



# CONVENTIONS OF COMMUNICATION FOR AIR SAFETY IN AVIATION INDUSTRY

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**Abstract:** Aviation Industry is one of the fastest growing industries in the world in the present context. Numerous are the public and private sector aviation industries that are growing and flourishing as a business too. However with the increasing demand and use of Air Transportation, the impact of fair aeronautics on human life becomes highly essential. Thus appropriate consideration should be given to the factors influencing the field of aeronautics. Ineffective and improper communication has been one of the major factors in aircrafts crash in the past three decades. In the past, we have spotted a number of aircraft crashes due to lack of clear and effective communication. However, much emphasis has been laid on the proper aviation communication. Certain measures, conventions and Standard Phraseology have been adopted to improve aviation communication in English specifically to make it effective.

**Keywords:** Verbal Aviation communication, standard phraseology, human factor ELPA, ICAO

## Introduction:

Communication plays an important role in aviation industry, from the point of view of air safety.

Popular Psycho Analyst Carl Young has precisely given the objective of communication in air industry as to prevent accidents and manage air traffic efficiently and provide safety at the highest possible level.

This paper will briefly explore the role of communication in aviation safety, factors causing Effective verbal (voice) communication, standardised phraseology in Aviation communication in English and other ELPA and ICAO conventions.

**Aviation communication** imbibes five types of communication verbal, nonverbal, written and graphical, and human-machine and machine-machine **communications**. The most widely used mode of communication in aircraft and ground communication is the Verbal **communication** or the speech. The speech has its own challenges and difficulties viz. Ambiguity, Tone, Pace, Intonation, accent, Clarity, Pronunciation, and other factors among natives and non-natives.

## Verbal Communication

A communication which involves use of words orally or in written is a verbal communication. It is a communication in which a message is given verbally and received audibly, regardless of any coding, decoding. Verbal communication is usually enhanced with the use of non-verbal communication such as body language when the message is complemented with the body during delivery, Charts, signals (lights, signs), and written communication (e.g. anti-icing code). Likewise it can also become ambiguous and confusing with inappropriate use of non-verbal communication.

## Verbal Communication in Aviation

Verbal communication in Aviation can be face-to-face (e.g. caterer to cabin crew), remote (e.g. aircraft in the air – ATC tower), or even two pilots (or controllers) sitting side-by-side but both concentrating on instruments. Verbal communication is important not just between air traffic controllers and pilots, but also amongst ground-handlers, cabin crew, aerodrome operators, airline staff, security, and members of the public. Although hand-held and integrated data-link communication and computer interfaces involving non-verbal inputs are highly used, verbal communication still constitutes the vital part of ensuring safety in aviation.

It is a known fact that English is the worldwide accepted language in aviation industry, also ATC Officers and pilots are required to meet ELPA (English Language Proficiency Assessment) established by ICAO. Use of common language eases the communication between the crew as well as between the pilot and ATC Officers avoiding misinterpretation, other understanding issues and aviation language conventions.

### Some ELPA conventions regarding English language proficiency:

An error in communication between ATC and pilot has cost serious damage to lives and properties. Verbal communication is very significant and hence much consideration is given to the same and ELPA has recommended certain landmarks and qualifications and has laid down a few requirements and standardised phraseology, some of which are as under:

“4.4 ‘The ICAO language proficiency requirements apply to speaking and listening proficiency only and do not address the ability to read or write. In assessing a person’s language proficiency, it is necessary to analyse individual categories of that person’s language use, as well as assess the person’s overall ability to communicate in a relevant context.

4.5 In terms of effective aviation communication, it is required the proficient speakers to be able to

4.4.1 Communicate effectively in voice only and in face to face situations;

4.4.2 Communicate on common and work related topics with accuracy and clarity;

4.4.3 Use appropriate communicative strategies, to exchange messages and to recognise and resolve misunderstandings in a general or work related context;

4.4.4 Handle successfully the linguistic challenges presented by a complication or unexpected turn of events that occurs within the context of a routine work situation or communicative task with which they are otherwise familiar; and

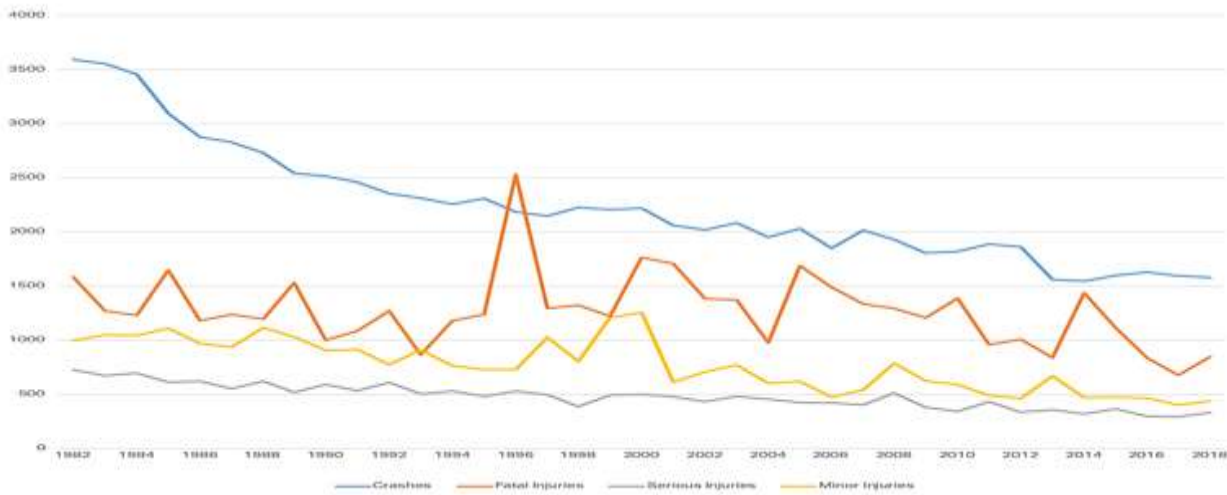
4.4.5 Use a dialect or accent which is intelligible to the aeronautical community.

4.6 Standardised ICAO phraseology retains its importance and should always be used when applicable. However, a finite list of phraseology cannot cover every conceivable situation and thus must be augmented by plain language, especially to describe unusual events or for when clarification or explanation is required.”<sup>1</sup> (CIVIL AVIATION REQUIREMENT SECTION 7 – FLIGHT CREW STANDARDS TRAINING AND LICENSING SERIES G PART III ISSUE II)

### Some ICAO Conventions regarding English language proficiency:

“2.3.3.1 All the competences needed for language proficiency are “constructs” of mental and physical abilities and they are not directly observable. They can be inferred in individuals only by observing the language performance of those individuals. In performance, other factors may impact language proficiency, for example, levels of attention, mood, stress, verbal working memory and verbal processing abilities. These factors will, in turn, influence levels of performance in the areas of fluency, comprehension and interaction.”<sup>2</sup> ICAO DOC 9835.

AVIATION CRASHES AND INJURIES BY YEAR: 1982 - 2018



From the above statistical data in the figure, we deduce that airplane accidents have reduced considerably in past four decades and much consistently especially after ICAO and ELPA conventions are introduced. Here we observe that in 1982 airplane crashes have reduced from 3,583 to 1,581 in the year 2018 – a decrease nearly 56 percent . This is a result of much awareness and safety generated as regards the human error of which mis communication is a major factor.

**The Human Factor**

The Human factor constitutes one of the vital factors in aviation. Despite of the newer high tech equipments are employed in aircrafts or in towers for clearer and smooth communication, we cannot alienate the human factor and its significance remains intact till date. According to the report from NASA Safety Reporting System (ASRS) for human factors occurrences on the runway, 37% of the accidents are due to mis communication or the communication breakdown.

Following chart shows results from a search of NASA ASRS for Human Factors and parked aircraft.



ASRS SEARCH "Parked" + "HF" + Category below		
Troubleshooting	4269	78%
Time Pressure	3530	64%
Communication Breakdown	2030	37%
Situational Awareness	1258	23%
Confusion	858	16%
Training & Qualification	523	9.5%
Distraction	396	7%
Workload	276	5%
Human-Machine Interface	190	3.5%
Fatigue	134	2.5%
Physiological	86	1.6%

In 2005, as per the analysis, in Europe, showed that one of most causal factors for the aircraft accidents was due to human factor. Such cases involved a breakdown in communications, including incorrect read-back by pilot which is often a natural corollary of call sign confusion.<sup>3</sup>

The FAA also estimates that human error is a major contributing factor in 60-80% of all air accidents. It observed that ineffective communication and other communication-related indicators were the causes of accidents under the human factor. Federal Aviation Administration, 2004.

## Factors affecting verbal communication in aviation:

The quality and frequency of verbal communication is a crucial aspect in aviation industry. The quality of communication is affected by various factors like: ambiguous phraseology, blocked transmission, incomplete or inaccurate message by the controller, incomplete/partial read back, accent of a non native controller or pilot, high rate of speech of the pilot or the controller, long messages, incompetent use of standard phraseology, frequency change or the frequency congestion, Distraction/ expectations of the pilot. Manner of Speech etc.

The most critical verbal communication occurs remotely via radio systems. Helmreich and Foushee have analysed that 70% of aircraft accidents are caused due to human error, and they have quoted several specific accidents in their famous work Crew Resource Management. They have stated that Human error has caused majority of cases in aircraft accidents most specifically arising out of failures in interpersonal communication.<sup>4</sup> As per the work 'Team Dynamic Overtime' Research on managing groups and teams Vol. 18 interpersonal communication and the peripheral factors have contributed upto 80% of the aircraft accidents in past 2 decades.<sup>5</sup>

## Instance of accident caused by Human factor/ communication flaw:

The Tenerife tragedy, 1977 is one of the worst crash in aviation caused by ineffective communication factor.<sup>6</sup> Other high profile accidents, including the Avianca crash in Jamaica Bay near JFK and the American Airlines crash in Columbia in 1990, are again, at least in part, the results of communication problems.<sup>7</sup>

The communication factor is directly responsible for the safety in aviation. As per the reports of Flight Safety Information Air accidents had caused more than 1100 deaths due to language misinterpretation Between 1976 and 2000.

## Instance of mis interpretation:

The following communication between the pilot and the cabin member gives us a clear instance of mis interpretation in communication causing an aircraft accident.

As per the company protocols, the cockpit doors in an aircraft are required to be secured before starting the engine. This procedure had been complied. During the flight one of the flight attendant reported the flight deck about certain disturbance in the cabin hence requested to prepare the aircraft to return. After some time, while the aircraft was nearing the destination the flight attendant called the flight deck to ensure if the aircraft was landing. The captain replied in affirmation and further asked about the situation in the cabin. The flight attendant answered that the only problem was that the door of the cockpit was opened which was secured later. But while communicating with the captain the attendant simply said, "Turn around" which was misinterpreted by the captain that the aircraft should be turned around Whereas the intention of the flight attendant was to let the captain see the secured door.<sup>8</sup>

## Enhancing Verbal Communication

We can highlight following factors that has rendered verbal communication in aviation to be effective :

- use of standard phraseology
- using improved and standard accents
- controlling volume, pitch, tone, and pace of speech
- stress urgency and importance
- Use of proper comprehensive English language in the time of urgencies.
- Maintenance of communication equipment
- Developing appropriate modules of expected verbal communication in aviation
- Conducting regular trainings to ATCOs and pilots

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