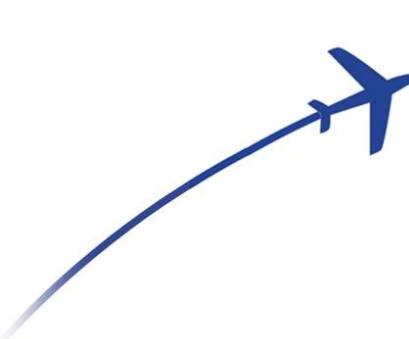# ALLCLEAR?

The path to clear communications

ALL CLEAR? COMMUNICATION TRAINING

LESSON FACILITATION NOTES FOR TRAINERS

These Lesson Facilitation Notes for Trainers have been derived from the EUROCONTROL Air Ground Communication (AGC) Safety Initiative and their use will cover the majority of recommendations made in the AGC Action Plan.

EUROCONTROL

Description

These Lesson Facilitation Notes for Trainers have been derived from the EUROCONTROL Air Ground Communication (AGC) Safety Initiative and their use will cover the majority of recommendations made in the AGC Action Plan.

Context

These Notes are recommended for training where no visual aids or technology is available, and/or where facilitation is the preferred method of the Trainer. However, the preferred method should always be to use the videos.

How to Use these notes

- The Notes are designed so that they can be used by Trainers stood at the front of a class as a guide to running a training session based on Q&A (eliciting answers) from the students.

- Pages marked "intentionally blank" are included to ensure that other pages covering a single topic are facing each other when photocopied double-sided.

- The Notes can be printed and used directly as they are, or they can be cut-and-pasted, amended or added to.

- Trainers may wish to use the whole set or just relevant parts to suit their own requirements.

- The Notes can also be used by trainers as a revision/research tool for developing their own training on this subject.

- It is recommended that Trainers familiarise themselves with these notes before using them in practice.

- Some information may need to be amended where it is pertinent to the Trainer's airline/ATC Unit/country's requirements and procedures.

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Contents of these Lesson Facilitation Notes

i. Decode

1. Interest and need for training

2. Background to the Initiative

3. Aims

4. Factors contributing to poor communications

5. ICAO SARPS for communications

6. Call-sign confusion

7. Loss of communications

8. Blocked transmissions

9. Local communication procedures

10. Further learning material

11. Conclusions and summary

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i.   DECODE OF LESSON FACILITATION NOTES

Although instructions are given throughout the Notes, and they are clear to understand, colours and boxes have been used to differentiate different aspects of these notes in order to enable easy interpretation.

Bold and italics have been used to provide the same if the Notes are printed in Black&White, as follows:

GREY BOLD CAPITALS = SUBJECT TITLES

Red Bold = Instructions to Trainers such as "Brief or Discuss"

(grey in brackets) = (suggestions for Trainers)

Grey = information to be briefed

Black and **Black Bold** inside Box = Factual Information

Dark Blue italics = Q: Questions

Dark Red italics = A: suggested or possible Answers

1. INTEREST AND NEED FOR TRAINING

Brief some interest on the subject:
(optional - this example is just one suggestion)

Accident Summary:

1977 - KLM 4805 B747 and PANAM 1736 B747 Tenerife, collision on runway, 335 fatalities:

Tenerife congested due to terrorist attack at Las Palmas airport and diverted aircraft.

KLM and PANAM back-tracking for take-off.

KLM ready for departure and ATC give departure clearance.

KLM thought they were cleared for take-off and call "we are now at take-off" then started rolling.

PANAM still back-tracking to exit.

ATC and PANAM call simultaneously:

o   ATC – "Standby for take off we will call you"

o   PANAM – "No … uh we're still taxiing down the runway"

KLM heard high-pitched noise for nearly 4 seconds due to simultaneous transmissions.

ATC heard PANAM and respond "report when clear" – PANAM acknowledge this with read-back.

These two messages are heard by KLM

KLM flight engineer asks pilots <u>twice</u> – "is he not clear then?"

KLM Captain answers "Oh, yes".

Q:What communication errors and inadequate communication performances are highlighted from this short accident summary?

Answers:

Take-off began without clearance – hearing error – expectation – lack of understanding?

Non-standard phraseology used "we are now at take-off"

Call-signs omitted

ATC did not pick-up on the significance of this read-back

Critical transmission was Blocked from KLM regarding PANAM still taxying

KLM Captain "assumed" PANAM was clear

CRM issues between FE and FC.

IMPACT OF COMMUNICATION ERROR

Brief a short introduction:

We want to ascertain not just the potential consequences of poor communications but also the size of the risk which exists today.

RISK = LIKELIHOOD x CONSEQUENCES

Q: What voice messages are normally passed between controllers and pilots?

Answers:

Instructions – clearances – level, heading, routing, altimeter settings, frequencies etc

Information – weather, traffic, terrain, airport etc

Intentions

Requests

Advice – weather, traffic, terrain, airport etc

Emergency service

Q: When messages are not transmitted or received, or misunderstood what is likely to result?

Answers:

Failure to follow intended clearances and/or obey instructions

Following wrong clearance

Wrong aircraft following clearance

Unnoticed deviations from clearance

Failure to act on information and advice and/or provide a service

Likely to act on expectations and assumptions

Loss of situational awareness – third parties

Q: If clearances are not flown, or incorrect clearances are flown (for whatever reason) what are the potential hazards/consequences?

Answers:

Runway Incursion – ground collision

Level Bust – mid-air collision

Penetration of airspace

Loss of lateral separation

CFIT

Increased workload for ATCO due to impact on other traffic – coordination and deconfliction

Military Interception

Runway Incursions:

There are two Runway Incursions reported every day in Europe

Level busts:

10 level busts per day in Europe

10 % result in a loss of separation of less than 1nm

Communication problems are the most common causal factor in Level Busts

Contributory Influence:

Communications are causal factors in 30% of approach and landing accidents

Brief the need for training:

The Future:

traffic increasing at around 6% per year
frequencies are becoming more congested
capacity from data-link is a long way away
in the meantime there is **a need** to reduce
the risk posed by poor communications.

2. BACKGROUND TO THE AGC INITIATIVE (optional)

The **Air Ground Communication (AGC) Safety Improvement Initiative** was launched by the Eurocontrol Safety Team in 2004.

As part of the Initiative the Dutch National Aerospace Laboratory (NLR) conducted:

    a safety study of over 500 reported occurrences of communication problems within Europe over a 13-month period during 2004-05, and

    a survey of pilots and controllers to identify lessons and recommendations.

The AGC Initiative is also addressing communications issues identified in the Runway Incursion and Level Bust safety improvement initiatives.

An AGC Action Plan was released in May 2006 which contains several briefing notes on different communication issues; recommendations for best practice aimed at Eurocontrol, National Regulators, Aircraft operators, Air Navigation Service Providers, Pilots and Air Traffic Controllers.

The **AGC Action Plan** also contained a commitment to produce an AGC Toolkit aimed at raising awareness of the issues and encouraging the widespread use of ICAO Standards and Recommended Practices (SARPS), the application of industry best-practice, and the promotion of recommendations resulting from the Initiative.

This briefing session has resulted from the AGC Safety Improvement Initiative and is based on information contained within the AGC Toolkit. Holding this session fulfils one of the recommendations for Aircraft Operators to provide training.

The Action Plan has been endorsed by the following organisations:

International Federation of Air Traffic Controllers' Associations - IFATCA

Flight Safety Foundation – FSF

European Cockpit Association – ECA

European Regions Airline Association – ERA

EUROCONTROL.

3. AIMS

Q: What would you personally hope to gain from the session in terms of reducing the risks from air-ground communications?

Answers?

Discover what the main findings of the Safety Study were

Find out what recommended best-practices are in the Action Plan

Review ICAO SARPS

Review company procedures

Discuss operational issues on XXX aircraft type/human-machine interface

Talk about sterile cockpit concept

Improve communication/radio discipline

Learn some "tips"

Add your own AIMS and CONTENTS for your training session:

4. FACTORS CONTRIBUTING TO POOR COMMUNICATIONS

Brief: There are various elements within a typical communication system that can affect the quality of communications, these could be:

- technical (systems, equipment and environmental)
- operating procedures
- routine practices, or
- human performance.

(Option to introduce/revise the S-H-E-L model)

Q: What equipment and environmental factors increase the chances of poor communication between pilots and controllers?

Answers:

Equipment failures, malfunction or poor performance

Ineffective use of equipment

Cockpit background noise

Frequency congestion

Interference

Blocked transmissions/simultaneous transmissions

Intentionally blank

Brief:

Often we do not help ourselves when communicating with each other; in fact we sometimes make it difficult to be understood.

Q: In what ways do we contribute through our day-to-day practices to (or: what examples have you experienced of) inadequate, ineffective and/or wrong communication between pilots and controllers?

Answers:

Poor procedures and practices

Inadequate training

Omission of call-sign

Incorrect use of abbreviated call-sign (see below)

Incomplete read-back

Non-standard phraseology and colloquialisms

Not pacing our speech

Not speaking clearly

Accent and tone

Language other than English

Lack of monitoring and cross-checking

Transmitting too many instructions in one message

Not clarifying/separating headings from flight levels

Not ensuring that call-signs are de-conflicted

Not recording (writing down) clearances

Clipping transmissions

Not listening before transmitting

Not allowing enough time to comply with a conditional clearance

Pilots not informing ATC promptly of intentions to deviate due to operational circumstances

Controllers accounting for aircraft performance and issuing clearances too late

Brief: As humans we are susceptible to certain influences (physical and mental) on our performance

Q: What physical and mental factors can affect our communication performance? (from your own experience?)

Answers:

Fatigue

Illness

Hearing deficiency

High work load

Distractions

Conflicts

Memory lapse

Expectations

Similar sounding words, numbers or phrases - confusion

Provide some examples:

These examples highlight how our assumptions and expectations play a key role in communication error.
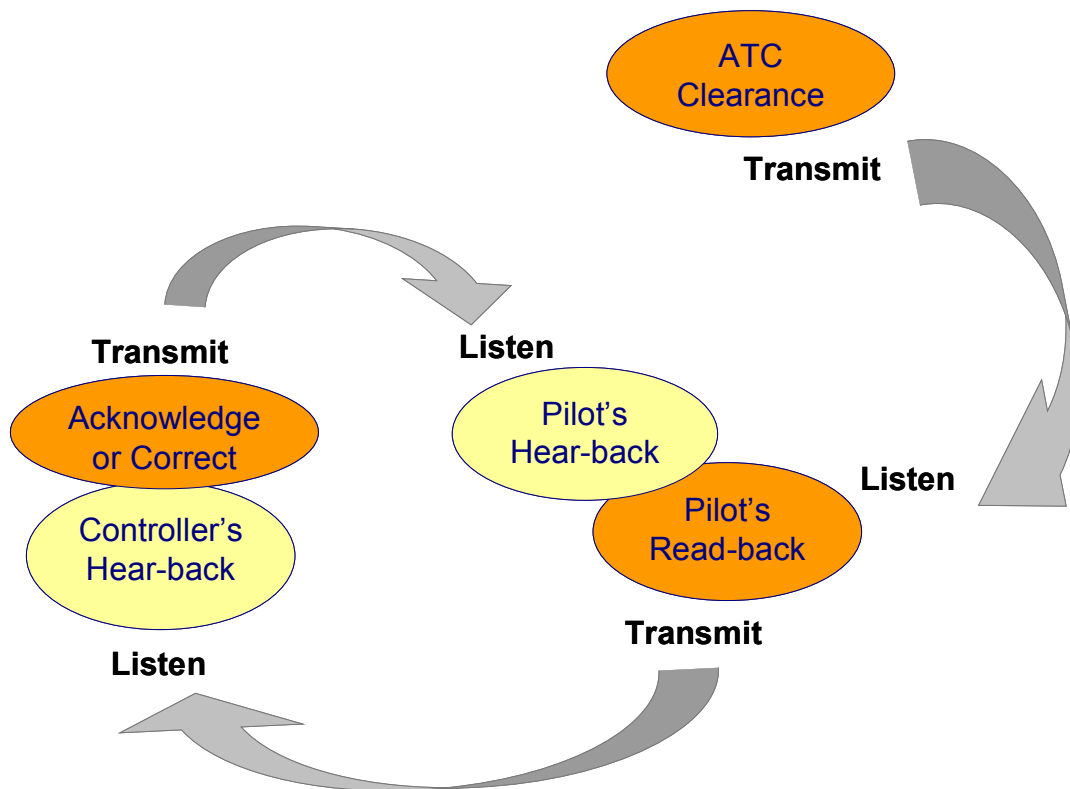

For Pilots:

Following a detailed departure brief, or when flying a routine familiar approach procedure, expectations of certain cleared levels, headings, squawks and frequency changes are very high. Inattention will often lead to hearing what you want to hear and not what was actually said.

For Controllers:

When issuing routine clearances and instructions less attention can be paid to listening to the pilots' read-backs (ie hear-back) – it is best not to assume that all pilots are familiar with the airspace, and therefore to them the instructions and clearances may not be "routine – same as always" and they could mis-hear.

Draw the communication loop – and explain:

Ensuring that the loop is always completed reduces the possibility of error.

```
                    ┌──────────────┐
                    │     ATC      │
                    │  Clearance   │
                    └──────────────┘
                         Transmit

  Transmit              Listen
┌──────────────┐    ┌──────────────┐
│ Acknowledge  │    │   Pilot's    │
│ or Correct   │    │  Hear-back   │      Listen
└──────────────┘    └──────────────┘
┌──────────────┐    ┌──────────────┐
│ Controller's │    │   Pilot's    │
│  Hear-back   │    │  Read-back   │
└──────────────┘    └──────────────┘
     Listen              Transmit
```

Q: If the communication loop breaks down due to technical, procedural or human factor problems, what can we do to enhance our further understanding of communication errors?

A: File an Air Safety Report

A: Make recommendations for changing procedures to reflect best practice

5. ICAO SARPS FOR COMMUNICATIONS

Q: How can we prevent many of the problems we have discussed (such as language, speech characteristics and message formats and contents)?

Answers:

Comply with ICAO standards and recommendations, including phraseologies

Write better SOPs

Always ensure the communication loop is completed

Pay attention to our own speech characteristics

Improve listening skills

Adhere to monitoring and cross-checking procedures and best-practices

Restrict the number of elements (requests/instructions) in a message to just two

Clarify (ie separate) headings from flight levels

Transmit in good time

Be very clear with conditional clearances – both issuing and complying with them

The AGC Safety Initiative recommends the observance of ICAO SARPS, including standard phraseologies. Adhering to these will improve radio discipline and help to harmonise communication standards across Europe.

ICAO REFERENCES

PANS-ATM DOC4444 contains procedures which are complementary to the SARPS contained in Annex 2 - *Rules of the Air* and in Annex 11 - *Air Traffic Services*. They are supplemented when necessary by regional procedures contained in the *Regional Supplementary Procedures* (Doc 7030).

Although the procedures are mainly directed to ATS personnel, flight crews should be familiar with the procedures contained in several chapters of the Document.

Chapters 4, 5 and 12 contain procedures for air-ground communication including: clearances, read-backs, phraseologies, and deviations.

> *Note: Pilots and Controllers should be familiar with the phraseologies contained in Chapter 12.3.*

Annex 10, Aeronautical Telecommunications, Volume II, Communications Procedures contains SARPS for communications procedures including: discipline, use of language, pronunciation/phonetics, and techniques. Some of these procedures are denoted as PANS.

EXAMPLES FROM ICAO DOCUMENTS

Brief: One of the critical elements of the Communication Loop is the pilot's read-back.

Clearances and Read-back:

Quote: *ATC clearances must be phrased in a standard manner and issued early enough to ensure that the aircraft can comply with them.*

Quote: *The flight crew shall read back safety-related parts of clearances.*

Q: What items should always be read back?

Answers:
Route clearances
Clearances for any runway to:
Enter
Land
Take-off
Hold short of
Cross
Taxi
Backtrack
Runway in use

Altimeter settings
SSRR codes
Level instructions
Heading and speed instructions
Transition levels (from controller or ATIS)

Q: What about other clearances and instructions, such as frequency changes?

A: Ideally always read frequencies back too.

Brief: Note that read-back of frequencies are not mandated. However, to complete the Communication Loop both read-back and hear-back should be attempted.

> **Quote:** *The controller shall listen to the read-back to ascertain that the clearance or instruction has been correctly acknowledged by the flight crew. If not, they must take immediate action to correct any discrepancies.*

Q: What rules apply to the issue of conditional clearances concerning an active runway?

A: The aircraft or vehicle(s) concerned must be seen by the appropriate controller _and_ pilot.

> **Quote:** _In all cases a conditional clearance shall be given in the following order and consist of:_
> _a)Identification;_
> _b) The condition;_
> _c)The clearance; and_
> _d)Brief reiteration of the condition, for example:_
>
> _"AERO 123, BEHIND DC9 ON SHORT FINAL, LINE UP BEHIND"_

Q: What other examples of conditional clearance have you experienced, and what potential problems can arise from their use?

Discuss:
LANGUAGE

Brief: The inappropriate use of different languages not only makes communication error more likely, it will also lead to loss of situational awareness for third parties.

Q: What language does ICAO insist should be used for air-ground communications?

A: The language normally used by the station on the ground!

A: Pilots flying internationally, and Controllers handling International traffic, should communicate in English.

Quote: *It is recommended that all international AGC be conducted in English, and that languages are not mixed on the same frequency.*

Note: By March 2008 pilots and controllers need to demonstrate a level of competency to ICAO level 4 in the language they use for air-ground communication.

Brief: ICAO also requires and recommends transmitting techniques to enhance the clarity of speech.

Q: What steps can we take to enhance the clarity of our speech?

Answers:
Always use ICAO standard phraseology
Use normal conversational tone
Enunciate each word clearly and distinctly
Neutralise strong accents
Maintain an even rate of speech – slower for messages that need to written down
Maintain a constant level of volume
Use (slight) pauses appropriately – eg before and after numerals
Use microphone appropriately – eg don't speak with head turned away; keep constant distance
Use standard phraseologies
Pronounce numbers and key words phonetically
Spell difficult words using the phonetic alphabet

Brief: Even when two people communicating with each other speak English as their native language, they can be misunderstood due to heavy accents.

Discuss: How can (do) you neutralise your own accent?

Discipline

Q: Assuming that others are not so diligent at maintaining high standards of speaking how can we improve our listening ability?

Answers:
Use headsets – SOPs for radios?
Good use of volume
Both pilots monitoring frequency during busy or critical phases of flight
Be extra vigilant if other pilot/colleague is "off radio"
Write down all messages/requests
Controllers - always insist on pilot read-backs and acknowledge or correct
Pilots - always read back messages in full
Controllers - playback recordings if possible

Q: If we are ever unsure of any message, or whether a message was meant for us, what should we do?

A: Query and ask for clarification

Querying a message

Brief: It is human nature that when invited to say "yes" we often do, especially when distracted or busy. This situation often occurs when pilots ask for confirmation from ATC or vice versa.

Demonstrate with examples:

Closed question style:

(Using a rising tone of voice) "Clear direct VOR climb FL330 RUSHAIR 123?"

"ATC confirm RUSHAIR 123 cleared NDB?"

"did you copy that last clearance RUSHAIR 123?"

Q: How can we guarantee that errors are not compounded whenever there is uncertainty that a pilot has received the correct clearance?

A: Re-issue the clearance, listen to read-back and acknowledge or correct it, or
A: Ask an OPEN question

Demonstrate with examples:

Open question style:
  "ATC XY say again for RUSHAIR 123"
  "ATC XY who was that last message for? RUSHAIR 123"
  "RUSHAIR 123 read back clearance"

NON-STANDARD PHRASEOLOGY

Brief: Some States will allow deviations from standard ICAO phraseology, and publish these in their relevant manuals. These manuals will not always be readily accessible to pilots; who often have to learn through experience. Fewer deviations would improve harmonisation and therefore safety.

Q: What phrases are commonly used which can sometimes add confusion or differ from ICAO standards?

Q: What non-standard use of language have you experienced that adds to clarity and is helpful.

Give some examples of non-standard phraseologies that may be encountered:

In UK airspace Flight Levels 100, 200 and 300 are transmitted as *wun hundred, two hundred and tree hundred* to avoid confusion with 110, 220 and 330.

The ICAO phrase "taxi to holding position" has recently been replaced by the phrase *"taxi to holding POINT"*. This is to avoid confusion with the non-standard phraseology used in the USA "taxi into position and hold" which is equivalent to "line up and wait".

Brief: Some phrases and words which we commonly use can actually add to communication confusion.

Q: What phrases and words should we aim to avoid?

Answers:
Always use a full message read-back with call sign instead of "roger" or "wilco"
Use of the phrase "go-ahead" can be misconstrued as authorisation for another aircraft to proceed.

Use of the words "to" and "for" could be interpreted as "two" and "four" avoid their use where there could be confusion eg "climbing <u>to 80</u>" (280?).

Also non-standard phrases and words can be interpreted differently by different cultures.

Brief: If it is necessary to use non-standard phrases within a message, it is advisable to ensure the receiving party is aware of this.

Q: How can we draw attention to the use of a non-standard phrase or word, if it is deemed necessary to use them?

A: Placing appropriate stress (tone, volume, repetition) on the phrase or word.

CALL-SIGNS

Brief: Call signs should be used in conjunction with all transmissions (especially clearance issues and read-backs) – although, during a continuous two way conversation they may be omitted until the call is terminated.

When establishing communications an aircraft should always use its full call sign.

ICAO identifies three types of call sign:

Type A – Registration marking with or without aircraft manufacturer or model as a prefix.

ABCDE or AIRBUS ABCDE

Type B – Telephony designator of operator followed by last four digits of registration.

RUSHAIR BCDE

Type C – Telephony designator of operator followed by flight identification number.

RUSHAIR 1234

Brief: Only two of these may be abbreviated.

Q: Which ICAO Call-sign type <u>can not</u> be abbreviated?

A: Type C - Call signs which contain the flight identification.

Call-sign abbreviations:

Type A – First character and at least the last 2 characters.

AIRBUS (optional) ADE or ACDE

Type B – Telephony designator and at least the last two digits of the flight number.

RUSHAIR DE or RUSHAIR CDE

Q: When can abbreviated call signs be used?

Answers:
Only after satisfactory communication has been established, and provided that no confusion is likely to arise.

Q: Who can initiate the use of abbreviated call signs?

A: Only the ground station.

Brief: An aircraft shall not change its call sign in flight unless temporarily instructed by ATC on the grounds of safety.

The Air-Ground Communication Safety Study grouped the most common communication errors into 4 categories responsible for the highest risk:

1. call sign confusion
2. prolonged loss of communication
3. simultaneous transmission, and
4. radio discipline

The last is also relevant to the first three categories and much of this has already been covered. We are going to cover each of the first three categories in turn and discuss ways of eliminating or decreasing the associated risks.

6. CALL-SIGN CONFUSION

Brief: Call sign confusion is the major cause for aircraft taking a clearance not intended for them, and therefore carries the risk of potentially severe consequences.

Q: What would be the most effective way of ensuring the risk from call sign confusion was eliminated?

A: Plan so that no two aircraft with similar sounding call signs were using the same airspace at the same time.

Eurocontrol CFMU is currently investigating possible methods for de-conflicting call signs through the flight plan process, and the AGC Safety Improvement Initiative recommends national authorities and aircraft operators take measures to reduce the chances of call sign confusion.

However, until such time as a widespread coordinated system is accepted and implemented, controllers and pilots need to be aware of the issue and understand ways of preventing confusion from occurring.

The AGC Safety Study analysis highlighted certain call sign formats as being more susceptible to confusion than others. Such as:

- Number sequences beginning with a low number (five and below)
- Long number sequences (four or more)
- Repeated digits

Letter sequences corresponding to the last two letters of the destination ICAO location identifier

Q: From your own experience what call sign elements and formats are more easily confused with each other?

Discuss: company call-signs/common call-signs, and how they may add to the chances of confusion.

Possibilities:

Call-signs issued in sequences of numbers, therefore company departures often conflict with each other.

Similar call-signs to other carriers

Telephony identifier common ie Air, or Aero

Use of similar sounding elements ie "tree" and "charlie", "two" and "zulu"

Brief: It is a common human factor to transpose numbers and letters when reading and/or speaking back something heard.

Q: Has anyone experienced, or witnessed an incidence of call-sign confusion?

Q: What happened?

Q: Apart from written call-signs being alpha-numerically similar, what other factors could increase the chances of call-signs being <u>audibly</u> confused?

Answers:

Clarity of speech, including accent and rate of speech

Distraction – inattention

Expectation and assumption

Fatigue

Frequency congestion

Clipping and/or clipped transmissions

Q: What actions, in the air, can be taken to help prevent call sign confusion?

Answers:

Be prepared – look for potential conflict

Warn ATC/pilots/adjacent sectors of potential call sign conflicts

Use full call-signs

Accept/issue temporary call sign change if necessary

Clarify clearances if uncertainty exists:

Use "open" questions not read-back

Always give/insist on full read-back

When a frequency is congested/at critical stages of flight (below 10,000ft) – both pilots monitor radio

Transmit all messages clearly using full call sign and standard pronunciation – don't add to the confusion

Avoid clipping transmissions

Be alert for blocked transmissions

Note: responding to a message directed at another aircraft may block their transmission of read-back: this may not be noticed by ATC.

Q: If a call sign confusion incident occurs, or a potential problem was observed, what can we do to help us understand more about this problem in the long run?

A: File an Air Safety Report after the flight

7. PROLONGED LOSS OF COMMUNICATIONS

40% of reported incidents of lost communications were for a "prolonged" period, this type of incident is called PLOC.

Whether the loss of communications is brief or prolonged in some instances the consequences can be severe. In all cases there is additional work load placed on both pilots and controllers: a controller can become pre-occupied with one aircraft for a substantial period of time.

In 2004 there were 120 military intercepts of commercial aircraft in Northern Europe alone: subsequent reports of these intercepts indicate that many civil pilots do not routinely monitor the "emergency" frequency 121.5 MHz.

Q: Has anyone experienced a prolonged loss of communication and/or a military interception?

Q: What happened?

Q: What are the most likely causes of loss of communications?

Answers:
Equipment failure
Out of communication range
Radio interference
Issuing or Selecting the wrong frequency

Q: When is it most likely to occur, ie when are you most likely not to notice?

Answers:
During expected quiet periods ie in the cruise
During periods of high cockpit activity – climb and descent
During periods of high sector capacity/workload
Handover to new ATC sector where range is known to be an issue:
Just prior to handover to new ATC sector, and
Just after accepting a new aircraft into sector

Q: Are there any areas you encounter on your sector/operations where this is common?

Brief: *Frequency changing is one area where mistakes can be reduced especially through strict adherence to the communication loop. There can be a tendency to "sign off" by reading back the frequency and then immediately switching frequencies without waiting for the hear-back confirmation/correction.*

Q: How could pilots, during "sign off" simply obtain a double-check that the new frequency is correct?

Answers:

Read-back complete frequency

Don't switch frequencies immediately – pause and listen to any acknowledgement or correction from ATC

Q: How could controllers reduce the chances of loss of communications associated with the problems of frequency change?

Answers:

Issue vital clearances (headings and levels) in advance of any frequency change

Issue the new frequency in good time, with a condition to change by XYZ if range is an issue

Issue frequency change separate to any clearances

Don't be distracted – pause and listen to any read-back from the pilot

If no read-back is forthcoming – insist on one

Q: Assuming the right frequency was transmitted and received what other opportunities exist for pilots selecting the wrong frequency and why?

Answers:

Simple mistake, Memory lapse, Expectation, No cross-checking, Poor equipment

Right frequency set, but "RADIO" not selected

Squelch set inappropriately

Q: If no contact can be established on a new frequency/newly accepted aircraft what should be attempted?

Answers Pilots:

Check equipment and settings

Return to previous frequency and check

Transmit blind?

Ask for relay?

Answers Controllers

Transmit blind?

Ask for relay?

Provide precautionary clearances to other conflicting aircraft as soon as possible – don't assume contact will be made

Try 121.5Mhz

Monitor aircraft's progress against clearance

Check with previous sector

Contact the airline (relay via company radios)

Ultimately contact the authorities in accordance with national security procedures

Brief: Often when returning to the previous frequency the sector is no longer in range – this is a common situation which often leads to a PLOC incident.

Q: How can we avoid such situations?

Answers:

"Signing off" before going out of range

Prior communications planning

Writing down clearances

Reading back all frequency changes

High Workload - *Frequency congestion often coincides with periods of high workload for both controllers and pilots.*

Q: What measures can be taken to ensure that messages are heard and recorded correctly during periods of high workload?

Answers:

Use headsets

Both pilots monitoring active frequency

Write down clearances (including frequencies)

Reading back all frequency changes

Planning to reduce the number of radar vectors

Providing clearances in good time

Issuing only one instruction per message

Discuss Sleeping Receivers if relevant:
(optional)

Reported incidents of the phenomena known as sleeping receiver have been on the increase. The symptoms are that no reception of any transmissions is heard. If this scenario is encountered in-flight the solution is generally to key transmit; thereafter the reception is normally restored.

Sleeping receivers are often the cause of PLOC leading to a military intercept.

8. BLOCKED TRANSMISSIONS

Blocked transmissions are caused mostly by:
  simultaneous transmissions or
  radio interference

Both situations are increasing due to the congestion of the radio frequency spectrum and growing numbers of airspace users. This latter problem leads to pilots "needing" to jump in quick with their requests often blocking another's transmission.

Brief: Generally simultaneous transmissions are noticed by pilots on frequency through an audible squeal and no reception of either transmitted message.

However, where a controller is using multiple RTF frequencies, pilots on different frequencies will be unaware of the other's transmission.

Pilots are also unlikely to suspect a blocked transmission if the controller does not routinely acknowledge all read-backs.

Controllers who employ Best Signal Selection (BSS) often do not register a simultaneous

transmission; they are therefore reliant on pilots for this information.

Q: What steps can be taken to reduce the likelihood that we transmit at the same time as someone else?

Answers:

Listen out to ensure a two-way conversation is not on-going

Release 'press to transmit' immediately after we have finished transmitting

Avoid long pauses during a message which might encourage someone else to "jump-in"

Controllers should carefully listen to all read-backs and acknowledge them

Discuss actions to take if a blocked transmission is witnessed between other aircraft and ATC:

> Some pilots who witness such an incident transmit immediately afterwards "BLOCKED" – although this is not official procedure.

Q: If we experience safety problems through blocked transmissions, or encounter radio interference, what can we do to help others learn more about these situations?

A: File a safety report

Q: What information can we provide that will make a report more useful?

A: Time, location, frequency, start time/location, end time/location, aircraft involved, nature, and impact

Any incident of radio interference should be reported, with as many supporting details as are available: frequency, time and location of start, time and location of stop, FL, effect on communications, further impacts etc.

9. LOCAL COMMUNICATION PROCEDURES

(Optional, but recommended)

Brief from the following list:

Airline/Unit communications procedures

Sterile cockpit concept

Operations/Comms Manuals

Procedures for use of 121.5MHz

Actions on being intercepted by the military

National variations

Company and national reporting requirements

10. FURTHER LEARNING MATERIAL

Distribute as required:

European Air Ground Communications Safety Improvement Initiative (eg Safety Briefing Notes)

Company training material

National training material

Top 5 Tips

Resources:

All AGC safety training material is available from:

Trainers Memory stick, and

www.allclear.aero

Learn-on-line www.allclear.aero

The AGC Action plan has recommended that Air Navigation Service Providers (ANSPs) provide resources for self-improvement in the use of the English language.

Brief: Where English Language Training can be accessed if appropriate, and if available:

Nationally

From the local ANSP

Within the company

11. CONCLUSIONS AND SUMMARY

Brief your conclusions/key points:

Q: How can we contribute to good communications?

Q: What best practices can be employed to help prevent communication error?

Q: What are the key points learnt from this lesson?

For example:
Use ICAO Standards and Recommendations
Using full call sign – always
Read back clearances in full
Read back frequencies in full
Speak clearly – accent, pace, concisely, standard phraseology
Listen carefully – write down clearances
Cross-monitoring each other
Asking "open" questions if unsure
Transmitting at right time and in good time
Using headsets during busy and critical stages of flight (ideally for all clearances and below 10,000ft)

Pause before changing frequency
Pause before speaking

12. FEEDBACK

Ask for feedback on:

the content of the course,
the scope of the subjects covered, and
the recommendations made.

Send any feedback to:
allclear@eurocontrol.int