

**Eighteenth Meeting of the Cross Polar Trans East Air Traffic Management Providers' Work Group (CPWG/18)**

(Paris, France, 16-19 December 2014)

**Agenda Item 5: Provide Status on CPWG/17 Actions**

**Status of the Communication Failure Coordinating Group (CFCG)**

**(Action Item #CP16-01)**

(Presented by the United States)

**SUMMARY**

This paper presents information about the Communication Failure Coordinating Group (CFCG) and the outcome from its meetings.

**1 Introduction**

1.1. The Communications Failure Coordinating Group (CFCG) was formed by the ICAO Air Navigation Bureau in 2012 because of conflicting amendment proposals for existing communication failure (CF) provisions. The Secretariat also recognized that many States, and some regions, preferred to develop CF procedures that differ from those specified in Annex 2 – Rules of the Air.

1.2. The CFCG has conducted two face-to-face meetings, with several telephone conferences. The face-to-face meetings were held at ICAO Headquarters in Montréal, with representatives from States and international organizations.

1.3. The effort of this Group is to establish simple, well-defined procedures, in the event an aircraft experiences a total communication failure, and eliminate disparate communication procedures between States, Flight Information Regions, and air navigation service providers.

**2 Discussion**

2.1. The Second Meeting of the CFCG (CFCG/2) was conducted 10-14 February 2014.

2.2. A Summary of Discussions for CFCG/2 is contained in the paper as Attachment A.

**3 Action**

3.1. The Meeting is invited to note the information provided in this paper.



## **COMMUNICATION FAILURE COORDINATING GROUP (CFCG)**

### **SECOND MEETING**

**Montréal, 10 to 14 February 2014**

### **SUMMARY OF DISCUSSIONS**

(Presented by the Secretary)

## **HISTORICAL**

1.1 The Second Meeting of the Communication Failure Coordinating Group (CFCG/2) was held at ICAO Headquarters in Montréal from 10 to 14 February 2014.

1.2 Ms Leslie Cary, Technical Officer in the Air Traffic Management (ATM) Section, welcomed the participants, providing a brief synopsis of the expectations being placed on the Coordinating Group and reminding them of the accumulated material from the many teleconferences available on the Portal.

1.3 Twelve participants from two States and five international organizations attended the meeting. An attendance list is at Appendix A.

## **2. WORKING ARRANGEMENTS AND APPROVAL OF THE AGENDA**

2.1 The meeting was conducted in English and all documentation was provided in English.

2.2 The agenda for the meeting was approved as follows with agreement that issues might be revised as the meeting progressed:

### **Agenda Item 1: Opening of the Meeting**

#### **1.1 Introductions**

#### **1.2 Administrative notes**

- 1.3 Election of rapporteur
- 1.4 Approval of the agenda

**Agenda item 2:** Identify goals to be achieved by radio communication failure procedures  
2.1 Determine if more than one set of procedures are needed (e.g. VHF vs other)

**Agenda Item 3:** Review draft proposals from 2013 teleconferences  
3.1 Determine if aspects meet the goals from agenda item 2

**Agenda Item 4:** Draft new proposals for Annexes 2 and 10 vol. II and PANS-ATM

**Agenda Item 5:** Way forward  
5.1 Develop plan for related training material

**Agenda Item 6:** Any other business  
6.1 Work program (schedule)  
6.2 Working methods and future meeting

### 3. DISCUSSIONS

#### 3.1 Agenda item 1: Opening of the Meeting

3.1.1 The Secretary presented Working Paper 1 containing the agenda and work schedule. It was noted that while following the agenda in principle, adjustments would be accommodated on an as-needed basis.

3.1.2 The Secretary requested nominations or volunteers for the position of rapporteur; however the group decided it preferred to conduct the meeting without a rapporteur.

3.1.2 Mr. Chris Dalton, Chief ATM, thanked the participants for persevering with this activity, explaining that there was continued pressure to address the many conflicting communication failure provisions found around the world. He informed the group that they had the expertise necessary to find the optimum solution and were well equipped to complete the work.

#### 3.2 Agenda item 2: Identify goals to be achieved by radio communication failure procedures

3.2.1 The Meeting quickly decided that the goal of the ICAO radio communications failure provisions ought to be one set of procedures that would be applicable globally, without variations between busy continental and remote/oceanic areas and without an option for opting out on a regional basis. Furthermore, the procedures should be simple, unambiguous and allow for safe operation in the rare event of a complete communication failure event of a single aircraft. Communication failures due to HF propagation or ATC infrastructure failures would not be included.

#### 3.3 Agenda item 3: Review draft proposals from 2013 teleconferences

3.3.1 The Meeting reviewed the documentation prepared by Mr. Cojocariu of EUROCONTROL and the provisions contained in Annexes 2, 10, vol. II and the PANS-ATM. As discussion progressed to communications failures for aircraft on standard departure route(s) — instrument (SID) and standard arrival route(s) — instrument (STAR), the related provisions in Annex 4 were also reviewed.

3.3.2 The Meeting had extensive discussion, reaching consensus on the following items:

- aircraft must not invoke the radio communication failure provisions (RCF) in Annex 2 unless all available means of communications as described in Annex 10 vol. II have been tried and failed;
- globally, an aircraft shall maintain last assigned speed, level or routing for 20 minutes after setting the Mode A Code to 7600, the ADS-B to emergency/urgency mode or failing to make an expected report;
- SIDs and STARs must have RCF procedures and these procedures should be readily accessible to the flight crew;
- the definition of “Filed flight plan” must be revised to include modifications submitted prior to departure;
- IFR flights should normally continue to destination airport, in accordance with the last ATC clearance received and acknowledged, unless the pilot considers it advisable to proceed in VMC to a suitable aerodrome;
- ATC shall be responsible for maintaining separation between the aircraft experiencing communication failure and other aircraft on the assumption that the aircraft will comply with the procedures above. If the aircraft does not comply with the Standards, ATC will take all possible action to safeguard all aircraft concerned; and
- A new Mode A Code (e.g. 7601) should be adopted to indicate an IFR aircraft is proceeding in VMC to a suitable aerodrome.

3.4 Agenda item 4: Draft new proposals for Annexes 2 and 10 vol. II and PANS-ATM

3.4.1 Draft amendments to Annexes 2, 4, 10 vol. II and PANS-ATM are contained in Appendix B.

3.5 Agenda item 5: Way forward

3.5.1 The Meeting agreed that the next step would be development of rationales for each of the proposed changes. These rationales would be included with the proposals as they are coordinated with the Air Traffic Management Operations Panel (ATMOPSP) and the Flight Operations Panel (FLTOSP). The Group would also identify related documents for which consequential amendments would be needed.

3.5.2 The following individuals/groups will draft rationales, coordinate amongst the CFCG and submit the consolidated text to the Secretary not later than 28 March 2014:

Alain Lemery – SID/STAR rationale

Leifur Hákonarson – HF rationale

Nic Cojocariu – VMC procedures and 7601 (includes consequential documents which would need to be addressed for 7601)

IFALPA and IATA – Annex 2 provisions (includes consequential documents)

CANSO – PANS-ATM

3.5.3 Related documents which will need to be reviewed for consequential impacts include the *Regional Supplementary Procedures* (Doc 7030), *Regional Air Navigation Plans*, Doc 8168, *Procedures for Air Navigation Services – Aircraft Operations*, and documents relating to surveillance systems.

3.5.4 The Secretary informed the meeting that once the CFCG is satisfied with the amendment proposals and rationales, the Secretariat will submit the material to the ATMOPSP and FLTOPSP for review and comment. Once the material is deemed to be mature, it will be presented to the Air Navigation Commission for review with a request to circulate the material to States and international organizations for comment.

3.6 Agenda item 6: Any other business

3.6.1 None.

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**APPENDIX A**

**LIST OF PARTICIPANTS**

<b>Name</b>	<b>Nominated by</b>
Mr. Alain Lemery	Canada
Mr. Mark Patterson	United States
Mr. Bernard Gonsalves Mr. Leifur Hakonarson Mr. Stefano Romano	CANSO
Mr. Neculai Cojocariu	EUROCONTROL
Mr. Joël Morin Mr. Joe Hof Mr. Ruben Chaves	IATA
Captain Stefan Fiedler Ms. Carole Couchman	IFALPA
Dr. Ruth Stilwell	IFATCA
Ms Leslie Cary Mr. Nicolas Hinchliffe	ICAO

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## APPENDIX B

### DRAFT AMENDMENT PROPOSALS FOR ANNEXES 2, 4, 10 vol. II AND PANS-ATM

#### ***Annex 2 — Rules of the Air***

Proposed revised definition:

***Filed flight plan.*** The flight plan as filed with an ATS unit by the pilot or a designated representative, ~~without any subsequent changes~~ including any associated update messages submitted prior to departure.

#### 3.6.5 Communications

3.6.5.1 An aircraft operated as a controlled flight shall maintain continuous air-ground voice communication watch on the appropriate communication channel of, and establish two-way communication as necessary with, the appropriate air traffic control unit, except as may be prescribed by the appropriate ATS authority in respect of aircraft forming part of aerodrome traffic at a controlled aerodrome.

3.6.5.2 When an aircraft is unable to comply with 3.6.5.1 and fails to establish communications using other means available as described in Annex 10, Volume II, Chapter 5, the radio communications failure (RCF) procedures described below shall be invoked unless the crew have reason to believe that other aircraft might be similarly affected, as might be the case in any environment where high frequency (HF) is used for communications.

*Note 1.— The RCF procedures specifically address failure of communications affecting a single aircraft. In situations where multiple aircraft may be involved, especially when operating in an environment where high frequency communications are involved, safety is best assured by aircraft adhering to the last ATC clearance received and acknowledged.*

*Note 2. — Information relating to establishing communication is contained in Annex 10, Volume II, Chapter 5, 5.2.2.7.2.*

*Note 3.— SELCAL or similar automatic signalling devices satisfy the requirement to maintain an air-ground voice communication watch.*

*Note 4.— The requirement for an aircraft to maintain an air-ground voice communication watch remains in effect after CPDLC has been established.*

3.6.5.3 The aircraft, when forming part of the aerodrome traffic at a controlled aerodrome, shall keep a watch for such instructions as may be issued by visual signals.

3.6.5.4 The aircraft shall set the transponder on Mode A Code 7600 and/or transmit the appropriate ADS-B emergency and/or urgency mode and shall comply with such of the following procedures as are appropriate.

3.6.5.4.1 A VFR flight shall continue to fly in visual meteorological conditions; land at the nearest suitable aerodrome; and report its arrival by the most expeditious means to the appropriate air traffic services unit.

3.6.5.4.2 Except as provided in 3.6.5.4.3, an IFR flight shall:

a) maintain the last assigned speed and level, or minimum flight altitude if higher, for a period of 20 minutes following:

- 1) the aircraft's failure to make a required position report; or
- 2) the time the transponder is set to 7600 and/or the appropriate ADS-B emergency and/or urgency mode is transmitted if surveillance service is provided;

and thereafter adjust level and speed in accordance with the filed flight plan;

b) when being vectored or having been directed by ATC to proceed offset using area navigation (RNAV):

- 1) *with a specified limit*, continue to that limit, then rejoin the route specified in the last ATC clearance received and acknowledged, taking into consideration the applicable minimum flight altitude; or
- 2) *without a specified limit*, rejoin the route specified in the last ATC clearance received and acknowledged no later than the next significant point, taking into consideration the applicable minimum flight altitude;

c) proceed according to the route specified in the last ATC clearance received and acknowledged to the appropriate designated navigation aid or fix serving the destination aerodrome and, when required to ensure compliance with d) below, hold over this aid or fix until commencement of descent;

d) commence descent from the navigation aid or fix specified in c) at, or as close as possible to, the expected approach time last received and acknowledged; or, if no expected approach time has been received and acknowledged, at, or as close as possible to, the estimated time of arrival;

e) complete an instrument approach procedure as specified for the designated navigation aid or fix; and

f) land, if possible, within 30 minutes after the estimated time of arrival specified in d) or the last acknowledged expected approach time, whichever is later.

3.6.5.4.3 An IFR flight following a standard instrument departure route or a standard instrument arrival route shall comply with the provisions for radio communication failure specified on the Standard Departure Chart - Instrument (SID) or Standard Arrival Chart - Instrument (STAR).

*Note 1.- See Annex 4 Chapters 9 and 10 for charting SID and STAR radio communication failure procedures.*

*Note 2.- The provisions specified on a Standard Arrival Chart - Instrument describe the expected vertical manoeuvres in case of radio communication failure, as well as the actions to be taken when arriving before the expected approach time or the estimated time of arrival, as appropriate.*

3.6.5.4.4 If an IFR aircraft encounters visual meteorological conditions and the pilot-in-command decides to continue to fly in visual meteorological conditions, the pilot shall set Mode A Code 7601, land at the nearest suitable aerodrome; and report arrival by the most expeditious means to the appropriate air traffic services unit.

*Note.— The provision of air traffic control service to other flights operating in the airspace concerned will be based on the premise that an aircraft experiencing communication failure will comply with the rules in 3.6.5.4.2, 3.6.5.4.3 or 3.6.5.4.4.*

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## Annex 4 — Aeronautical Charts

~~9.9.4.2 **Recommendation.**— A textual description of standard departure route(s) — instrument (SID) and relevant communication failure procedures should be provided and should, whenever feasible, be shown on the chart or on the same page which contains the chart.~~

9.9.4.2 Relevant communication failure procedures shall be provided for standard departure route(s) — instrument (SID).

9.9.4.3 **Recommendation.**— *Whenever feasible, a textual description of the relevant communication failure procedures for the SID should be shown on the chart or on the same page which contains the chart.*

9.9.4.4 **Recommendation.**— *A textual description of the SID should be provided and should, whenever feasible, be shown on the chart or on the same page which contains the chart.*

~~10.9.4.2 **Recommendation.**— A textual description of standard arrival route(s) — instrument (STAR) and relevant communication failure procedures should be provided and should, whenever feasible, be shown on the chart or on the same page which contains the chart.~~

10.9.4.2 Relevant communication failure procedures shall be provided for standard arrival route(s) — instrument (STAR) and shall contain, at minimum, the expected vertical manoeuvres, as well as the actions to be taken when arriving before the expected approach time or the estimated time of arrival.

10.9.4.3 **Recommendation.**— *Whenever feasible, a textual description of the relevant communication failure procedures for the STAR should be shown on the chart or on the same page which contains the chart.*

10.9.4.4 **Recommendation.**— *A textual description of the STAR should be provided and should, whenever feasible, be shown on the chart or on the same page which contains the chart.*

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## **Annex 10 — Aeronautical Telecommunications, Volume II — Communication Procedures including those with PANS status**

### **5.2.2.7 Voice communications failure**

#### **5.2.2.7.1 Air-ground**

5.2.2.7.1.1 When an aircraft station fails to establish contact with the appropriate aeronautical station on the designated channel, it shall attempt to establish contact on the previous channel used and, if not successful, on another channel appropriate to the route. If these attempts fail, the aircraft station shall attempt to establish communication with the appropriate aeronautical station, other aeronautical stations or other aircraft using all available means and advise the aeronautical station that contact on the assigned channel could not be established. In addition, an aircraft operating within a network shall monitor the appropriate VHF channel for calls from nearby aircraft.

Note.- “... all available means ...” includes, inter alia, data link, satellite voice and mobile phones.

5.2.2.7.1.2 If the attempts specified under 5.2.2.7.1.1 fail, the aircraft station shall transmit its message twice on the designated channel(s), preceded by the phrase “TRANSMITTING BLIND” and, if necessary, include the addressee(s) for which the message is intended.

5.2.2.7.1.2.1 PANS.— In network operation, a message which is transmitted blind should be transmitted twice on both primary and secondary channels. Before changing channel, the aircraft station should announce the channel to which it is changing.

#### **5.2.2.7.1.3 Receiver failure**

5.2.2.7.1.3.1 When an aircraft station is unable to establish communication due to receiver failure, it shall transmit reports at the scheduled times, or positions, on the channel in use, preceded by the phrase “TRANSMITTING BLIND DUE TO RECEIVER FAILURE”. The aircraft station shall transmit the intended message, following this by a complete repetition. During this procedure, the aircraft shall also advise the time of its next intended transmission.

5.2.2.7.1.3.2 An aircraft which is provided with air traffic control or advisory service shall, in addition to complying with 5.2.2.7.1.3.1, transmit information regarding the intention of the pilot-in-command with respect to the continuation of the flight of the aircraft.

~~5.2.2.7.1.3.3 When an aircraft is unable to establish communication due to airborne equipment failure it shall, when so equipped, select the appropriate SSR code to indicate radio failure.~~

Note.— General rules which are applicable in the event of communications failure are contained in Annex 2 to the Convention.

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## ***Procedures for Air Navigation Services — Air Traffic Management*** **(PANS-ATM, Doc 4444)**

5.4.2.6.3.2 During the application of the 93 km (50 NM) separation, when an aircraft fails to report its position, the controller shall take action within 3 minutes to establish communication. If communication has not been established within 8 minutes of the time the report should have been received, the controller shall take action to apply an alternative form of separation.

### **6.3.2.5 COMMUNICATION FAILURE**

~~6.3.2.5.1 Clearances for departing aircraft may specify an initial or intermediate level other than that indicated in the filed flight plan for the en route phase of flight, without a time or geographical limit for the initial level. Such clearances will normally be used to facilitate the application of tactical control methods by ATC, normally through the use of an ATS surveillance system.~~

~~6.3.2.5.2 Where clearances for departing aircraft containing no time or geographical limit for an initial or intermediate level are utilized, action to be taken by an aircraft experiencing air-ground communication failure in the event the aircraft has been radar vectored away from the route specified in its current flight plan should be prescribed on the basis of a regional air navigation agreement and included in the SID description or published in AIPs.~~

### **8.8.3 Failure of equipment**

#### **8.8.3.1 AIRCRAFT RADIO TRANSMITTER FAILURE**

8.8.3.1.1 If two-way communication is lost with an aircraft, the controller should determine whether or not the aircraft's receiver is functioning by instructing the aircraft on the channel so far used to acknowledge by making a specified manoeuvre and by observing the aircraft's track, or by instructing the aircraft to operate IDENT or to make SSR code and/or ADS-B transmission changes.

Note 1.— *Transponder-equipped aircraft experiencing radiocommunication failure will operate the transponder on Mode A Code 7600.*

Note 2.— *ADS-B-equipped aircraft experiencing radiocommunication failure may transmit the appropriate ADS-B emergency and/or urgency mode.*

8.8.3.1.2 If the action prescribed in 8.8.3.1.1 is unsuccessful, it shall be repeated on any other available channel on which it is believed that the aircraft might be listening.

8.8.3.1.3 In both the cases covered by 8.8.3.1.1 and 8.8.3.1.2, any manoeuvring instructions shall be such that the aircraft would regain its current cleared track after having complied with the instructions received.

8.8.3.1.4 Where it has been established by the action in 8.8.3.1.1 that the aircraft's radio receiver is functioning, continued control can be effected using SSR code/ADS-B transmission changes or IDENT transmissions to obtain acknowledgement of clearances issued to the aircraft.

#### **8.8.3.2 COMPLETE AIRCRAFT COMMUNICATION FAILURE**

When a controlled aircraft experiencing complete communication failure is operating or expected to operate in an area and at flight levels where an ATS surveillance service is applied, separation specified in 8.7.3 may continue to be used. ~~However, if the aircraft experiencing the communication failure is not identified, separation shall be applied between identified aircraft and all unidentified aircraft observed along the expected route of the aircraft with the communication failure, until such time as it is known, or can safely be assumed, that the aircraft with radiocommunication failure has passed through the airspace concerned, has landed, or has proceeded elsewhere.~~

### 15.3 AIR-GROUND COMMUNICATIONS FAILURE

Note 1.— *Procedures to be applied in relation to an aircraft experiencing air-ground communication failure when providing ATS surveillance services are contained in Chapter 8, Section 8.8.3.*

Note 2.— *An aircraft equipped with an SSR transponder is expected to operate the transponder on Mode A Code 7600 to indicate that it has experienced air-ground communication failure. An aircraft equipped with other surveillance system transmitters, including ADS-B and ADS-C, might indicate the loss of air-ground communication by all of the available means.*

Note 3.— *Some aircraft equipped with first generation ADS-B avionics have the capability to transmit a general emergency alert only, regardless of the code selected by the pilot.*

Note 4.— *See also Chapter 6, 6.3.2.5, concerning departure clearances containing no geographical or time limit for an initial level and procedures to be applied in relation to an aircraft experiencing air-ground communication failure under such circumstances.*

Note 45.— *See also Chapter 5, 5.4.2.6.3.2, for additional requirements applying to communication failure during the application of the 50 NM longitudinal RNAV/RNP 10 separation minimum.*

15.3.1 Action by air traffic control units when unable to maintain two-way communication with an aircraft operating in a control area or control zone shall be as outlined in the paragraphs which follow.

15.3.2 As soon as it is known that two-way communication has failed, action shall be taken to ascertain whether the aircraft is able to receive transmissions from the air traffic control unit by requesting it to execute a specified manoeuvre which can be observed by an ATS surveillance system or to transmit, if possible, a specified signal in order to indicate acknowledgement.

Note.— *Some aircraft equipped with first generation ADS-B avionics do not have the capability of squawking IDENT while the emergency and/or urgency mode is selected.*

15.3.3 If the aircraft, operating in accordance with instrument flight rules, fails to indicate that it is able to receive and acknowledge transmissions, separation shall be maintained between the aircraft having the communication failure and other aircraft, based on the assumption that the aircraft will follow the actions described in Annex 2, 3.6.5.4.2 and 3.6.5.4.3, unless the crew has reason to believe that other aircraft might be similarly affected, as might be the case in any environment where high frequency (HF) is used for communications:

a) maintain the last assigned speed and level, or minimum flight altitude if higher, for a period of 20 minutes following:

1) the aircraft's failure to make a required position report; or

2) the time the transponder is set to 7600 and/or the appropriate ADS-B emergency and/or urgency mode is transmitted if surveillance service is provided;

and thereafter adjust level and speed in accordance with the filed flight plan;

b) when being vectored or having been directed by ATC to proceed offset using area navigation (RNAV):

1) *with a specified limit*, continue to that limit, then rejoin the route specified in the last ATC clearance received and acknowledged, taking into consideration the applicable minimum flight altitude; or

2) *without a specified limit*, rejoin the route specified in the last ATC clearance received and acknowledged no later than the next significant point, taking into consideration the applicable minimum flight altitude;

c) proceed according to the route specified in the last ATC clearance received and acknowledged to the appropriate designated navigation aid or fix serving the destination aerodrome and, when required to ensure compliance with d) below, hold over this aid or fix until commencement of descent;

d) commence descent from the navigation aid or fix specified in c) at, or as close as possible to, the expected approach time last received and acknowledged; or, if no expected approach time has been received and acknowledged, at, or as close as possible to, the estimated time of arrival;

e) complete an instrument approach procedure as specified for the designated navigation aid or fix; and

f) land, if possible, within 30 minutes after the estimated time of arrival specified in d) or the last acknowledged expected approach time, whichever is later.

15.3.4 If the IFR flight is following a standard instrument departure route or a standard instrument arrival route, it will comply with the provisions for radio communication failure specified on the Standard Departure Chart - Instrument (SID) or Standard Arrival Chart - Instrument (STAR);

15.3.5 If the aircraft, operating in accordance with visual flight rules, fails to indicate that is able to receive and acknowledge transmissions, ATC shall take all possible action to safeguard all aircraft concerned based on the assumption that the aircraft will continue to fly in visual meteorological conditions; land at the nearest suitable aerodrome; and report its arrival by the most expeditious means to the appropriate air traffic services unit.

15.3.6 Action taken to ensure suitable separation shall cease to be based on the assumption stated in 15.3.3 and 15.3.4 when:

a) it is determined that the aircraft is following a procedure differing from those in 15.3.3 and 15.3.4 in which case ATC shall take all possible action to safeguard all aircraft concerned; or

b) through the use of electronic or other aids, air traffic control units determine that action differing from that required by 15.3.3 and 15.3.4 may be taken without impairing safety; or

c) positive information is received that the aircraft has landed.

15.3.7 When ATC observes an IFR flight with a transponder code set to 7601 or determines by other means that the aircraft is following a procedure different from that in 15.3.3 or 15.3.4, ATC shall take all possible action to safeguard all aircraft concerned based on the assumption that the aircraft will continue to fly in visual meteorological conditions; land at the nearest suitable aerodrome; and report its arrival by the most expeditious means to the appropriate air traffic services unit.

Note 1.— *Provisions related to minimum levels are contained in Annex 2, 5.1.2.*

Note 2.— *As evidenced by the meteorological conditions prescribed therein, 15.3.3 a) relates to all controlled flights, whereas 15.3.3 b) relates only to IFR flights.*

Note 3.— *See also 8.6.5.1 b) concerning the requirement for the flight crew to be informed of what a vector is to accomplish and the limit of the vector.*

15.3.8 As soon as it is known that two-way communication has failed, appropriate information describing the action taken by the air traffic control unit, or instructions justified by any emergency situation, shall be transmitted blind for the attention of the aircraft concerned, on the frequencies available on which the aircraft is believed to be listening, including the voice frequencies of available radio navigation or approach aids. Information shall also be given concerning:

a) meteorological conditions favourable to a cloud-breaking procedure in areas where congested traffic may be avoided; and

b) meteorological conditions at suitable aerodromes.

15.3.9 Pertinent information shall be given to other aircraft in the vicinity of the presumed position of the aircraft experiencing the failure.

15.3.10 As soon as it is known that an aircraft which is operating in its area of responsibility is experiencing an apparent radiocommunication failure, an air traffic services unit shall forward information concerning the radiocommunication failure to all air traffic services units concerned along the route of flight. The ACC in whose area the destination aerodrome is located shall take steps to obtain information on the alternate aerodrome(s) and other relevant information specified in the filed flight plan, if such information is not available.

15.3.11 If circumstances indicate that a controlled flight experiencing a communication failure might proceed to (one of) the alternate aerodrome(s) specified in the filed flight plan, the air traffic control unit(s) serving the alternate aerodrome(s) and any other air traffic control units that might be affected by a possible diversion shall be informed of the circumstances of the failure and requested to attempt to establish communication with the aircraft at a time when the aircraft could possibly be within communication range. This shall apply particularly when, by agreement with the operator or a designated representative, a clearance has been transmitted blind to the aircraft concerned to proceed to an alternate aerodrome, or when meteorological conditions at the aerodrome of intended landing are such that a diversion to an alternate is considered likely.

15.3.12 When an air traffic control unit receives information that an aircraft, after experiencing a communication failure has re-established communication or has landed, that unit shall inform the air traffic services unit in whose area the aircraft was operating at the time the failure occurred, and other air traffic services units concerned along the route of flight, giving necessary information for the continuation

of control if the aircraft is continuing in flight.

15.3.13 If the aircraft has not reported within thirty minutes after:

- a) the estimated time of arrival furnished by the pilot;
- b) the estimated time of arrival calculated by the ACC; or
- c) the last acknowledged expected approach time, whichever is latest,

pertinent information concerning the aircraft shall be forwarded to aircraft operators, or their designated representatives, and pilots-in-command of any aircraft concerned and normal control resumed if they so desire. It is the responsibility of the aircraft operators, or their designated representatives, and pilots-in-command of aircraft to determine whether they will resume normal operations or take other action.

— END —