | C |
| 2 | SV2-0030 | MM | COMMENT: Suggest new text for chapter 2. SUGGESTED CHANGE: | A | 30-Mar-11-TK – See attached file beginning with <comment number>. 31-Mar-11-TK - Incorporated into v0.3. Close | C |
| 2.1 | SV2-0069 | TK | COMMENT: Text previously in 2.1 was moved to Foreword, rephrased to be globally applicable, and augmented. Chapter 2 is intended to provide an overview of satellite voice communications, including system architecture and components. SUGGESTED CHANGE: | E | 31-Mar-11-TK – Deleted text in 2.1 as redundant to new Foreword. Close. | C |

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| 2.1.1 | SV2-0035 | BP | <p>COMMENT: The phrase “Oceanic and remote airspace flight communications have...” is not as clear as the equivalent text in Foreword, para. 1.2, which refers to “remote continental areas”.</p> <p>SUGGESTED CHANGE: Replace, to read eg “Over the oceanic and remote continental airspace, flight communications have...”</p> | C | 31-Mar-11-TK – See comment SV2-0069. Deleted text. Close | C |
| 2.1.1 and 2.1.3 Also, Editor’s Note 5 | SV2-0036 | BP | <p>COMMENT: Reference to CNS as parts within ATM overall, and introduces concept of LRCS as used within US regulation, NB that EU doesn’t use that term and has a different approach, listing 8 systems used for ANS and making up the European ATM Network.</p> <p>SUGGESTED CHANGE: Add additional text at end of 2.1.1 or of 2.1.3 to reflect different terminology, but essentially technologically-neutral, approach adopted in both USA and EU.</p> | C | 31-Mar-11-TK – See comment SV2-0069. Deleted text. Close | C |
| 2.1.5 | SV2-0037 | BP | <p>COMMENT: A term such as “separate and dissimilar” emphasizes why the SATCOM equipment is carried (and used) and so also explains why the guidance is needed.</p> <p>SUGGESTED CHANGE: After “...due to atmospheric conditions.” insert the additional sentence “SATCOM voice and data systems have therefore also proven to be an appropriate equivalent, separate and dissimilar long range communications solution.”</p> | | 31-Mar-11-TK – See comment SV2-0069. Deleted text. Close | C |
| 2.2.2 | SV4-0132 | EN | <p>COMMENT: 2.2.2 should also include mentioning of MTSAT in the same way as it’s done in Doc 9925. Also this para could be shorten as the same details are repeated further down the text.</p> <p>SUGGESTED CHANGE: MODIFY as follows</p> <p>2.2.2 Today there are three satellite systems</p> | | 22-Jul-11-TK – Accept with slight edit. Revise to, “Today there are three satellite systems servicing the aeronautical market. Inmarsat and MTSAT are GEO and Iridium is a LEO satellite system. These satellite systems use AMS(R)S L-band frequencies reserved for aeronautical safety services. ...” Close.` | C |

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| | | | servicing the aeronautical market. Inmarsat and MTSAT are GEO and Iridium is a LEO satellite system. All satellite systems use AMS(R)S L-band frequencies reserved for aeronautical safety services. | | | |
| 2.2.3 2.2.5 | SV4-0131 | EN | COMMENT: These paragraphs describe systems that are not AMS(R)S SUGGESTED CHANGE: DELETE 2.2.3.-2.2.5 | | 22-Jul-11-TK – Accept. Deleted. Close. | C |
| 2.2.4 | SV4-0133 | EN | COMMENT: 2.4.4 on MTSAT should be separate para 2.5 SUGGESTED CHANGE: Ident 2.4.4 as 2.5 MTSAT | | 22-Jul-11-TK – Accept. Close. | C |
| 2.2.4 (Page 2-1) | SV3-0073 | ML | COMMENT: “In November 2010 a new company, LightSquared, targeting the United States 4G market, launched their first satellite and is positioned it over North America” SUGGESTED CHANGE: suppress “is” | E | 1-Jun-11-TK – Accept. Close. | C |
| 2.2.4 (Page 2-1) | SV3-0074 | ML | COMMENT: “Even though they are not currently targeting the aeronautical market they are planning to use the same AMS(R)S L-band frequencies as Inmarsat and Iridium, as well as frequencies adjacent to GPS” SUGGESTED CHANGE: To be more precise, LightSquared only uses INMARSAT frequencies, that are adjacent to GPS & Iridium ones (LightSquared doesn't use Iridium frequencies). | C | 1-Jun-11-TK - Revised sentence to, “Even though they are not currently targeting the aeronautical market they are planning to use Inmarsat AMS(R)S L-band frequencies that are adjacent to frequencies used for GPS.” I am not aware of any concerns with use of this service near Iridium frequencies. Sentence that follows only addresses GPS. Close. | C |
| 2.4.1 | SV3-0110 | TP | COMMENT: the word “rational” is used in the final sentence of this para. SUGGESTED CHANGE: the correct word to be used in this context would be “rotation”. | E | 1-Jun-11-TK – Accept. Close. | C |

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| 2.4.3 | SV3-0079 | SK/GC | <p>COMMENT: While VoIP (or packetized voice) will indeed offer advantages over traditional dedicated voice circuits, it is not for certain that the billing of voice under this technology will be via “data bits used”. In fact for the user, it should be billed consistently as “voice” regardless of circuit or packet switched modes. Affordability should be addressed and inferred as an action outside of this document.</p> <p>SUGGESTED CHANGE: Delete the following: “This will allow voice connectivity charges based on the data bits used, significantly lowering the cost of use.”</p> | C | 1-Jun-11-TK – Accept. Close. | C |
| 2.4.4 Inmarsat | SV3-0083 | YM | <p>COMMENT: suggest new paragraph</p> <p>SUGGESTED CHANGE: 2.4.4 MTSAT is a GEO satellite system. The specification is equivalent to that of I-3 except for the footprint which is limited to the Asia and the Pacific Ocean. MTSAT is interoperable with I-3 so that the subscriber unit can seamlessly carry out the handover between MTSAT and I-3 (and legacy communication module of I-4).</p> | A | 1-Jun-11-TK – Accept. Close. | C |
| 3.1 | SV3-0111 | TP | <p>COMMENT: The acronym “ATSP” is generally not used in the UK</p> <p>SUGGESTED CHANGE: replace ATSP with “ANSP”</p> | R | <p>1-Jun-TK – See resolution status to comment SV3-0114. What do I do if another State says use ATSP? Can we at least agree on common terminology and save the debate for the harder stuff?.</p> <p>22-Jul-11-TK – See resolution to comment SV3-0114. Document will use ATSP. Close.</p> | C |
| 3.1.1 | SV3-0087 | BC | <p>COMMENT: Refer to “provide these services consistent with voice communication procedures, regardless of the technology used.” In other words... SATCOM voice will use the same phraseology as is used today with HF voice.</p> | | 1-Jun-11-TK – See paragraph 4.1.1 and 5.1.2. Statement in 3.1.1 is broader and encompasses phraseology, performance, capability, etc. Close. | C |

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| | | | SUGGESTED CHANGE: | | | |
| 3.1.2.1 | SV1-0009 | FR | COMMENT: SATCOM should be in capital letters | E | 31-Mar-11-TK – Incorporated into v0.3. Close | C |
| | | | SUGGESTED CHANGE: | | | |
| 3.1.2.6 | SV2-0048 | MM | COMMENT: Suggest new item. SUGGESTED CHANGE: 3.1.2.6 Provide acceptable timely call establishment and connectivity (Current connection times exceed 1 minute) | | 31-Mar-11-TK – Incorporated into v0.3. Close | C |
| 3.1.4 and Foreword References 6.r. | SV4-0121 | EN | COMMENT: We shouldn't refer to EU docs all the time. We may only limit it to examples. SUGGESTED CHANGE: | | 1-Jul-11-EN - Deleted. See SV4-0127. Close. | C |
| 3.1.4 | SV2-0031 | FT | COMMENT: Suggested text for paragraph 3.1.4 SUGGESTED CHANGE: | | 30-Mar-11-TK – See attached file beginning with <comment number>. 31-Mar-11-TK – Incorporated into v0.3. Close | C |
| 3.1.4.1.4 | SV4-0136 | FTO | COMMENT: It would be interesting to have ICAO material on the evolution of the integrity requirement (e.g. 10E-3 for digitized voice, 10E-5 for current data link applications and 10E-7 for SESAR/NextGen) which drives requirements for COM service provider and software assurance level. However: The issue is still controversial and therefore may delay publication of the SATCOM voice material; The subject could be better discussed in the next edition of GOLD; In any case this material will not lead to additional requirements for SATCOM voice and therefore it may not be necessary in related GM. SUGGESTED CHANGE: Remove last sentence, which refers to Appendix D | C | 22-Jul-11-TK – Accept. Close. | C |
| 3.1.4.2.4 | SV4-0134 | EN | COMMENT: | | 22-Jul-11-TK – Accept. Close. | C |

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| | | | <p>3.1.4.2.4 for consistency suggest append the last sentence to start with “For instance” SUGGESTED CHANGE:</p> <p>For instance, this latter ICAO provision is transposed in the EU by so called “EU-OPS” in respect of commercial air transport operators and by so called “common requirements ” for ATSPs.</p> | | | |
| 3.1.4.3 | SV2-0049 | MM | <p>COMMENT: Paragraph 3.1.4.3 refers to Appendix A. These times in Appendix A were challenged in Paris and are still questionable and need agreement</p> <p>SUGGESTED CHANGE:</p> | | 31-Mar-11-TK – Incorporated Ed Note into v0.3. Comment really is relevant to Appendix A. Close | C |
| 3.1.4.4.4 (b) | SV3-0119 | TP | <p>COMMENT: delete (t) in the word “ort”</p> <p>SUGGESTED CHANGE:</p> | E | 1-Jun-11-TK – Accept. Close. | C |
| 3.1.5.1 | SV3-0091 | BC | <p>COMMENT: Refer to, “...capability to handle any expected SATCOM voice traffic demand. ...”</p> <p>SUGGESTED CHANGE: Any? That is not guidance. Suggest we just say expected...</p> | | 1-Jun-11-TK – Accept. Revise to, “The necessary infrastructure will need to be developed and implemented to provide the capability to handle expected SATCOM voice traffic demand in accordance with prescribed performance specifications. ” | C |
| 3.1.5.1 | SV3-0120 | TP | <p>COMMENT: in the first sentence insert the word “currently” after “facilities</p> <p>SUGGESTED CHANGE:</p> | A | 1-Jun-11-TK – The first sentence is historical information and not guidance material. Chapter 3 should provide guidance material. Revise to, “To provide SATCOM voice radio services at a full operational level, the radio facility should be able to accept or place a SATCOM voice call given the necessary infrastructure to handle the expected | C |

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| | | | | | SATCOM voice traffic demand and in accordance with prescribed performance specifications.” Close. | |
| 3.1.5.1 | SV2-0050 | MM | <p>COMMENT: Suggest revision to text.</p> <p>SUGGESTED CHANGE: 3.1.5.1 Many radio facilities provide the capability to initiate and receive SATCOM voice calls. However providing SATCOM voice radio services at a full operational level means more than simply accepting and placing a SATCOM voice call. The necessary infrastructure will need to be developed and implemented to provide the capability to handle any expected SATCOM voice traffic demand. Additionally, radio facility providers must ensure that adequate resources are available in the event that SatVoice and DataLink services are disrupted.</p> | A | <p>31-Mar-11-TK – Incorporated into v0.3, except SATCOM data out of scope for this document. Refer to GOLD for data link. Revise to, Additionally, radio facility providers must ensure that adequate resources are available in the event that SATCOM voice services are disrupted.</p> <p>See also resolution to comments SV2-0050, SV2-0057, SV2-0060, and SV2-0061.</p> <p>Close</p> | C |
| 3.1.5.2.c) | SV2-0051 | MM | <p>COMMENT: Delete this sentence about phone numbers in flight plan due to safety risk and security issues.</p> <p>SUGGESTED CHANGE: Delete “(we might need to have the operators also file the aircraft phone number in the flight plan in case they change equipment during the 28 day cycle)”</p> | C | <p>31-Mar-11-TK – Incorporated into v0.3. Close</p> | C |
| 3.1.5.3 | SV1-0032 | DR | <p>COMMENT: 3.1.5.3 When supporting satellite voice communications, radio facilities should provide automation support that allow the radio operator to provide SATCOM voice services for the intended operations:</p> <p>SUGGESTED CHANGE: add (g). Provide for the ability to prioritize, preempt and establish precedence on outgoing calls.</p> | A | <p>31-Mar-11-TK – Incorporated into v0.3. Close</p> | C |
| 3.1.5.3.d | SV2-0052 | MM | <p>COMMENT: Change “rapid” to “faster.”</p> | C | <p>31-Mar-11-TK – Incorporated into v0.3. Close</p> | C |

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| | | | SUGGESTED CHANGE: Auto-dial capability to enable faster call setup times. | | | |
| 3.1.6.1.a) | SV2-0054 | MM | COMMENT: Change “should” to “must.” SUGGESTED CHANGE: Revise to, “a) The ground earth station must be capable of preventing unauthorized calls to aircraft;” | E | 31-Mar-11-TK – As a guidance material, use of “must” is not any different than “should.” Where is the Annex requirement? See also comment SV2-0041. Close. | C |
| 3.1.6.1.c) | SV2-0055 | MM | COMMENT: Change “should” to “must” and add PIN information SUGGESTED CHANGE: Revise to, “c) The SATCOM voice system must provide Caller ID with PIN security information for display to the receiving party. | | 31-Mar-11-TK – As a guidance material, use of “must” is not any different than “should.” Where is the Annex requirement? Incorporated additional PIN information. Address use of “must” as a separate comment. Close. | C |
| 3.1.6.1.c) Note | SV2-0056 | MM | COMMENT: Correct spelling SUGGESTED CHANGE: Revise “duel” to “dual.” | | 31-Mar-11-TK – Incorporated into v0.3. Close | C |
| 3.2.1 | SV4-0135 | FTO | COMMENT: Paragraph on operational authorization needs to clarify which are the safety requirements, when State of Operator may impose a “specific approval” (i.e. additional application/letter of authorization process, which is however the last exception and not the rule); MEL and details for operator come after. These clarifications are necessary, because Annex 6 is not totally clear and this has led to unnecessary proliferation of “specific approvals” in the NAV domain. The same should be prevented in COM, while ICAO may find the material also useful (with proper adaptations) for guidance in the NAV domain. SUGGESTED CHANGE: Proposal for replacement of par. 3.2.1. References: I.e. draft rule CAT.IDE.A.330 (Radio communication equipment) in Opinion 2011/04: http://www.easa.europa.eu/agency- | A | 22-Jul-11-TK – Accept. Close. | C |

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| | | | <p>measures/docs/opinions/2011/04/Annexes%20to%20Regulation.pdf AMC4-CAT.IDE.A.345 Communication and navigation equipment for operations under IFR, or under VFR over routes not navigated by reference to visual landmarks in http://www.easa.europa.eu/rulemaking/docs/crd/part-ops/CRD%20b.3%20-%20Resulting%20text%20of%20Part-CAT%20(A,H)-corrigendum-1.pdf</p> <p>3.2.1 Operational authorization to use satellite voice communications</p> <p>3.2.1.1. Pilots holding an instrument rating (and where necessary a type rating) have the privilege to fly an aircraft under Instrument Flight Rules (IFR): e.g. en-route following a series of VOR (VHF Omni-Range) stations in the domain of navigation or using on-board radio equipment to liaise with Air Traffic Control in the domain of communication. Granting to pilots privileges linked to possess of a valid licence and proper ratings, is the normal way used by States to “authorize” aviation operations, without requiring additional administrative processes. However the meaning of “authorization”, although this word is widely used in Annex 6, is not defined.</p> <p>3.2.1.2 Attachment E to Annex 6 Part I clarifies that an “approval” is an active response by the competent aviation authority established by State(s) to a matter submitted for its review, constituting a finding or determination of compliance with the applicable standards. An approval will be evidenced by the signature by the approving official, the issuance of a document or certificate, or some other formal action (e.g. a letter). Same Attachment explains that an “acceptance” does not necessarily require an active response by the</p> | | | |

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| | | | <p>authority to a matter submitted for its review. In other words this is a form of “silent approval”, unless the authority specifically rejects all or a portion of the matter under review, usually after some defined period of time after submission.</p> <p>3.2.1.3 Hence in this guidance material the word “authorization” refers to a privilege granted by the applicable rules to persons holding the required licences or certificates and enjoying the related privileges (no additional administrative process). The word “approval” indicates an administrative procedure based on an application and an explicit written reply by the competent authority. The word “acceptance” means that a certified organisation (e.g. a commercial air operator) submits a document (e.g. a change to the operations manual) to the competent authority and, if the latter does not object within a given time, the change is in fact accepted.</p> <p>3.2.1.4 Authorizations and approvals may be applied also to general aviation. On the contrary, since in most ICAO Contracting States an Air Operator Certificate (AOC) is not required for general aviation, the “acceptance” process does not apply to this segment of aviation.</p> <p>3.2.1.5 From the point of view of air operators, the authorization (i.e. no additional administrative procedures) is normally preferred in comparison to the approval (i.e. written application followed by written reply by the authority).</p> <p>3.2.1.6 The general principle of granting to properly rated pilots the authorization to use on board radio equipment, as part of their privileges, is however implicitly based on several underlying assumptions, such as:</p> <p>a) the aircraft, including its avionics, has an airworthiness approval covering the type of envisaged IFR operations (e.g. long range) and a radio licence;</p> | | | |

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| | | | <p>b) the complexity of using radio equipment, including SATCOM, does not present particular challenges;</p> <p>c) the concept and systems upon which the operation will be carried out are mature enough (= not “new”), which is the case of SATCOM voice;</p> <p>d) the risk associated with improper operation (including for third parties in the air or on the ground) is tolerable, which is the case for SATCOM voice since the transmission, if unclear can be repeated, and for which, a totally independent long rang communication system (i.e. HF) exists;</p> <p>e) availability and continuity of SATCOM voice is ensured, under responsibility of a Service Provider as explained in previous paragraph 3.1.4;</p> <p>f) appropriate standards for quality and management are established;</p> <p>g) accuracy and integrity of the address data base is ensured;</p> <p>h) appropriate training and checking standards and procedures for using SATCOM equipment exist and are implemented mainly for pilots; and</p> <p>i) provision of information (e.g. MMEL and training requirements) from holders of Type Certificates (TC) to air operators, throughout the life cycle of the aircraft is ensured.</p> <p>3.2.1.7 Should one or more of the requirements listed above not be substantiated, then the competent authority at national or regional level, should assess whether rules and procedures for an explicit approval are necessary. Historically this has been the case in several instances in the navigation domain, but it has almost never been considered necessary in the communication domain.</p> <p>3.2.2 Radio equipment to be carried on board</p> <p>3.2.2.1 Competent authorities also establish the minimum number of long range radio equipment to be carried on board. For instance, in the European Union</p> | | | |

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| | | | <p>(EU) the competent regional authority (i.e. EASA) has proposed that, at the level of legally binding rules (See references) aeroplanes shall be equipped with the radio communication equipment required by the applicable airspace requirements. Radio communication equipment shall include at least two independent radio communication systems necessary under normal operating conditions to communicate with an appropriate ground station from any point on the route, including diversions. This means that in principle one set of SATCOM and one set HF could be approved in regions where both services are available.</p> <p>3.2.2.2 The possible acceptance of one set of SATCOM and one set of HF on long range routes, is further clarified by proposed EASA Acceptable Means of Compliance (AMC) clarifying that:</p> <ul style="list-style-type: none"> a) An HF - system is considered to be long range communication equipment; b) Other two-way communication systems may be used if allowed by the relevant airspace procedures. <p>3.2.2.3 The proposed EASA rules mentioned above, would hence allow national authorities in the EU Member States to accept, as normal communication equipment used by aircraft on long range routes, one set of SATCOM voice and only one set of HF radio. These rules are expected to enter into force in 2012.</p> <p>NOTE: it would be nice to insert examples from other continents.</p> <p>3.2.2.4 If changes to the Minimum Equipment List (MEL) are desired to allow dispatch with one satellite voice communication system and only one HF radio system, the air operator should obtain operational approval or acceptance authorization from the State of the Operator or State of Registry.</p> | | | |

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| | | | <p>3.2.3 Criteria for aircraft operators</p> <p>3.2.3.1 Aircraft operators should meet the following criteria: ... (to end of current 3.2.1., Existing 3.2.2 would become 3.2.4)</p> | | | |
| 3.2.1.1 Ed Note 6 | SV2-0057 | MM | <p>COMMENT: Refer to: “What about CPDLC for MEL considerations?” This is for another forum and out of scope of this Task Force.</p> <p>SUGGESTED CHANGE:</p> | C | 31-Mar-11-TK – Incorporated into v0.3 as part of Ed Note. See also resolution to comments SV2-0050, SV2-0060, and SV2-0061. Close | C |
| 3.2.1.2.a) | SV2-0058 | MM | <p>COMMENT: Correct spelling.</p> <p>SUGGESTED CHANGE: from phreasiology to phraseology</p> | | 31-Mar-11-TK – Incorporated into v0.3. Close | C |
| 3.2.1.2.b4) Ed Note 7 | SV2-0059 | MM | <p>COMMENT: Refer to “Editor’s note 7. — For contact information, change to read ANSP. Just an idea.”</p> <p>No leave as is. Some use different ATC and Comms providers.</p> <p>SUGGESTED CHANGE:</p> | C | 31-Mar-11-TK – In GOLD, the term “ATSP” is used instead of ANSP. In this context, I do not understand the comment. Added MM comment to Ed Note. Close. | C |
| 3.2.1.2.b5) | SV2-0060 | MM | <p>COMMENT: Revise to include data link failures</p> <p>SUGGESTED CHANGE: 5) Procedures when SATCOM voice fails and DataLink services fail where both are linked;</p> | A | 31-Mar-11-TK – No change. Data link out of scope for SATCOM voice guidance material. Data link addressed by GOLD. I think the “where both are linked” is referring to common cause failure, which is also beyond the scope of this document, but should be considered as part of total comm. failure. See also resolution to comments SV2-0050, SV2-0057, and SV2-0061. Close. | C |
| 3.2.2 and Editor’s Note 8 | SV2-0045 | BP | <p>COMMENT: The “Global” nature of the guidance means this should be minimum common practices – additional requirements should go in SUPPs.</p> | C | 31-Mar-11-TK – Now Ed Note 10. I believe the Ed Note agrees with the comment. The intent of the note was to remove FAA specific references, such as AC 20-150 in para. 3.2.2.1. or generalize. | C |

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| | | | SUGGESTED CHANGE: Only list ICAO docs? | | Revise Ed Note to “Need to remove FAA-specific references.” Close | |
| 3.2.2.1 | SV1-0016 | DR | COMMENT: SUGGESTED CHANGE: add (c) RTCA, Inc. Document (RTCA/DO)-262A, Minimum Operational Performance Standards for Avionics Supporting Next Generation Satellite Systems (NGSS), Normative Appendix, section 2, dated December 16, 2008 | A | 31-Mar-11-TK – Incorporated into v0.3. Close | C |
| 3.2.2.1.d) (Page 2-1) | SV3-0075 | ML | COMMENT: “d) Add ARINC 761 (Iridium) ” SUGGESTED CHANGE: to be replaced by: Add ARINC 761 (Iridium) | E | 1-Jun-11-TK – Accept. Removed “Add.” Close. | C |
| 3.2.3.2 Also 3.1.5 onwards, and Editor’s Note 9 | SV2-0046 | BP | COMMENT: Note comments also for 3.1.5 etc above. SUGGESTED CHANGE: Emphasize that this is the responsibility of the aircraft operator. | C | 31-Mar-11-TK – I don’t understand the comment. All of 3.2 is “operator eligibility.” According to ICAO definition, an “operator is a person, organization or enterprise engaged in or offering to engage in an aircraft operation.” 3.1.5, 3.1.6, and 3.1.7 are not intended to contain guidelines for the operator. 1-Jun-11-TK – Close. | C |
| 3.2.3.2 | SV2-0061 | MM | COMMENT: Revise to include data link failures SUGGESTED CHANGE: 3.2.3.2 The operator should establish procedures to ensure its flight crews and dispatchers are notified of significant degradation of SATCOM and DataLink service, e.g., outage. | | 31-Mar-11-TK – No change. Data link is out of scope of SATCOM Voice GM. Refer to GOLD. See also resolution to comments SV2-0050, SV2-0057, SV2-0060, and SV2-0061. Close. | C |
| 3.3.1 | SV2-0062 | MM | COMMENT: I’m not sure we can just recommend this without proper authorization and agreement. SUGGESTED CHANGE: | | 30-Mar-11-TK - Comment was inserted right after 3.3.1.b. Not sure to what “this” refers. 1-Jun-11-TK – Not sure who to go to for proper authorization and agreement. Isn’t that why we are writing this guidance material, to get agreement | C |

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| | | | | | from those who can authorize this? Close. | |
| 3.3.2 | SV2-0063 | MM | COMMENT: Are these already in place ? SUGGESTED CHANGE: | | 1-Jun-11-TK – Effective date for Amendment 1 is November 2012. Close. | C |
| 4 | SV3-0108 | MM | COMMENT: Additional material and modifications to chapter 4 provided by the “Chapter 4 Team.” SUGGESTED CHANGE: Mark-up of chapter 4 provided. | | 18-May-11-TK – See attached file beginning with <comment number>. 1-Jun-11-TK – Incorporated additional text and changes per the file provided. Close. | C |
| 4 | SV2-0064 | MM | COMMENT: Numerous changes from Ch 2/Ch4 Group SUGGESTED CHANGE: | | 31-Mar-11-TK – Incorporated into v0.3. Close | C |
| 4.3.1.1 b) | SV1-0001 | AL | COMMENT: Respond to an aircraft that identifies itself as “SATCOM” by restating “SATCOM” in conjunction with the aircraft call sign. Really the same logic that currently applies to aircraft using HF should apply to those on SATCOM. No issue with notifying SATCOM on the initial call regardless of who initiates the call it but it is redundant thereafter. Aircraft answering a SELCAL on HF will typically answer “UAL842 answering SELCAL” – but the ground station never replies or mentions the medium they are using as it is fairly obvious. The flight deck will be able to identify the call is via SATCOM just as ground station will know they are answering a phone call as opposed to a HF call. SUGGESTED CHANGE: | | 31-Mar-11-TK – Defer to Ch 2/Ch4 Group for resolution. 31-Mar-11-TK – Note paragraph reference may have changed as comment made on v0.1. Defer to Ch 2/Ch4 Group for resolution. 18 May 11 – MM – Chapter 4 team agrees and we have deleted that “SATCOM” identifying text. 1-June-11-TK – Close per above. | C |
| 4.3.1.2 Example | SV3-0104 | AL | COMMENT: Refer to: Example: <line rings in flight deck> Radio Air France 465, Gander Radio operator Flight Gander Radio, Air France 465 go ahead crew | | 1-Jun-11-TK – See v0.4 for revisions. Close. | C |

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| | | | <p>Radio Air France 465, Gander Radio, operator <message></p> <p>Flight Gander Radio, Air France 465, <read crew back message></p> <p>Radio Air France 465, Gander Radio, operator readback correct, out</p> <p>SUGGESTED CHANGE: Revise to: Example:</p> <p>Flight <answering line ringing in flight crew deck>Air France 465 answering Satcom.</p> <p>Radio Air France 465, Gander Radio, operator <message></p> <p>Flight Gander Radio, Air France 465, <read crew back message></p> <p>Radio Air France 465, Gander Radio, readback operator correct, out</p> <p>First row, could be “Air France 465 on SATCOM” Ground crew will answer first.</p> <p>Fourth row, Do we want to add here <message / ATC clearance> ?</p> | | | |

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| 4.3.1.4 a) | SV1-0003 | AL | <p>COMMENT: – I doubt many ground facilities will have the ability to recall if an aircraft’s initial call was on HF but is now calling on SATCOM. If you are going to have such a procedure then do you need one for the reverse ie initial call on SATCOM but now calling on HF? Provided the identification process is established correctly there should not be an issue.</p> <p>SUGGESTED CHANGE:</p> | | <p>31-Mar-11-TK – Note paragraph reference may have changed as comment made on v0.1. Defer to Ch 2/Ch4 Group for resolution.</p> <p>18 May 11 – MM team – Chapter 4 team agrees; therefore, we had removed the SATCOM identification in version 3.</p> <p>1-Jun-11-TK – Close per above.</p> | C |
| 4.3.1.4 b) | SV1-0004 | AL | <p>COMMENT: 4.3.1.4 b)– Same comment as for para 4.3.1.1 b) (Comment SV.1-0001), reiterating the word SATCOM. It’s unnecessary.</p> <p>SUGGESTED CHANGE:</p> | | <p>31-Mar-11-TK – Note paragraph reference may have changed as comment made on v0.1. Defer to Ch 2/Ch4 Group for resolution.</p> <p>18 May 11 – MM Team – same answer as above. We agree and have deleted it.</p> <p>1-Jun-11-TK – Close per above.</p> | C |
| 4.3.2 | SV1-0005 | AL | <p>COMMENT: Outgoing calls – 4.3.2.2 covers the radio operator procedures for delivering a clearance or message but over the page in section 4.3.2.4 In cases where an ATC message contains a clearance or instruction which will change the flight profile, a call back from the aircraft will be required before delivering the clearance. ? Any clearance will change the flight profile of an aircraft so I am not sure how these two sections tie up. Are the procedures here suggesting that no clearance can be issued by a ground initiated SATCOM voice call but the ground station needs to call the aircraft on SATCOM, identify itself and then have the aircraft call it back to pass the clearance?</p> <p>SUGGESTED CHANGE:</p> | | <p>31-Mar-11-TK – Note paragraph reference may have changed as comment made on v0.1. Defer to Ch 2/Ch4 Group for resolution.</p> <p>18 May 11 – MM Team – Chapter 4 team does not agree with having the aircraft call back, so we have deleted that text from the Radio Operator (Ground-to-Air) section. However, we do believe that security measures are an important issue, and that is referenced in section 4.3.1.2.</p> <p>1-Jun-11-TK – Close per above.</p> | C |
| 4.3.2.2 Example | SV3-0105 | AL | <p>COMMENT: Refer to: Example: <line rings at aero radio></p> | | <p>1-Jun-11-TK – See v0.4 for revisions. Close.</p> | C |

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| Paragraph reference | Comment Number | Comment Author | Description of comment and proposed resolution | Cat | Resolution Status | Status |
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| | | | <p>Flight crew Shanwick Radio, Speedbird 255</p> <p>Radio operator Speedbird 255, Shanwick Radio, GO AHEAD</p> <p>Flight crew Shanwick Radio, Speedbird 255, <message></p> <p>Radio operator Speedbird 255, Shanwick Radio <read back message></p> <p>Flight crew Shanwick Radio, Speedbird 255, ROGER</p> <p>Radio operator Shanwick Radio OUT</p> <p>SUGGESTED CHANGE: Revise to:</p> <p>Example:</p> <p>Radio operator <answering line ringing at aero radio > “Shanwick Radio”</p> <p>Flight crew Shanwick Radio, Speedbird 255</p> <p>Radio operator Speedbird 255, Shanwick Radio, GO AHEAD</p> <p>Flight crew Shanwick Radio, Speedbird 255, <message></p> <p>Radio operator Speedbird 255, Shanwick Radio <read back message></p> <p>Flight crew Shanwick Radio, Speedbird 255, ROGER</p> <p>Radio operator Shanwick Radio OUT</p> | | | |

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| Paragraph reference | Comment Number | Comment Author | Description of comment and proposed resolution | Cat | Resolution Status | Status |
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| | | | First row - Normal identification of station answering a telephone line | | | |
| 4.3.2.3 (formerly 4.3.1.2) | SV1-0002 | AL | COMMENT: – Suggest removal of this section as it is already covered in 4.3.1.1 SUGGESTED CHANGE: | | 31-Mar-11-TK – Note paragraph reference may have changed as comment made on v0.1. Defer to Ch 2/Ch4 Group for resolution. 18 May 11 – MM Team – Chapter 4 team has deleted the redundant example, but we have left some of the text in for now. We can review again when version 4 is published. We also reversed the order of the outgoing (Ground-to-Air) and incoming (Air-to-Ground) sections, so 4.3.1.2 is now 4.3.2.3. 1-Jun-11-TK – Reassess in v0.4. 22-Jul-11-TK – Submit another comment if above did not address the issue. Close. | C |
| 4.3.2.3 | SV3-0106 | AL | COMMENT: This procedure is already covered in c) in paragraph 4.3.2.2. SUGGESTED CHANGE: Delete paragraph and example | | 1-Jun-11-TK – Same as comment SV1-0002. Close. | C |
| 4.4 (Page 4.6) | SV3-0078 | ML | COMMENT: This paragraph “Flight Crew Procedures” overlaps with paragraph 5. (Flight Crew Procedures) and has to be suppressed (it does not have to be placed in Chapter 4 (Controller and radio operator procedures) SUGGESTED CHANGE: suppress paragraph 4.4 | S | 1-Jun-11-TK – Accept comment. a) Revise 4.3.2 to “Incoming calls – radio operator receives calls (air to ground) b) Revise 5.3 to “Flight crew receives call” c) 4.4.1 is covered by 5.1.4. Delete 4.4.1 d) 4.4.1.1.1 is covered by 5.2.2. Delete 4.4.1.1.1 e) 4.4.1.2.1 is covered by 5.3.1. Delete 4.4.1.2.1 f) 4.4.1.2.2 is covered by 5.3.2. Delete 4.4.1.2.2 g) 4.4.1.3.1 merged with 5.1.3. Delete 4.4.1.3.1. h) 4.4.1.4.1 merged with 5.5.2.1. Delete 4.4.1.4.1. Review in v0.4 and submit new comments, if necessary. | C |

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| | | | | | Close | |
| 4.4.1.2.1 | SV3-0081 | SK/GC | <p>COMMENT: There appears to be references to future Airbus & Boeing appendices. The current appendix A & B assignments are incorrect. Suggest to replace with TBD's.</p> <p>SUGGESTED CHANGE:</p> <p>4.4.1.2.1: Visually confirm the priority of the incoming call and verify that it is an ATC (safety priority) call, see type specific guidance in Appendix TBD (Airbus) and TBD (Boeing). Reply to calls with the flight identification.</p> | E | 1-Jun-11-TK – Deleted text. Flight crew procedures covered in Chapter 5. Airframe specifics for meeting performance-based criteria will be covered by reference to specific aircraft manuals and flight crew training programs assisted by OEMs, beyond scope of this guidance material. See also resolution to comment SV3-0078. Close. | C |
| 4.4.1.3.1 | SV3-0101 | JK | <p>COMMENT: Wording needs serious change. I suggest the following.</p> <p>SUGGESTED CHANGE: On initial contact with a radio station flight crews should provide flight identification and request frequency assignment and perform a Selcal check on HF. After a successful Selcal check all subsequent communications with that radio station may be performed via SATCOM Voice based on regulatory requirements and company policies.</p> | | 1-Jun-11-TK – See resolution to comment SV3-0078 and paragraph 5.1.3, slight revision to include HF voice, “On initial contact with a radio station, the flight crew should provide flight identification and request frequency assignment and perform a SELCAL check on HF. After a successful SELCAL check, all subsequent communications with that radio station may be performed via SATCOM Voice or HF voice based on regulatory requirements and company policies.” Close. | C |
| 5.1.1 | SV4-0126 | BC | <p>COMMENT: Paragraph 5.1.1 does not read well.</p> <p>SUGGESTED CHANGE: Replace with “Operators with data link equipped aircraft (CPDLC, ADS-C, and FMC WPR) operating in airspace where data link services are provided should use data link as their normal means of communications. Some normal ATC communications and most non normal communications will require use of voice communications. Flight crews should use either SATCOM or HF voice at their</p> | | 22-Jul-11-TK – Accept. Close. | C |

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| | | | discretion. Urgency, type of message being communicated, current atmospheric conditions, and company standard operating procedures are all factors in determining which voice system to use.” | | | |
| 5.1.3 | SV2-0065 | MM | COMMENT: Revise “should” to “may” SUGGESTED CHANGE: 5.1.3 The flight crew may use either SATCOM voice or HF voice to contact the radio operator as appropriate. | E | 31-Mar-11-TK – Incorporated into v0.3. Close | C |
| 5.1.4 | SV2-0066 | MM | COMMENT: Refer to “. The radio station facilities are interconnected.” This statement needs clarification. How are they interconnected? SUGGESTED CHANGE: | C | 31-Mar-11-TK –Defer to Ch 5 Group for resolution. 1-Jun-11-TK – I don’t think the sentence is needed. The guidance follows, revised to, “If communications are lost with the current aero radio station, the flight crew should attempt contact with any other aero radio station to relay.” Close. | C |
| 5.2.1 | SV1-0006 | AL | COMMENT: Same comment as previous regarding repetition of the word SATCOM when it has already been established and its fairly obvious to aircrew and a ground station. SUGGESTED CHANGE: | | 31-Mar-11-TK – Note paragraph reference may have changed as comment made on v0.1. Defer to Ch 5 Group for resolution. 1-Jun-11-TK – I believe this was accepted. Resubmit, if necessary. Close. | C |
| 5.2.3 (formerly 5.2.2) | SV1-0007 | AL | COMMENT: Onboard failure prevents use of SATCOM voice, the flight crew should a) not advise SATCOM is unavailable ? This seems a little strange unless the procedure is for Arctic Radio only. Given the procedures are waited to notifying SATCOM in a lot of situations why wouldn’t you advise the ground station when SATCOM is unavailable? Notification of such a failure would prevent the ground station attempting to call a aircraft on SATCOM and instead would use HF as the primary means. SUGGESTED CHANGE: | | 31-Mar-11-TK – Note paragraph reference may have changed as comment made on v0.1. Defer to Ch 5 Group for resolution. 1-Jun-11-TK – Now 5.2.3. Moved intent of 5.2.3 to 5.5.2.1, deleted 5.2.3. Close. | C |
| 5.3.2 | SV2-0067 | MM | COMMENT: Add text to clarify | | 31-Mar-11-TK –Defer to Ch 5 Group for | C |

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| | | | SUGGESTED CHANGE: 5.3.2 The flight crew should not act on ATC instructions from SATCOM calls with other than ATC priority calls, and if in doubt terminate the call and perform a downlink call for confirmation. | | resolution. 1-Jun-11-TK – Revise to, “The flight crew should not act on ATC instructions from SATCOM calls with other than ATC priority calls, and if in doubt terminate the call and initiate a new call for confirmation.” Close. | |
| Apx A | SV3-0109 | SK | COMMENT: Requested to help provide 1st draft of SVGM TVT Definition and apply it to GOLD RCP400/3V Format SUGGESTED CHANGE: Please review attached markup. More discussion required on some key principles and differences between how data and voice operates. | A | 26-May-11-TK – See attached file beginning with <comment number>. 22-Jul-11-TK – The Apx A team completed proposal, which is incorporated into v0.5, Apx A and Chapter 1, definitions. Close. | C |
| Apx A, A.1 | SV2-0068 | MM | COMMENT: Refer to Figure A-1. This timing scenario was challenged in Paris and still presents issues. G – J is highly exaggerated. The example given is that it can take 7 Mins and 20 Secs for completion of a transaction ! In the US, the FAA performance goal is 3 minutes for Clearances and 5 minutes for Requests & Advisories, which ARINC consistently exceeds. We need to discuss this further at our next meeting. SUGGESTED CHANGE: | | 22-Jul-11-TK – See resolution to comment SV3-0109. Close. | C |
| Apx A, A.1 | SV3-0102 | JK | COMMENT: RCP Times were challenged in Paris. This needs serious round table discussion as the times would appear to be excessive. SUGGESTED CHANGE: | | 22-Jul-11-TK – See resolution to comment SV3-0109. Close. | C |

