



RADIO COMMUNICATION

COURSE SOURCE

- ◉ ANNEX 10 vol.II chapter 5
- ◉ Radiotelephony Manual Doc 9432
- ◉ PANS-ATM chapter 12
- ◉ MATS chapter 3
- ◉ **CAP413**
- ◉ www.Skybrary.aero
- ◉ SAY AGAIN
- ◉ ALL Clear?

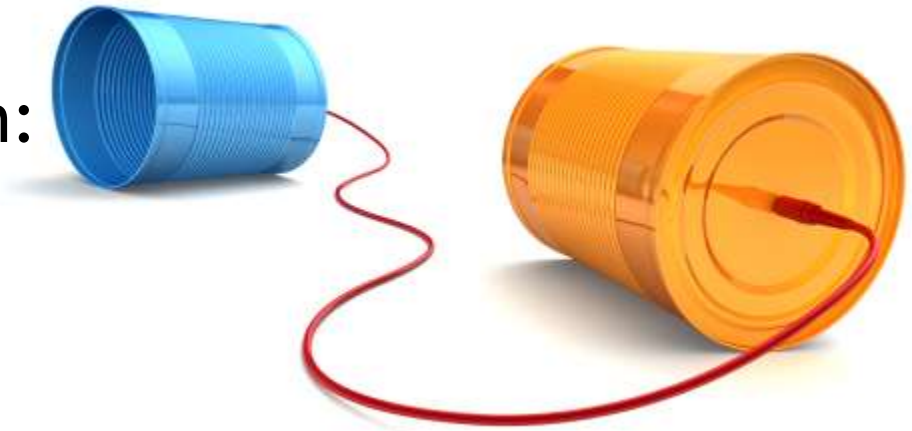


COMMUNICATION

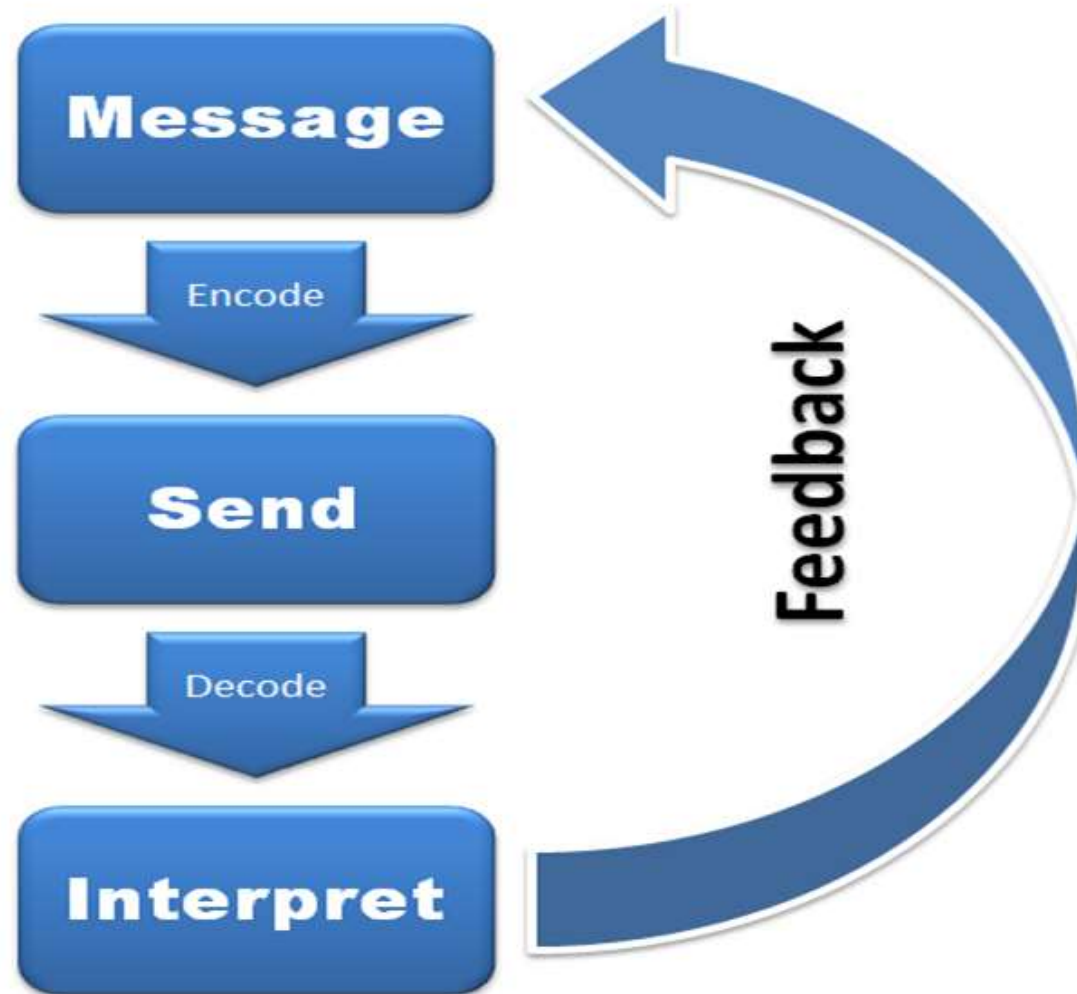
- ◉ The process of sending and receiving messages
- ◉ Via different channels(**voice**, **body/facial gestures**, **intonation**, ...)

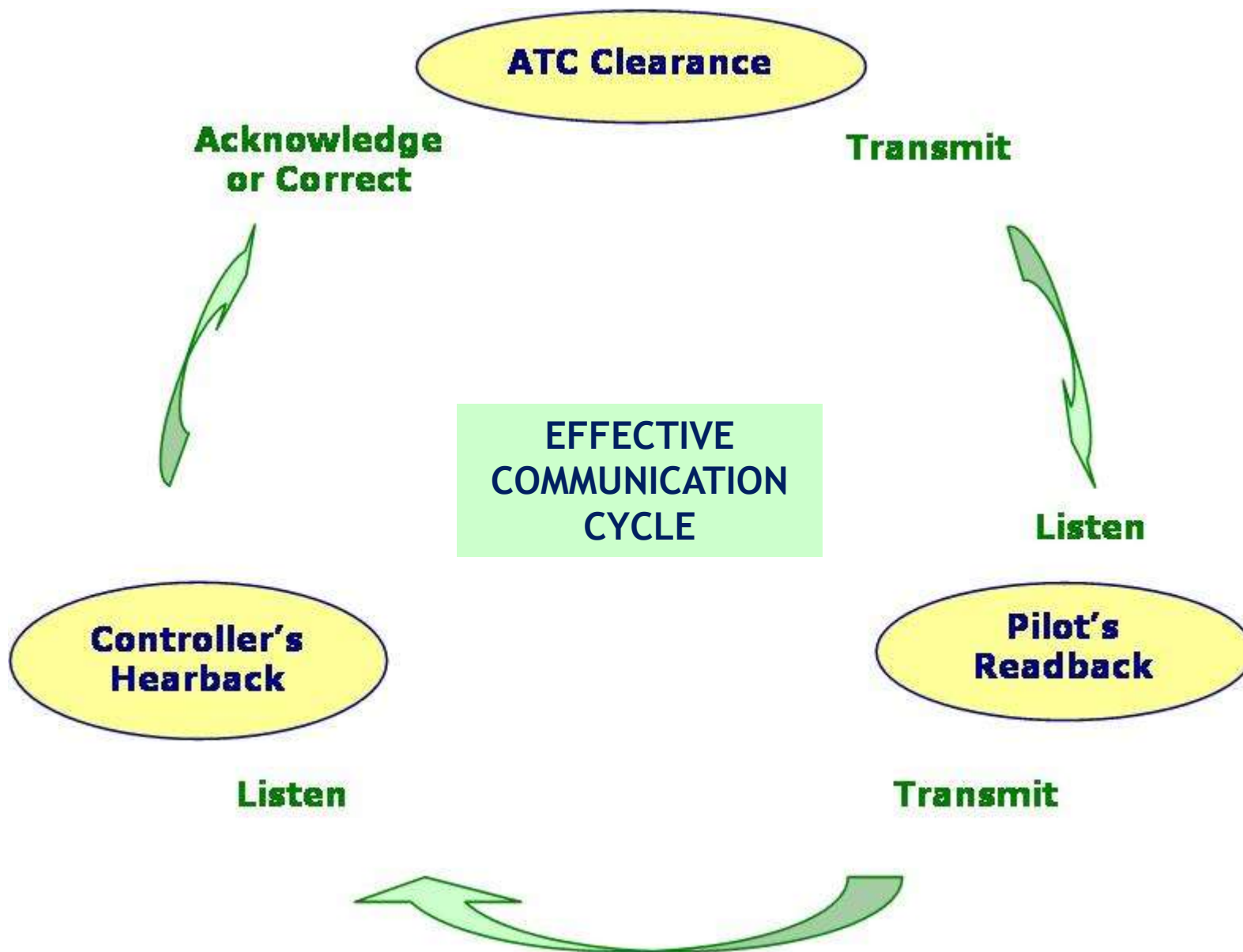
In the context of aviation:

➤ *Via radiotelephony*



Effective Communication Cycle





RADIOTELEPHONY

- ◉ A means by which ***pilots & ATC***(and ground personnel) communicate with each other.
- ◉ for the sake of ***safety***:
transmissions by radiotelephony should comply with ***internationally agreed procedures and phraseology***

IMPORTANCE OF STANDARD PHRASEOLOGY

- ◉ To avoid misunderstanding

non-standard phraseology:

causes misunderstanding;

a *causal/contributing factor* to several Incidents/accidents

- ◉ To reduce the need for repeat transmissions.

STATISTICS TELLS THE TRUTH



NASA -AIRPORT SURFACE MOVEMENT EVENT TRANSGRESSION (ASMET) SURVEY(2007-8)

1184 incidents in the Aviation Safety Reporting System (ASRS):

- 254 (21 percent) involved pilots misunderstanding clearances;
 - 235 (20 percent) involved pilot misconceptions about ATC instructions,
 - 110 (9 percent) involved readback/hearback errors.
- **Misconception + miscommunication = 50% of all incidents**

SURVEY OF THE **NASA** AVIATION SAFETY REPORTING SYSTEM (ASRS)

- Incorrect or incomplete pilot / controller communications is a **causal or circumstantial factor** in **80 %** of incidents or accidents

Factor	% of Reports
Incorrect Communication	80 %
Absence of Communication	33 %
Correct but late Com.	12 %

Tenerife - Canary Islands
1977. Pan Am jumbo and a
KLM plane,
claimed the lives of 583
people — **deadliest
accident in aviation
history.**

Dutch-speaking pilot's lack
of English proficiency &
wrong perception
contributed to the accident

**Dan Air Flight 1008
(1980): Pilot appears to
have mistaken "*inbound*"
for "*outbound*"
and flew in the
wrong direction.**

January 13, 1982
Air Florida Flight 90 was
due to travel from
Washington National
Airport in Virginia to
Hollywood International
Airport in Fort
Lauderdale, Florida,

**American Airlines
Flight 965 (1995): An
air traffic controller's
lack of English
proficiency**

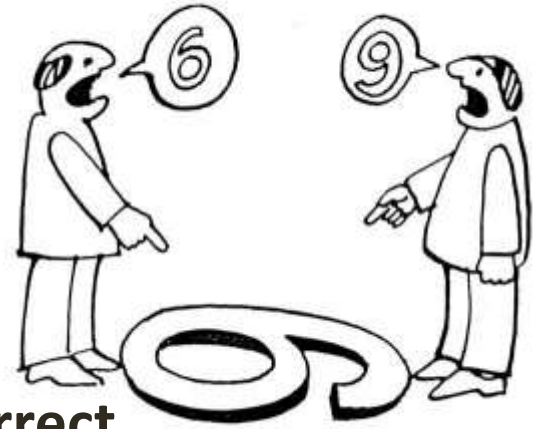
**Avianca Flight 52
(1990): Did not declare
an emergency when
reporting it was running
out of fuel.**

Mid-air collision Charkhi
Dadri : Nov.12, 1996. the
worst mid-air crash in the
history of aviation.

Kazakhstan Airlines Flight
1907 collided with Saudi
Arabian Airlines Flight 763 at
14,000 feet, killing all 349
people on board both planes.

**Linate Airport
Disaster (2001):
Poor radio
communication**





MISCONCEPTION IN BRIEF

Oxford dictionary: A view or opinion that is **incorrect** because based on *faulty thinking or understanding*

- Research in crew resource management (CRM) highlights the **relevance of the context and expectations**.
- expectations** may introduce **either a positive or negative bias** in the effectiveness of the communications.

ONSET OF MISCONCEPTION

During initial *TRAINING*:

- ⦿ Pilot learns to prioritize “*aviate, navigate, communicate*” - in that order
- ⦿ controller’s substantial **priority** on **communication** - the primary means of exercising his responsibilities.

Noise

Channel
malfunction

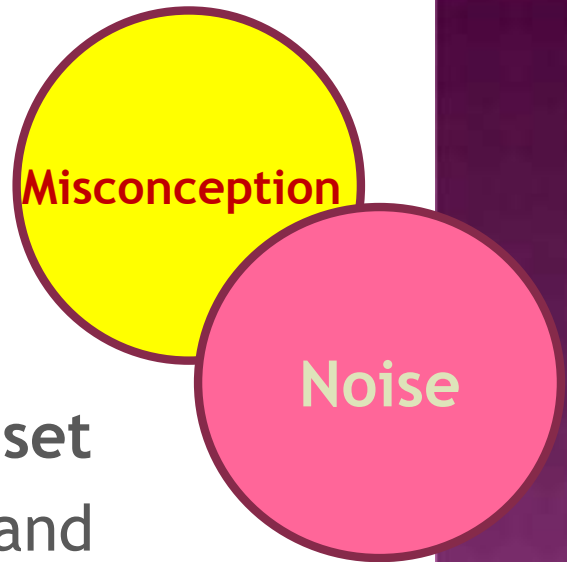
COM. error

Misconception

Non-standard
phrases

Miscommunication

- Wrong perceptions
- TRAINING
- Lack of mutual Understanding
- Conflicting standards
- Different priorities



Misconception

Noise

HOW TO AVOID

- Unbiased approach/ impartial mindset
- All messages must be clear, concise and unambiguous.

- Examples:

Pilot: Tower, will you **call** me a fuel truck?

TWR: Roger N435P, you're a fuel truck.

...

pilot: What is SID?

ATC: It is Standard Instrument Departure

RADIOTELEPHONY ELEMENT

One or more of the following:

- ◉ ***Clearances***: transmitted by ATC are to be strictly complied with and to be read back verbatim.
- ◉ ***Instructions***: in most cases, should be read back.

However, if the instruction is **short, clear and unambiguous**, acknowledgment of the instruction using standard phraseology such as '***Roger***' or '***Wilco***'

- ◉ ***Information***: Information is provided to assist the safe conduct of the flight and should not be read back

ANNEX 10 CHAPTER 5 /DOC 9432



GENERAL

- ◉ In all communications the **highest standard of discipline** shall be observed at all times.
- ◉ *ICAO standardized phraseology* shall be used in **all situations**.
- ◉ *plain language*: Only when standardized phraseology **cannot serve**.
- ◉ Communications shall be *concise* and *unambiguous*, using standard phraseology.

Plain language

- ◉ is permitted in specific conditions.
- ◉ ICAO LPR(level 4)
- ◉ **Caution** in using expressions
- ◉ Avoid using **idioms** or **Ph. Verbs**.
 - *“Run out of fuel”*

Non-standard phrase

- ◉ **Not** permitted by the ICAO Regulation
- ◉ **Improper use** of phrases
 - Syntax / semantics
- ◉ Phrases in **other regions??**
- ◉ Too long/ too short

WHO ESTABLISHES COM?

- ◉ Except as otherwise provided, the *responsibility* of establishing communication shall rest with the *station having traffic* to transmit.
- ❑ In dense traffic

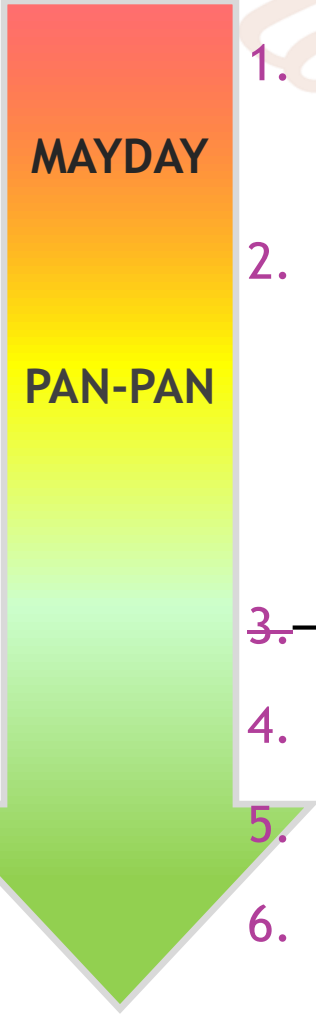
RECOMMENDATION

- ⦿ *After a call has been made to the aeronautical station, a period of at **least 10 seconds** should elapse before a second call is made.*
 - ⦿ *This should eliminate unnecessary transmissions while the aeronautical **station is getting ready to reply** to the initial call.*
- ❑ Bulk transmissions

PRIORITY FOR RESPONSE

- ◉ When an aeronautical station is called simultaneously *by several aircraft stations*, the aeronautical station shall *decide the order* in which aircraft shall communicate.
- ❑ First come, First Service

CATEGORY & PRIORITY OF MESSAGES



MAYDAY

1. Distress calls/messages/ Traffic

PAN-PAN

2. Urgency messages, including messages preceded by PAN-PAN, or medical transports signal

~~3. Communications relating to DF~~

4. Flight safety messages

5. Meteorological messages

6. Flight regularity messages

FLIGHT REGULARITY MESSAGES BY ATS

- ATS units using direct pilot-controller communication channels shall only be required to handle flight regularity messages provided:
 - this can be achieved ***without interference*** with their primary role, and
 - ***no other channels are available*** for the handling of such messages.

□ ACARS

INCOMPLETE TRANSMISSIONS

- If a message has not been completely transmitted when instructions to cancel are received, the station transmitting the message shall instruct the **receiving station to DISREGARD** the incomplete transmission.
- This shall be effected in radiotelephony by use of an appropriate phrase.

CORRECTING TRANSMISSION

- ◉ If an error is made:
 - “**CORRECTION**” shall be spoken.
- ◉ If repetition of the entire message needed:
 - “**CORRECTION I SAY AGAIN**” shall be used.

RTF LANGUAGE

- ⦿ the **English** language, or
- ⦿ the **language normally used** by the station on the ground

Note 1.— The language normally used by the station on the ground may not necessarily be the language of the State in which it is located. A common language may be agreed upon regionally as a requirement for stations on the ground in that region.

❑ **Mind the possible impairment of Crew Sit. Awareness**

WORD SPELLING IN RADIOTELEPHONY

- When *proper names*, *service abbreviations* and words of which the spelling is doubtful are spelled out in radiotelephony the *alphabet in Figure 5-1* shall be used.

Letter	Word	Approximate pronunciation	
		International Phonetic Convention	Latin alphabet representation
A	Alfa	'ælfə	<u>AL</u> FAH
B	Bravo	'brɑ:'vɔ	<u>BRAH</u> VOH
C	Charlie	'tʃɑ:'li or 'ʃɑ:'li	<u>CHAR</u> LEE or <u>SHAR</u> LEE
D	Delta	'delta	<u>DELL</u> TAH
E	Echo	'eko	<u>ECK</u> OH
F	Foxtrot	'fɒkstrot	<u>FOKS</u> TROT
G	Golf	gɒlf	<u>GOLF</u>
H	Hotel	ho:'tel	<u>HO</u> TELL
I	India	'indi:ə	<u>IN</u> DEE AH
J	Juliett	'dʒu:li:'et	<u>JEW</u> LEE <u>ETT</u>
K	Kilo	'ki:lo	<u>KEY</u> LOH
L	Lima	'li:mə	<u>LEE</u> MAH
M	Mike	maɪk	<u>MIKE</u>
N	November	no'vembo	<u>NO</u> <u>VEM</u> BER
O	Oscar	'oskə	<u>OSS</u> CAH
P	Papa	pə'pɑ	<u>PAH</u> <u>PAH</u>
Q	Quebec	ke'bek	<u>KEH</u> <u>BECK</u>
R	Romeo	'ro:mi:ə	<u>ROW</u> ME OH
S	Sierra	si'era	<u>SEE</u> AIR RAH
T	Tango	'tæŋɡo	<u>TANG</u> GO
U	Uniform	'ju:nifo:m or 'u:nifo:m	<u>YOU</u> NEE FORM or <u>OO</u> NEE FORM
V	Victor	'vɪktə	<u>VIK</u> TAH
W	Whiskey	'wɪski	<u>WISS</u> KEY
X	X-ray	'eks'rei	<u>ECKS</u> RAY
Y	Yankee	'jɒŋki	<u>YANG</u> KEY
Z	Zulu	'zu:lʊ	<u>ZOO</u> LOO

HOW TO PRONOUNCE POINTS/NAVAIDS

Annex 11 Appendix 2:

- ⦿ Normally the *name selected* for NAVAID/5-letter point shall be used to refer to the significant point in voice communications.
 - ⦿ If the plain language name for NAVAID not used, or it rises ambiguity
 - it shall be *replaced by the coded designator*.
- ❑ *How to pronounce GIRUN, ITIBI,...*

HOW TO PRONOUNCE *NUMBERS*?

- ◉ All numbers, each digit separately
- ◉ Except All numbers used in the transmission of:
 - altitude,
 - cloud height,
 - visibility and runway visual range (RVR) information,which contain *whole hundreds* and *whole thousands*,
- ◉ CAP413

TRANSMITTING NUMBERS

All digits in:

- aircraft call-signs, (IRA 350/DLH 600)
- altimeter settings, (QNH 1020)
- flight level, (FL300/ FL080?)
- headings, (HDG 030 Degrees??)
- wind speeds/directions, (020/08kt)
- airspeed, (280kts)
- transponder codes (1547)
- frequencies, (128.75)

shall be transmitted separately

TRANSMITTING NUMBERS

All numbers used in the transmission:

- ◉ Altitude/ height, (6000 ft)
- ◉ cloud height, (200 or 003 ft)
- ◉ visibility and RVR (4500m)

pronouncing each digit in the number followed by the word HUNDRED or TOUSAND as appropriate.

➤ Ex: *FEW 005, SCT 200* :

“cloud Few **5 HUNDRED** Ft, Scattered **Two zero**
(**not Twenty**) **TOUSAND Ft**”

TRANSMITTING TECHNIQUE. ANNEX 10

- Transmissions shall be conducted concisely in a **normal conversational tone** (*not to mix up with Rate of speech or Tempo*)
- Speech transmitting technique should be such that the **highest possible intelligibility** is incorporated in each transmission.

TRANSMITTING TECHNIQUE. ANNEX 10

- ◉ **enunciate** each word clearly and distinctly;
- ◉ **Rate Of Speech** not exceeding **100** words per minute.
- ◉ When a message contents need to be recorded the speaking rate should be **at a slower** rate to allow for the writing process.
- ◉ A slight **pause** preceding and following **numerals** makes them easier to understand;
- ◉ maintain the speaking volume at a constant level (**but avoid Robotic/monotonous speech**);

TRANSMITTING TECHNIQUE. CAP413

- ◉ *be familiar with the microphone operating techniques*
- ◉ *maintain a constant distance from the microphone*
- ◉ ***suspend** speech temporarily if it becomes necessary to turn the head away from the microphone.*

TRANSMITTING TECHNIQUE. ANNEX 10

- ◉ To expedite communication, the use of **phonetic spelling** *should be dispensed with*, if there is no risk of this affecting correct reception and intelligibility of the message.
- ◉ Messages should **not** contain **more than three specific phrases**,
- ◉ *long messages TX: should be interrupted momentarily*
 - *to permit the transmitting operator to confirm that the frequency in use is clear*
 - *and, if necessary, to permit the receiving operator to request repetition of parts not received.*

PRECAUTIONS

- ◉ only those elements that are required to be read back are transmitted.
- ◉ **Verbose** transmissions are to be avoided,
- ◉ one of the most common faults in radiotelephony is the unnecessary **re**transmission of simple instructions and information

MIND YOUR MIKE



1. Before TX, check that the **receiver volume** is set at the **optimum level**
2. **listen out on the frequency** to be used to ensure that there **will be no interference** with a transmission from another station.
3. do not turn your **head away from it whilst talking** or vary the distance between it and your mouth.
4. Severe **distortion** of speech may arise from:
 - a) **talking too close** to the microphone;
 - b) **touching the microphone with the lips**; or
 - c) **holding the microphone or boom**
5. **Depress** the TX switch **fully before** speaking and do not release it until the message is complete.
6. **do not depress transmit switch until ready to speak (think about what to be said).**



DON'T HESITATE TO REPORT

Any interruption, distortion, noise ,or degradation
in Radio Freq. & sound quality

COMMON MISTAKES & AMBIGUITY

- ◎ **AFFIRM** is pronounced: /ə'fɜ:m/ or /ei'fɜ:m/??

- *AFFIRMATIVE in FAA*

- ◎ **BREAK** :Indicates the separation between messages

Vs.

- ◎ **BREAK BREAK** : Indicates the separation between messages transmitted to different aircraft in a busy environment.

- ◎ **RECLEARED** : (UK CAP413, EASA) To be used only in relation to routings and NOT for LVL instructions and **Time** constraints

COMMON MISTAKES & AMBIGUITY

- ◉ **CONFIRM** “I request verification of: (*clearance, instruction, action, information*).”

- Ex: IRA460 CONFIRM FL290 ?

- ◉ **NEGATIVE** “No” or “Permission not granted” or “That is not correct” or “Not capable”.

Vs.

- ◉ **UNABLE** “I cannot comply with your request, instruction, or clearance.”

- *Note.— UNABLE is normally followed by a reason.*

COMMON MISTAKES & AMBIGUITY

◎ **REPORT** “Pass me the following information...”

Vs.

◎ **REQUEST** “I should like to know...” or “I wish to obtain...”

◎ **STANDBY** “Wait and I will call you.”

- *Note.— The caller would normally re-establish contact if the **delay is lengthy**. STANDBY is not an approval or denial.*

COMMON MISTAKES & AMBIGUITY

- ◉ **APPROVED** : Permission for proposed action granted.

Vs.

- ◉ **CLEARED**: Authorized to proceed under the conditions specified.

□ **Clearance Vs. Instruction**

COMMON MISTAKES & AMBIGUITY

Omission of “GO-AHEAD”

- ◉ The use of the calling aeronautical station's callsign followed by the answering aeronautical station's callsign (e.g. IRA721, TEHRAN RADAR) shall be considered **the invitation to proceed with transmission** by the station calling.
- ◉ **CAP413-** The use of the phrase ‘*Pass your message*’ may be used when considered appropriate
 - *!!! this phrase is inserted in IRAN MATS-chapter 3 S.2*

COMMON MISTAKES & AMBIGUITY

◉ ROGER:

“I have received all of your last transmission”

Note.— Under no circumstances to be used in reply to a question requiring “READ BACK” or a direct answer in the affirmative (AFFIRM) or negative (NEGATIVE).

Vs.

◉ COPPIED: non-standard phrase

COMMON MISTAKES & AMBIGUITY

An aircraft may be instructed to:

- ⦿ **‘STANDBY’** on a frequency when it is intended that the ATCO will initiate communications,
 - *Example: IRC861 STANDBY for Shiraz APP 119.0*
- ⦿ **‘MONITOR’** a frequency on which information is being broadcast.
 - *Example: IRC861 MONITOR ATIS 118.25*

BROADCAST & GENERAL CALL

- ◉ **Broadcast.** A transmission of information relating to air navigation that is **not addressed to a specific station or stations.**
- ◉ **General Call.** The preamble of each radiotelephone broadcast shall consist of the **general call(ALL STATIONS)**, station name, and optionally the time of broadcast (UTC).

BLIND TRANSMISSION

- ◉ ACFT/Station, Unable to establish two-way COM.
 - transmission of message: TWICE preceded by:
“TRANSMITTING BLIND”
- ◉ In Case of Receiver Failure:
 - At scheduled time/position: TWICE preceded by:
“TRANSMITTING BLIND DUE TO RECEIVER FAILURE”

CALL SIGN TYPES

a) characters corresponding to the ***registration marking*** of the aircraft;

- Ex; EP-IFA / F-DAXD

b) ***telephony designator of the aircraft operating agency***, followed by the ***last four characters*** of the registration marking of the aircraft;

- Ex; IRM PMNN

c) telephony designator of the aircraft operating agency, followed by the ***flight identification***.

- Ex; CPN043 / SHI4321 / UAE4CN

- *Note 1.— The name of the aircraft manufacturer or of the aircraft model may be used as a radiotelephony prefix to the Type a) call sign*

HEAVY & SUPER

- ◉ aircraft in the heavy wake turbulence category:
 - the word “Heavy” shall be included immediately after the aircraft call sign in the initial call.
- ◉ For A380 :
 - the word “Super” shall be included
- ❑ **ATS unit Acknowledgement ??**

CALL-SIGN ABBREVIATION

- **Full radiotelephony** call signs shall always be used when ***establishing communication***.
- After establishing such Communication, ATC may abbreviate call-sign Type a) or b), but **never Type c)**

Full callsign	Abbreviation
GBFRM	G-RM
Speedbird GBGDC	Speedbird DC
N31029	N029
N753DA	N3DA
* Midland 640	No abbreviation
**Piper GBSZT	Piper ZT
**Helicopter GABCD	Helicopter CD

CALL-SIGN CONFUSION

- ◉ In case, there is a likelihood of confusion, because of similar callsigns, an aircraft may be instructed by an ATS unit to change the **type of its callsign** temporarily.
- ◉ *EuroControl CSS*

CHANGE OF CALL SIGN

- ◉ An aircraft shall not change the type of its RTF call sign during flight, except:

temporarily on the *instruction* of an ATC unit in *the interests of safety*.

- ◉ ATC may *temporarily* change the type of RTF call-sign,
 - Example: IRM1023 Change your Call-sign to IRM PMNB

MESSAGES TO BE READ BACK FULLY BY THE PILOT

- ◉ **Level Instructions**
- ◉ **Heading Instructions**
- ◉ **Speed Instructions**
- ◉ **Airways or Route Clearances**
- ◉ **SSR Operating Instructions**
- ◉ **Altimeter Settings,**
- ◉ **Frequency Changes(CAP413)**
- ◉ **Approach Clearances**
- ◉ **Runway-in-Use**
- ◉ **Clearance to Enter, Land On, Take-Off On, Backtrack, Cross, or Hold Short of any Active Runway**
- ◉ **Type of ATS Service**
- ◉ **Transition Levels**
- ◉ **Taxi/Towing Instructions**

COMPLIANCE WITH INSTRUCTIONS

- If the instruction or clearance must be complied with **at once**, the controller's message will include the word 'now' or 'immediately'.
 - 'now' indicates that the instruction should be complied with in accordance with *normal aircraft operating procedures*, but without delay.
 - 'immediately' indicates a *further degree of urgency exists*

TEST PROCEDURE

- ◉ Preformed; If needed by aeronautical station
- ◉ Format“:
 - ACFT call-sign
 - Aero. Station call-sign
 - “RADIO CHECK”
 - The Freq.
- Ex: IRC783, Tehran RADAR, RADIO CHECK 125.7
- Tehran RDR, IRC783 READING YOU / YOU ARE UNREADABLE
- CAP413: “READABILITY ...”
- ◉ Such TX must be kept to minimum.

TEST TRANSMISSION

◉ Readability Scale:

- 1 Unreadable
- 2 Readable now and then (*not in-&-out*)
- 3 Readable but with difficulty
- 4 Readable
- 5 Perfectly readable (*loud & clear*)

“OPERATIONS NORMAL” REPORTS

- **PANS.—** When ***“operations normal”*** reports are ***transmitted by aircraft, they should consist of the prescribed call followed by the words “OPERATIONS NORMAL”.***

BLOCKED FREQ./ OPEN MIKE

- ◉ **Stuck mike**: One of the most irritating and potentially dangerous situations
 - always ensure that the button is released after a TX and the microphone placed in an appropriate place.
- ◉ **simultaneous transmissions**: effectively, block all or part of intended messages.
- ◉ the individuals who inadvertently make such transmissions may be unaware.
 - On hearing a simultaneous transmission it can be helpful for the controller to draw attention to the situation using the word '**BLOCKED**'.

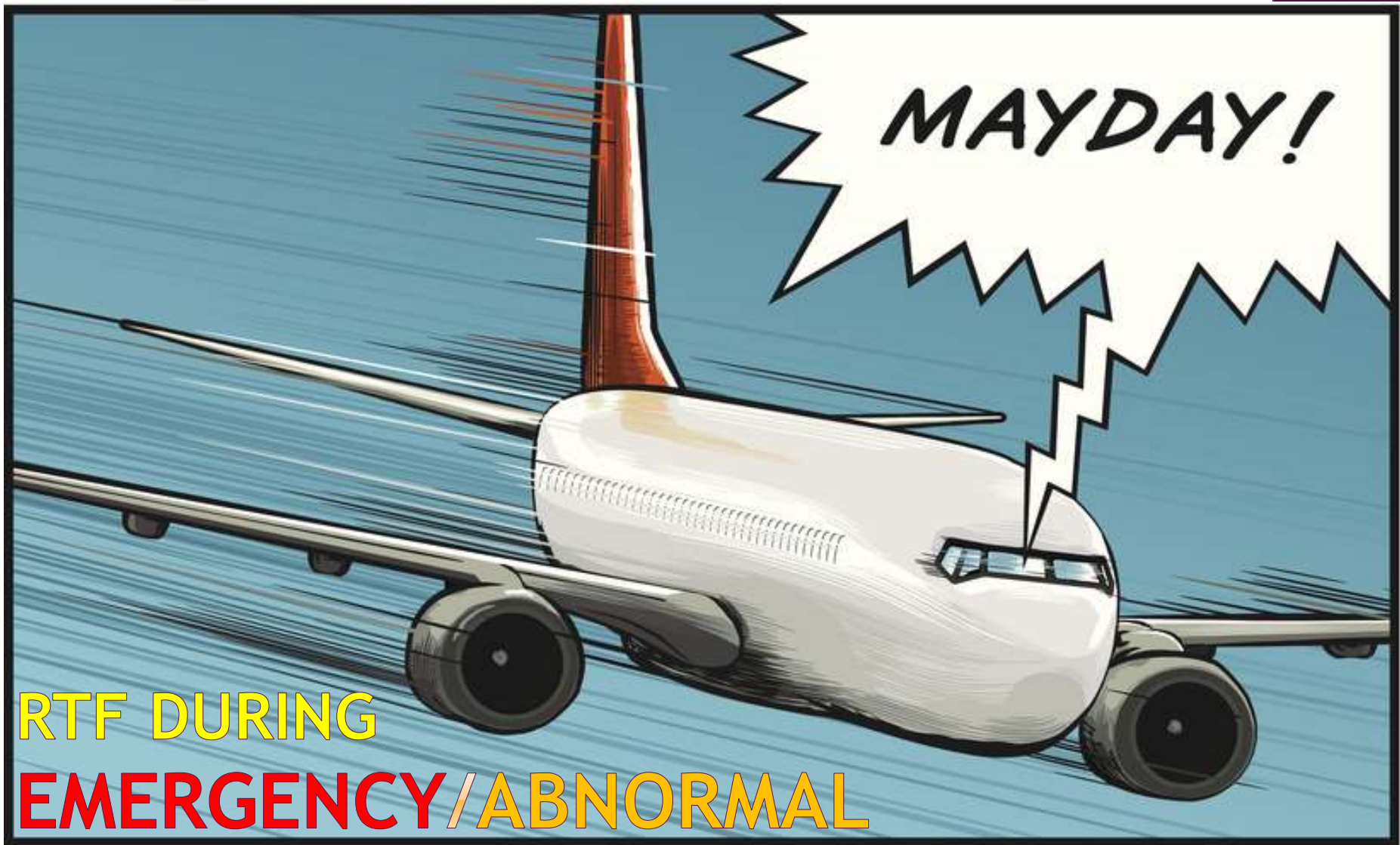
UNAUTHORIZED USE OF ATC FREQ.

- ◉ In case of false and deceptive transmissions on ATC frequencies, the ATC unit concerned should:
 - a. *correct any false or deceptive* instructions or clearances which have been transmitted;
 - b. *advise all aircraft on the affected frequency(ies)* that false and deceptive instructions or clearances are being transmitted;
 - c. *instruct all aircraft to verify instructions* and clearances before taking action to comply;
 - d. if practical, instruct aircraft to *change to another frequency; and*
 - e. if possible, advise all aircraft affected when the false and deceptive instructions or clearances are no longer being transmitted.

UNAUTHORIZED USE OF ATC FREQ.

Collect and report pertinent information regarding the false, deceptive transmission to the operational supervisor





RTF DURING
EMERGENCY/ABNORMAL

SITUATION

DIFFERENT SCENARIOS

- ◉ The various circumstances in each emergency require different reactions
- ◉ The outlined points : *a general guide* to ATS personnel.
- ◉ ATC units shall maintain full and **complete coordination**, and personnel shall use their **best judgment** in handling emergency situations.
- ★ In any case: ***Do not hassle the crew - they need thinking time!***

Acknowledge

*Make sure you **understood the nature of emergency** and acknowledge accordingly.*

Separate

*Don't forget to **establish/maintain** separation!*

Silence

*Impose **silence on your control frequency** if necessary. Don't disturb urgent cockpit actions by unnecessary transmissions!*

Inform

*Inform your **supervisor and other sectors/units** concerned.*

Support

*Give **maximum** support to pilot and crew.*

Time

*Allow pilots sufficient time to **work on their problem**.*

OTHER ACRONYMS

◎ RISC:

- Recognize the problem
- Identify the relevant aircraft
- Separate
- Communicate with

◎ TAS

- Time-Give the pilot time
- Airspace
- *Silence*

◎ SSSS

- Squawk-Acknowledge
- *Silence*
- Separate
- Shout

◎ QRST

- *Quiet*
- Recognize
- Separate
- Time

DISTRESS & URGENCY

- a) ***Distress***: a condition of being ***threatened by serious and/or imminent danger*** and of requiring immediate assistance.
- b) ***Urgency***: a condition concerning the safety of an aircraft or other vehicle, or of some person on board or within sight, but which **does not require immediate assistance**.

MAYDAY & PAN-PAN

○ MAYDAY:

- Stems FRENCH phrase: /**venez m'aidez: help me**/
- Is the radiotelephony **distress signal**

○ PAN-PAN:

- Stems FRENCH phrase: /**panne: breakdown**/
- the radiotelephony urgency signal

- shall be **used at the commencement** of the first distress and urgency communication respectively.

FREQ. TO BE USED

- ⦿ Distress and urgency *traffic shall normally be maintained on the frequency* on which such traffic was initiated
- ⦿ until it is considered that *better assistance* can be provided by transferring that traffic to another frequency.

ACTION BY THE STATION ADDRESSED OR ACKNOWLEDGING THE DISTRESS MESSAGE

- a) **immediately acknowledge**
- b) **take control of the communications or clearly transfer that responsibility, advising the aircraft if a transfer is made;**
- c) **necessary information shall be made available, as soon as possible, to:**
 - 1) *the ATS unit concerned;***
 - 2) *the aircraft operating agency* concerned, or its representative;**

IMPOSITION OF SILENCE

- ◉ The distressed station/ controlling station shall be permitted to IMPOSE silence on Freq.
- ◉ By the General Call or to one station:
 - STOP TRANSMITTING
 - Distress Signal MAYDAY
- Ex. “ALL STATIONS STOP TRANSMITTING, **MAYDAY**”
- ◉ Shall be terminated by:
 - DISTRESS TRAFFIC ENDED



MEDICAL TRANSPORT



- ⦿ According to the 1949 Geneva Conventions and Additional Protocols.
- ⦿ For *announcing and identifying* aircraft used for medical transports: signal **PAN PAN**, preferably spoken *3 times*,
- ⦿ followed by the radiotelephony signal for medical transports **MAY-DEE-CAL**, pronounced as in the *French “médical”*.

MEDICAL TRANSPORT

- ◉ The message shall convey the following data:
 - a) the *call sign* or other means of identification of the medical transports;
 - b) *position* of the medical transports;
 - c) *number* and *type* of medical transports;
 - d) intended *route*;
 - e) *estimated time* en route and of departure and arrival, as appropriate; and
 - f) any *other information* such as flight altitude, radio frequencies guarded, languages used, and SSR modes and codes.

[illegible]

TENERIFE DISASTER

- ◉ after lining up, the KLM captain advanced the throttles and the aircraft started to move forward.
- ◉ First officer Meurs advised him that ATC clearance had not yet been given,
- ◉ Meurs then said the tower that they were "ready for takeoff" and "waiting for our ATC clearance".
- ◉ They then received ATC clearance to follow after takeoff.
- ◉ The **instructions used the word "takeoff,"** but not Take-off clearance.
- ◉ Meurs did readback with the statement: "We are now at takeoff."
- ◉ Captain Veldhuyzen van Zanten interrupted the co-pilot's readback with the comment, "**We're going.**"
- ◉ ATC, initially responded with "**OK**" (**nonstandard phrase**), which reinforced the KLM captain's misinterpretation that they had takeoff clearance.



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- ◉ The captain asked the F/O : "**tell them we are in [an] emergency.**"
- ◉ The first officer told ATC: "we'll try once again[;] **we're running out of fuel,**"
- ◉ ATC replied, "**okay.**"
- ◉ A few seconds later, the captain again told the first officer to "**advise him we are [in an] emergency**" and asked if he did so.
- ◉ The first officer replied, "**Yes sir, I already advised him.**"
- ◉ The JFK controller instructed to contact the NY TRACON approach controller once more
- ◉ The TRACON controller asked the flight to climb once more to 3,000 feet
- ◉ The captain asked the F/O again to "**advise him we don't have fuel.**"
- ◉ The F/O replied, "Climb and maintain three thousand and ah **we're running out of fuel sir**"
- ◉ The captain once again asked whether he had advised the controller of the fuel emergency, and the first officer replied, "**Yes sir. I already advise him**"



MEDICAL TRANSPORTS

Note.— The term “medical transports” is defined in the 1949 Geneva Conventions and Additional Protocols (see also RR S33 Section III) and refers to any means of transportation:

- *by land,*
 - *water,*
 - *air,*
 - *whether military or civilian,*
 - *permanent or temporary,*
- assigned **exclusively to medical transportation** and under the control of a competent authority of a Party to the conflict”.*



FLIGHT SAFETY MESSAGES

- 1) **movement and control messages** [PANS-ATM (Doc 4444) CHAPTER 12];
- 2) messages originated by an aircraft operating agency(OCC) or by an aircraft, of **immediate concern to an aircraft in flight**;
- 3) **meteorological advice of immediate concern** to an aircraft in flight or about to depart (individually communicated or for broadcast);
- 4) other messages concerning aircraft in flight or about to depart.



FLIGHT REGULARITY MESSAGES

- 1) messages regarding the operation or **maintenance** of facilities essential for the safety or regularity of **aircraft operation**;
- 2) messages concerning the **servicing of aircraft**;
- 3) instructions to aircraft operating agency representatives concerning changes in requirements for passengers and crew caused by **unavoidable deviations from normal operating schedules**.
Individual requirements of passengers or crew shall not be admissible in this type of message;



PANS-ATM CHAPTER 9

- 9.2.1.2 aircraft equipped with suitable two-way radio communications shall report during *the period 20 to 40 MINUTES* following the time of last contact.
 - Merely to indicate that the *flight is progressing according to plan*,
 - Such report to comprise identification of the aircraft and the words “Operations normal” or the signal QRU.
- 9.2.1.3 The “Operations normal” message shall be *transmitted air-ground to an appropriate ATS unit*

