A linguistic Analysis of the Aviation Language

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المستخلص:
في لغة الطيران، تتكامل المهاتفة الراديوية عن طريق القدرات البشرية بحيث يمكن تحديد المعلومات وتغييرها حسب الحاجة المطلوبة وبتوظيف هذه اللغة، يمكن لأطقم الطيران السيطرة على الأجواء التي يمارسون فيها مهنتهم وتشكيلها ونتيجة لذلك، توفر لغة الطيران المعلومات، وتؤثر على المواقف وتحافظ على التواصل في مجموعة متنوعة في مواقف الطيران اللغوية وعلاوة على ذلك، تختلف الطريقة التي تؤدي بها أطقم الطيران مهامها المختلفة عبر هذه اللغة، إلى جانب التنوع في السمات المعجمية، والنحوية والأسلوبية والصوتية ومن خلال فحص معاني السجلات الصوتية للطيران، وكذلك تحديد القواعد والمعايير التي تحكم الخطاب اللغوي في مجال الطيران، فإن الغرض من هذه الدراسة هو فحص التحليل اللغوي للغة الطيران من خلال مجموعة متنوعة من الأساليب وأخيرًا، تقوم الدراسة بفحص دلالة لغة الطيران في ضوء هذه القواعد والمعايير وعلاوة على ذلك، تقدم الدراسة تحليلًا لغويًا للغة الطيران من المعجمات اللغوية إلى النحوية إلى الخطاب اللغوي إلى علم الأصوات إلى السمات التنغيمية. كما أن لغة الطيران هي لغة متخصصة ذات خصائص متفردة. وتم الرجوع إلى الدليل المرجعي للغة الإيكاو ودليل مرجع إتقان اللغة في منظمة الطيران المدني الدولي (٢٠١٠) في جمع البيانات، إلى جانب التسجيلات الصوتية وإجراءات Doc 4444 لخدمات الملاحة الجوية، وإدارة الحركة الجوية كما نص عليه الإصدار السادس عشر، ٢٠١٦. وتشير النتائج إلى أن لغة الطيران تختلف وتتميز عن جميع أنواع اللغات الأخرى. وبناءً على نتائج هذه الدراسة، تعتبر لغة الطيران متفردة في خصوصيتها وذات صلة لأولئك الذين يعملون في هذا المجال. وفي هذه الدراسة، يتضح أن اللغة المستخدمة في الطيران هي البديل الأمثل والوظيفي للغة الإنجليزية الطبيعية. لقد اشتملت منهجية هذه الدراسة على تحليل ٥٥ تسجيلاً صوتياً، منها (١٠٠٣) جملة صوتية و (١٢٤٣٨) كلمة صوتية. كما تتضمن الدراسة تسجيلات صوتية بين "طيارين" طاقم الطيران ومراقبي الحركة الجوية. وتشير نتائج هذه الدراسة إلى أنه يمكن استخدام العبارات المتخصصة واستخداماتها العملية بشكل فعال في مراقبة الحركة الجوية. ويمكن تلبية متطلبات الكفاءة اللغوية لمنظمة الطيران المدني الدولي من خلال إعداد المراقبين والطيارين للتعامل مع

مجموعة متنوعة من التركيبات اللغوية وبالتالي تلعب هذه الدراسة دورًا مهمًا في تحسين التواصل بين طاقم الطائرة ومراقبي الحركة الجوية (ATC).
الكلمات المفتاحية: اللغة المتخصصة، الطيران، العبارات المتخصصة، الإيكاو، سياق الطيران

Abstract:

In the aviation language, radiotelephony integrates with human capabilities so that information can be identified and changed as needed. Using this language, flight crews are able to dominate and shape the environments where they practice their professions. As a result, this language provides information, influences attitudes, and maintains social relationships in a wide variety of aviation situations. Furthermore, the way in which flight crews perform their various tasks differs across languages, along with their differences in lexical, syntactic, stylistic, and phonological features. Through the examination of the meanings of the aviation registers, as well as identifying the rules and norms that govern discourse in aviation, the purpose of this paper is to examine the linguistic analysis of aviation language through a variety of approaches. Finally, the meaning of aviation language is examined in light of these rules and norms. Moreover, it presents a linguistic analysis of aviation language from lexical to syntactic to discourse to phonology to intonation. Aviation language is a specialized language with unique characteristics. ICAO Phraseology Reference Guide, and the Manual on the Implementation of ICAO

Language Proficiency Requirements (2010) are used in the collection of data, along with voice recordings and Doc 4444 Procedures for Air Navigation Services, Air Traffic Management Sixteenth Edition, 2016. The results indicate that aviation language differs from all other types of language. Based on the findings of this paper, aviation language is both peculiar and relevant to those who work in the field. In this study, the language used in aviation is assumed to be a distinct and functional variant of English. The methodology of this study consisted of analyzing 55 voice recordings, including (1003) running sentences and (12438) running words. Voice recordings include dialogues between flight crew 'pilots' and air traffic controllers. The results of this study suggest that standard phraseology and its practical uses can be used effectively in air traffic control. ICAO's language proficiency requirements can be met by preparing controllers and pilots to deal with a variety of languages. Consequently, this study plays a significant role in improving communication between cabin crew and air traffic controllers (ATC).
Keywords: Register, Aviation, Phraseology, ICAO, Context of Aviation

This study aims to examine the occupational variety of English used in the aviation industry,which is a sub-variety of occupational variety. Based on these findings, Moody (1970) concludes that each language has developed different ways of

differentiating functions and associations. According to him, we can only understand language when we are able to understand, interpret, and originate all the subtleties we encounter in our personal, social, political, and professional lives (p.2).

There is diversity and flexibility to this language depending on its use and demands in aviation. The linguistic context of this language is considered when defining linguistic terms. According to Asher and Simpson (1994), signs, symbols, clothing, badges, etc. They all contribute to communication in some way (p.2496). Aviation communication is characterized by a variety of specializations along with advanced technologies. This is why flight crew members are more likely to communicate effectively if they speak a language specific to the aviation industry. In addition, technology is transforming communication via electronic means. The terms service or unit describe a collective performing a service, including how they are referred to as abstract nouns.

Thus, aviation English is a register since it is a variant of English designed specifically for civil aviation. It is used by ICAO to communicate highly technical information. Register language is defined by ICAO as a type of speech that is appropriate for a particular situation (including vocabulary,

syntax, speech rate, etc.). Ragan (1997) explains that any type of language associated with a specific person or situation can be considered a register. Pilots and air traffic controllers need Aviation English Level 4 (Paltridge, B., & Starfield, 2013). The following skills are required for air traffic controllers or pilots to achieve Operational Level 4: First, they must be proficient in English. Another significant requirement is the ability to communicate fluently and effectively.

Furthermore, pilots and air traffic controllers need to have an understanding of aviation register language (Paltridge, B. & Starfield, S., 2013, p.375). Yet, a fundamental question remains about aviation English's importance. To answer this question, it is necessary to examine civil aviation's history first. In the history of civil aviation, there have been a number of dramatic accidents that have led to fatalities and financial losses. The International Civil Aviation Organization reported in 2004 that insufficient English proficiency contributed to the accident. In October 1947, the United Nations established ICAO to replace PICAO (Provisional International Civil Aviation Organization), founded in Chicago in 1944. As a result of an agreement between the International Civil Aviation Organization and the United Nations, English is the official language of international flight operations. Air traffic control communicates with pilots in English, but non-natives have

difficulty understanding it. Using aviation English can help you overcome this obstacle. A pilot and a controller can sometimes communicate despite not speaking the same language. A radiotelephony register is used by pilots and air traffic controllers for communicating weather conditions, air traffic, aircraft positions, and runway conditions. Accidents can be caused by inaccurate information provided by pilots or air traffic controllers.

When fog obscures the pilot's view and other aircraft are on the runway due to fog, the air traffic controller becomes the pilot's eyes. Many people rely on the accuracy of air traffic controllers to communicate instructions to pilots.

As a result, Aviation English is designed to facilitate communication among aviation personnel from different countries. According to a 2004 study by the Federal Aviation Administration, 60 to 80% of aircraft accidents are caused by inadequate communication. Furthermore, pilots and air traffic controllers avoid ambiguous communication. As Krifka, et al (2003) point out, "ambiguity may have contributed to the most infamous commercial aviation accident, the collision between two aircraft in 1977 at Tenerife airport (p.12). The accident highlighted the importance of accurate communication between air traffic controllers and pilots. They could have prevented this tragic

accident by using aviation phraseology instead of non-standard phrases.

Air traffic controllers do not just use aviation language to control airspace in airports; they also speak en route controller language to control large areas outside airports. Aside from that, they direct airplanes within the country's airspace to their destinations. "The Handbook of English for Specific Purposes" (Paltridge, B., & Starfield, 2013) states that en route controllers monitor aircraft direction, speed, and altitude using radar and radiotelephones. The language of aviation is driven by safety concerns. This prevents pilots and controllers from mishearing each other and causing an accident. Navigation, aircraft operation, electronics, avionics, physics, the laws of the aviation language, and instruments are all covered by unambiguous and exact terminology. As a result of regional differences in speech dialects, verbal communication adds an additional dimension to language pronunciation. People with foreign accents also face problems in air travel and international radio communications because English is their first language. Clearly, these users have a wide range of abilities that can be adapted to be used as register languages.

To conclude, this study primarily seeks to fulfill the following objectives: (1) To examine the meaning of the special

aviation registers, (2) To identify the rules and norms that govern discourse in aviation, AND (3) To understand how these rules and norms affect the meaning of aviation language. Three research questions will be addressed to achieve these objectives: (1) What are the special registers in aviation language and what do they mean? (2) To what extent is aviation discourse governed by rules and norms? (3) In what ways do the rules and norms affect aviation language's meaning?

2- Literature Review

It has been discussed at length in earlier linguistic studies (Philps 1991; Sullivan and Girginer 2004; Tajima 2004; Howard 2008; Hyejong and Elder 2009; Seiler 2009), as well as the dangers of using standard English (Sullivan and Girginer 2004; Tajima 2004; Howard 2008; Hyejong and Elder 2009). In all of these works, it is stressed that it is critical to follow the prescribed standards, both among air-ground interlocutors with English as a native language, as well as among speakers who have no native language.

A paper by Masita (2019) is titled Aviation Register Used by Ground Crew and Pilots. In this study, ground crew-pilot conversations are analyzed for aviation registers. Specifically, the study examines the vocabulary of aviation registers used by pilots and ground crew. This problem is explored in both

a descriptive and qualitative manner. In accordance with Halliday's and Biber's theory, the researcher classified data into words, phrases, noun phrases, verb phrases, and adjectives. There were 29.5% of nouns in the study, 25.5% of verbs, 12.5% of adjectives, and 25,5% of noun phrases. There were 22,5% verb phrases, 2,5% adjective phrases, and 7,5% sentences. Research suggests that aviation registers inform ground crews and pilots about three things: (a) the field, the takeoff and landing area, and how many people are available to fly. In (b), both ground crew and pilot use the register, while in (c), the register serves as speech depending on the mode.

Takhmirt (2017) presents an article entitled English in Civil Aviation. This study examines how a language can be applied technically and for a specific purpose. This field falls under the applied linguistics umbrella. Developing proficiency in English is one of the major objectives of English for Academic Purposes (EAP). As an example, aviation English, which is a language commonly studied and adopted by civil aviation, is another language. Pilots, air traffic controllers, en route controllers, flight attendants, and other aviation professionals fall under this category. This paper discusses civil aviation in English. Additionally, Aviation English (AE) has also been called ATC English (Breul, 2013). This paper consists of three parts: After Part (I) discusses Aviation

English's significance, Part (II) explains how it fits into the LSP (language for specific purposes) and ESP (English for specific purposes) research areas. Part two of the study discusses the International Civil Aviation Organization. Finally, the study concludes by discussing civil aviation's version of English, as well as its unique vocabulary and register.

In a paper titled Aviation English: An Introduction, Ragan (1996) presents that a wide variety of activities are involved in aviation, from the analysis of compressible fluids to ticket sales and clearance for takeoff. As a result, such activities require specialized usage of English, which is commonly known as Aviation English. All aspects of aviation/aerospace education and practice, as well as national and international regulatory and administrative agencies as well as academic, industrial, and government research and development, using aviation English extensively. For aviation professionals who use language heavily in their work, understanding aviation English and having access to relevant resources can be beneficial. This paper aims to provide aviation professionals with a basic understanding of language. Here is an overview of aviation English. The paper discusses why this topic needs to be addressed, explains what aviation languages are, reviews relevant writings, and suggests ways to improve the use of aviation English.

EL2 pilots' radio communication in general aviation is a seminal work by Estival and Molesworth (2009). An evaluation of the utility of language technologies to mitigate communication problems in General Aviation is presented in this study. Using a three-part study presented in this paper, it examines whether pilots whose native language is not English (EL2) communicate more effectively with Air Traffic Control (ATC) as a result of their English language proficiency, as well as the potential impact this may have on their safety performance. A preliminary survey of flight training organizations revealed self-reported instances of miscommunication between pilots and ATC. Pilots were asked to rank five typical radio communication tasks from easiest to most difficult. According to the study, both native English speakers and EL2 pilots found understanding other pilots to be the most challenging aspect of radio communication.

According to Krifka, Martens, and Schwarz (2014), linguistic factors contribute to group interactions in the cockpit. Research in this field has been reviewed in some detail in this article. As part of the study, Manfred Krifka used transcripts of flight simulator sessions with pilots of an American airline to report findings. Several problems related to this project are discussed. Finally, they describe an ongoing project that uses flight simulator sessions with commercial German airline

pilots. In fact, misunderstandings can result from structural properties of language, according to a study of aviation accident reports. It is particularly true when participants are overburdened with tasks and have low cognitive resources. These incidents typically occur when pilots are preoccupied and overloaded with concentrating on problems such as equipment failures or adverse weather conditions; furthermore, it can be very difficult to communicate with air traffic control (ATC) in a noisy cockpit.

3- Scope of the Study

The study of aviation languages can be approached from a variety of perspectives. However, this study is primarily concerned with linguistic items with specialized meanings that are relevant to aviation. As a result of time and space constraints, this study can only cover a limited number of aviation register norms and roles that govern this language.

4- Methodology of Data Analysis

For this linguistic analysis of the International Civil Aviation Organization (ICAO), (55) recorded voices were analyzed, including (1003) running sentences and (12438) running words. The recordings contain dialog between flight crew members, or pilots, and air traffic controllers, or ATCs. The following steps are involved in a data analysis method:

1. Extractions of examples are arranged as uttered phrases and clauses to reflect the register feature of analysis.

2. The phraseology and voiced messages are then analyzed according to their features, which include: Syntactic, lexical, semantic, phonetic, and phonological norms and rules, followed, if necessary, by tables at the end of each section; and,

3. At the end of each table, the analysis is summarized.

5. Phraseology Language Register for Aviation

Standard aviation situations require a clearly defined set of phrases with unambiguous meanings. In the aftermath of some deadly and catastrophic air crashes, this terminology has been widely discussed. A flight operated by Avianca from Bogotá to JFK International Airport in New York was forced to hold up and exhaust its reserve fuel. On 25 January 1990, it had to hold over at the airport for an hour. Since the pilot did not use the correct (standard) phraseology when requesting a "priority landing", the sense of urgency was lost: "MAYDAY", "PAN, PAN, PAN" and "EMERGENCY".

The Avianca pilot did not challenge air traffic control and simply held his position until he ran out of fuel (Atten, 2008). Eventually, the concept of aviation phraseology became apparent: while phraseology is an effective tool in standard

contexts, it is not that effective in nonstandard situations. An ICAO language proficiency test was introduced in 2011 for pilots and air traffic controllers around the world. Since then, international pilots and air traffic controllers have to demonstrate adequate phraseology skills. Tests like this are conducted to identify the norms and rules that govern aviation discourse. Further, the implications of these norms and rules for aviation language understanding are being investigated.

As Falzon (1986) explains, air traffic control communication is primarily based on specialized or operative languages known as phraseology, which is "knowledge shaped by an activity," i.e. operative knowledge. As part of its mission to ensure safety in radiotelephony, the International Civil Aviation Organization created and continuously updated it. The purpose of this is to explain the most common and ordinary air navigational situations. Phraseology is designed to convey routine messages clearly, concisely, and unambiguously (ICAO, 2010). Syntax, lexicon, semantic, and phonetic rules and norms govern the phraseology and messages employed by the sentence. Aviation phraseology has implications that ensure that all flight crews and ATCs are aware of its meanings, so that air disasters can be avoided.

The following are some examples of phraseology from the reference corpus (Document 4444, Air Traffic Management Order Number: 4444) which provides procedures for air navigation services. According to (DGAC, 2007; Mell, 1992; Philips, 1989, 1991; Rubenbauer, 2009), phraseology has the following specific characteristics, in addition, phraseology provides lexical, syntactic, and semantic properties, along with optimal implications and safe guidance for air traffic.. According to ICAO, phraseology is a limited tool for air navigation because it covers limited norms and rules.

Although ICAO's standardized phraseology covers many circumstances, it cannot accommodate all communication needs between pilots and controllers. The ICAO (2010) acknowledges that no set of standardized phraseologies will completely describe all circumstances and responses (ICAO, 2010: 1.2.3).

Due to this, pilots and controllers use "plain language" when phraseologies are unavailable. Below are phraseologies without call signs that show the full message text. The ICAO language specifies that pilots, ATS personnel, and other ground personnel must use clear, concise, and plain language when circumstances differ. Phraseologies are listed according to the types of norms and rules governing air traffic services. They are used in conjunction with the appropriate call signs

(aircraft, ground vehicles, and air traffic control). There are a few phraseologies outlined in Section 12.3 of (Doc 4444, Procedures for Air Navigation Services – Air Traffic Management Order Number: 4444).as the table (1) below shows:

	ATC Phraseologies	Circumstances	Phraseologies
1	General	Level Descriptions (*Subsequently called*) "(*level)")*	(A) Flight level (*number*); or (B) (the number of) METRES; or (C). The number of feet.
		Changes in levels, reports, and rates	A) Climbing (*or descending*); Followed as necessary by: 1) to (*level*);
		... An instruction to commence a climb (*or descent*) to a level within the vertical range defined	2)to and maintain block (level) to (*level*); 3)to reach (*level*) at (*or by*) (*time or significant point*); 4) A report of leaving (or reaching, or passing) (level); 5) (number) metres per second (*or feet per minute)* [*or less (or more*);
		... For *SST* aircraft only	6) Report the start of acceleration (or deceleration). B) Maintain at least (number) meters (or feet) above (*or below*)

			(*aircraft call sign*); c) Change the level (*or flight level or altitude*) from (*name of unit*) at (*time or significant point*); d) Stop climbing (*or descending*) at (level); e) Continue climbing (*or escending*) to (*level*); f) Expedite climbing (or descending) [*until passing (level)*]; g) Climb (or descend) when ready to (level); h) Expect to climb (*or descend*) at (time or significant point); *i) Request descent at (*time*);
2	Minimum Fuel	Indication of minimum fuel	*a) minimum fuel; B) Roger [*no delay expected* or expect (*delay information*)].
	Transfer of Control and/or Frequency Change	In the case of *ATS* units, aircraft may be requested to "*STAND BY*" on a frequency and to "*MONITOR*" a frequency when information is being broadcast.	a) Get in touch with the unit (*call sign*), (*frequencies*) [*now*]. b) at (or *over*) (*time or place*) [or when] [passing/leaving/reaching (level)] contact (*unit call sign*) (frequency); c) without contact (*instructions*); d) Stand by for (*unit call sign*) (frequency);
	KHZ Channel Spacing	... To request confirmation of 8.33 khz capability	a) confirm eight point three three; *b) affirm eight point

		... To indicate 8.33 *KHZ* capability ... To indicate lack of 8.33 *KHZ* capability ... To request uhf capability	three three; *c) negative eight point three three; d) confirm uhf;
	Traffic Information	... To pass traffic information ... To acknowledge traffic Information	a) traffic (*information*); b) no reported traffic; *c) looking out; *d) traffic in sight;
	Meteorological Conditions	...For multiple *RVR* Observations	a) [surface] wind (*number*) degrees (*speed*) (*units*); b) wind at (*level*) (*number*) degrees (number) kilometres per hour (or knots); note.- wind speed and direction are always expressed as the average of their significant variations. c) visibility (*distance*) (*units*) [direction]; d) runway visual range (or *RVR*) [runway(number)] (distance) (units); e) runway visual range (or *RVR*) runway (number) not available (or not reported); f) runway visual range (or *RVR*) [*runway (number*)] (*first position*)

			(*distance*) (*units*), (*second position*) (*distance*) (*units*), (*third position*) (distance) (*units*);
3	Aerodrome Information		A) [*(location)*] runway surface condition runway (number) (condition); b) [(*location*)] runway surface condition runway (number) not current; c) landing surface (condition); d) caution construction work (location); e) caution (*specify reasons*) right (or *left*), (or *both sides*) of runway [number]; f) caution work in progress (or *obstruction*) (*position and any necessary advice*); g) a runway report at (*observation time*) runway (*number*) (*type of precipitant*) up to (depth of deposit) millimeters. estimated surface friction good (or medium to good, or medium, or medium to poor, or poor; h) report of braking action by type of aircraft at time (*good, medium, medium to poor, or poor*);

Table 1: Shows some ATC Phraseologies and in which Circumstances they are Used in Aviation Language Register (* Denotes pilot transmission).

As Kim and Elder (2009) point out, radiotelephony phraseology is the language used in radiotelephony communication. As a register language, this phraseology is primarily used by air traffic controllers, pilots, and en route controllers to constrain norms and rules. Following is a table adapted from "Flightpath: Aviation English for pilots and ATCOs" (Shawcross (2011), which contains some examples of the register used by civil aviation personnel as the table (2) below shows:

Word	Definition	Example
Call-sign (n)	Flight identification used to contact each flight. To identify an aircraft or station, a series of words, letters, and/or numbers is used.	Gulf 33 is the aircraft's callsign. Stations transmit an aural Morse callsign of two or three letters.
Dump (v/n)	To jettison fuel during flight as a means of reducing the aircraft's weight:	We need to dump 2 tonnes of fuel since we are over our MLW (Maximum Landing Weight)
Garbled (adj.)	Technical difficulties usually	I repeat, your

	lead to unclear, inaudible audio.	last transmission was garbled.
Roger (*excl.)*	To confirm the reception of the information communicated by the pilot	receiving all of the last transmission
Request (v)	Meaning like to know or wish to obtain.	Pilot: Cairo Centre. Airbus IMX. Request area RUH for area 33.
Wilco (*excl.)*	Understanding the message and it will be complied.	We understand the message and will comply with it.
Radiotelephony: R/T (N)	Radio transmission of speech.	Using *R/T* phraseology correctly avoids ambiguity.
Squawk (N) (V)	A code that identifies something. The transponder (v) is used to activate specific codes and modes, e.g., "Squawk two-one-five." "Squawk" does not mean to press the transponder's *IDENT* button.	During garbling, two signals are received at the same time, and this can be resolved either technically or by making an aircraft squawk.
Taxiing (Bri) (v) Taxying (US)	An aircraft's motion along the ground under its own power	Tailwheel aircraft taxi

	prior to takeoff or after landing.	more difficultly than nosewheel aircraft.
visual (adj.)	A 'Visual Flight Rules' (*VFR*) clearance is used at Class D aerodromes to give pilots control over when to descend.	The VASI stands for visual approach slope indicator
STAND BY (V)	"Stand by" as in "wait for clearance." If there is a long delay, the caller should reestablish contact. "Stand by" does not mean approval or denial.	Controllers or pilots must pause for a few seconds while attending to other duties, usually of higher priority.

Table 2: Show some lexical items of the register used by civil aviation personnel.

6- Plain Language in Aviation Communication

Aviation communication relies heavily on communication to exchange information and knowledge. Berelson et al. (1964) argue that communication involves the exchange of information, ideas, emotions, and skills through symbols (P. 527). As Ayer (1995) examines communication as a product. In his words, "communication can be defined in terms of

what is being transferred, or it can be defined in terms of the means of transmission, or it can be defined in terms of the whole process" (p. 13). There are two main streams in the study of communication. Communication is characterized by Fiske as the transmission of messages as well as the production and exchange of meaning (p. 24). In the case of aviation radiotelephony, ICAO asserts that plain language does not simplify communication between radiotelephony professionals. According to the ICAO, plain language is language without phraseology. The reason plain language cannot be considered natural is that it conforms to phraseology's norms and rules. In accordance with the ICAO (2010: 3.3.14), it refers to spontaneous, creative, and non-coded communication using natural language, within a framework of functions and topics required for obvious, intelligible, direct, appropriate, and precise aeronautical radiotelephony.

As a rule, it is necessary to rely on standard phraseology in verbal communication; however, plain-language communication may be justified in certain circumstances. However, ICAO has developed a system to ensure that air-ground communication is clear and concise. As a result, ICAO acknowledges that plain language can be difficult to communicate effectively because it is so diverse. The plain language user is therefore able to use a broader vocabulary, to

construct complex sentences, and to use poorly-organized sentences outside the aviation sector (2010: 3.3.16).

Thus, pilots and controllers must use natural language in context situations when phraseology is insufficient, however it is limited, by the clarity, precision, and concision norms of phraseology (Mell, 1992). In the first place, ICAO standardized phraseology is always recommended (2010: 4.3.3). As a last resort, plain language is used if phraseology cannot be applied.

A standardized phraseology developed by ICAO should be used for all situations which have been specified by the organization. It is only when standardized phraseology cannot serve the intended transmission that plain language should be used (2001: 5.1.1.1).

According to Falzon (1986), operators use natural language in unusual situations, since there are no procedure patterns, so they use a powerful, but not specialized, representation tool, natural language, instead of operative language (p.37). Phraseology language, on the other hand, is not creative in nature. In accordance with the International Civil Aviation Organization, natural language and creativity are the most effective tools for interacting with people, especially when unexpected events occur. In light of Feak's (2013) definition, aviation language is a form of English that has no written

versions, aside from ICAO manuals and the Aeronautical Information Publications (AIPs) (Lopez, 2013). According to Barshi et al., 2011, Lopez et al., 2013, and Moder (2013), air traffic control safety and efficiency are reflected in aviation communication. In aviation, register communication includes light signals, navigation aids like ADFs, ILSs, VORs, and GPS/GNSSs; as well as weather forecasting and reporting codes. Furthermore, phraseology prescribes special pronunciations, syntax, discourse structures, and dialogues (Estival et al., 2016, p. 22). In (AIP, GEN 3.5, 4.1.4) AIP specifies that plain language is used whenever circumstances require, and when phraseology is unavailable (Ponds in AIP, GEN 3.5, 4.1.4). The definition of plain language and how it differs from natural language remain controversial (Lopez, 2013; Moder, 2013). The term 'plain English' in aviation refers to straightforward English following the guidelines provided by phraseology. Among the different aspects of aviation communication, pilot–air traffic control communications are most pertinent to the general public.

Even native English speakers have to learn some conventions in aviation language. The ICAO regulations require a special vocabulary, scripted phrases, specialized pronunciation, and an organization of speaker turns so that pilots can acquire proficiency in the 'aviation language'. In Goh's (2013) description of knowledge, three types are identified:

knowledge of a language (phonology, syntax, vocabulary), knowledge of its use (discourse and pragmatics), and knowledge of the context, facts, and experiences (prior knowledge, or "schema") (p.58).

7. Structure of Dialogue in Aviation Language

Dialogue structure in aviation language indicates that the pilot's exchange with ATC has three parts: the pilot's initial radio call, ATC's response, and finally, the pilot's response to ATC. (1) illustrates the general structure of pilot–initiated exchanges.

(1) Structure of dialogue - exchanges initiated by pilots
a. The pilot's initial call
b. Response from Air Traffic Control
c. Readback of the pilot

As illustrated in (2) below, information in dialogue turns is transmitted strictly according to its phraseological components.
(2) Structure of dialogue turns: initial call

A. To initiate dialogue with an aircraft or ground station, pilots determine which station they are talking to.

B. The pilot determines the emission point, i.e. the station:

C. "Name or call-sign" Lufthansa 343 Ranger is used as an introduction

D. Pilots identify their location and altitude

E. Intentions of the pilot (route, arrival, etc.).

There are two types of elements in the dialogue turn below: dialogue turn components (e.g. 'Where I am') and dialogue turn components (e.g. 'Altitude'). On the basis of (3), the initial call in (1.a) can be interpreted as follows:

(3) Pilot (initial contact)

Who I am talking to: 'Tower Lufthansa 432' (could be 'Kendra Approach', or 'Transcenter Pacific 328' …, etc.)

What I am: 'Jeff ' (could be 'Jabiru', or 'Qeen Air' …etc.)

Who I am: 'APU' (could be 'CIA', 'RUH', or '2321' … etc.) (Each letter or number is pronounced separately in the international phonetic alphabet).

Where I am: Position: 'Tom Midland' (could be 'Amigo 05 Runway, or '6RN', etc.)– altitude is above 11,000

What my intentions are: 'Inbound' (could be 'a towing track, '232 Queen landed at 1/2., etc.) 777 the ATC's response in (1.b) as shown below, it follows a similar structure:

(4) Response of ATC

Here is who I am talking to: 'CIA' (the aircraft's call sign when calling).

Instructions: Altitude to maintain: 11,000 feet' – Take slide 20 taxi to everyone #2. (could be 'Upwind', 'Crosswind', 'Downwind', or 'Final'). Runway 03 has driven off the taxiway

–When to contact ATC again: '5 miles' (from the airport)

(1).c) The pilot reads back the instructions from ATC, then confirms the station calling, i.e. "Who

I am".

(5) Pilot readback

Instructions: Altitude to maintain: 11,000 feet'

– CIA: '[join] Right Base'

– Runway 05

–Report point: '[report] 3 miles'

Who I am: 'CIA'

Professional communication aims to minimize the number of words in each transmission and omit verbs when possible.

8. The Levels of dialogue - exchanges initiated by ATC:

Pilots and air traffic controllers appear to have a power imbalance that is quite distinct linguistically. Pilots are responsible for notifying ATC of their flight plans and

requesting clearance. Therefore, pilots obey the ATC's instructions unless they can pose a safety risk. It is ATC's responsibility to request information from pilots, which is provided, and to provide relevant information about traffic and weather at destination, which is needed by pilots. ATC can also refuse clearance requests. The ATC system is intended to assist and support pilots, but pilots are often apprehensive about interacting with it. It is mainly due to their fear of making mistakes that they do this. All radio communications are public, so everyone will hear every transmission.

8.1 Level of syntax in the Aviation Language Register

The pilots are well versed in all the terms used in international aviation. Syntax of radio transmissions is simplified during dialog turns so that only the details necessary to communicate are transmitted. This includes the order of information items and the structure of the transmission. The syntax of 'aviation' differs from 'natural' English in these respects. As a result, aviation language conventions are simplified, making the level of syntax easier to learn and understand.

8.1.1 Phrases and clauses in the Aviation Language Register

Aviation language syntax aims to reduce messages to their lexico-semantic content, whether at the sentence or phrase

level. Dialogue turns can be understood based on their structure and components. Sententially, aviation language is characterized by only main clauses, clauses that complement or refer to one another without subordinate clauses. As shown in (6) below, different units of information are juxtaposed in simple sentences and phrases.

(6) Cairo International Airport ATC: Maintain 1800 ft, join runway 03 downwind, report 5 miles.

- Air France request for 8501 stand T6 startup and pushback.

-The Queen Alia Airport maintains a height of 6000 feet. Expected to follow this approach. Runway 26 is initially maintained at 6000 feet.

However, ATC or the pilot can use complement clauses when switching to plain English as shown in (7) below:

(7). ATC: CIA, Thunderstorms moving around the airport on the north side. You are exactly at 5.3 NM. Report 3 miles.

-Tower, 8501 stand and startup inputs for six requests.

-We are blocking the taxiway. A visual inspection will be made by the copilot after we shut down the number one engine.

-Go ahead Pacific 328, we are at 5370 and on the way to our destination. We have been hearing unusually loud air noise in the cabin that appears to have been caused by some air leaking through an emergency exit.

8.1.2 The Pronoun Category in the Aviation Language Register

As with most other languages, in aviation registers only the first-person pronouns 'I' and 'we' are used, and no second-person pronouns are used.

Noun phrases (NP) are almost never referenced with a third person pronoun, such as 'traffic' in (8.b), and instead are repeated in full, such as 'traffic' in (32.c).

(8) a. Pilot: Pacific 328, Roger. Pan traffic is a Boeing 757 holding at Keilar at flight level 130, presently in your 12:00 o'clock position at 5 miles, crossing right to left for separation, turn right immediately heading 180.

b. ATC: Does it make sweet 28? Roger that. We have the traffic visual turning right to heading 180.

c. Pilot: * We have it visual turning right to heading 180.

In aviation language, pronouns are mostly absent, but there are roughly five types: 'you', 'I', 'one', 'we', and 'it'. Pilots' messages often include the pronoun 'we'. Controllers usually refer to themselves as "I" instead of "We". When controllers are unable to provide what pilots want or need, they often use the plural pronoun. In this way, they remind their interlocutors that the context of the conversation is not really up to them. In addition, controllers also use 'we' when referring to themselves as a team. The following are some examples of the pronouns “I” and "We" in both pilots' and controllers' messages:

1-C: I do confirm.

P: Roger, thank you. Lufthansa 42.

2-C: We already called the airport operation and they told us that the medical crew is going to.

P: OK. Thank you very much.

3-P: We are Boeing 7, three seven 300, Lufthansa 432.

C: Thank you.

Using pronouns in phraseology is another way to minimize individual speaker presence due to the human nature of communication (Kerbrat-Orecchioni, 1999, p.80). There is a key syntactic characteristic of this discourse (the removal of subject pronouns, determiners, and modals) that illustrates its objectivity. As a result, air-ground communications that include pronouns, determiners, modals or interrogatives tend to be more subjective. The use of pronouns emphasizes the subjectivity of specific speakers, irrespective of the norms imposed on them: they remind us that pilots and controllers are not machines.

8.1.3 Key Imperatives in the Aviation Language Register

In most cases, transmissions from ATC are imperative, either requests or instructions (Lopez, 2013). As a result, there will be no subject pronouns in aviation communication. In addition, pilot transmissions, which are often readbacks of ATC instructions, lack subject pronouns. There is an understanding that all verbs refer to pilots. In communications with ATC, pilots seldom use imperatives.

As shown below, 'SAY AGAIN' is understood as a question marker. In (8), pilots or ATC often use 'SAY AGAIN' rather than 'What did you say? '. (8) 'SAY AGAIN' Meaning: 'Repeat all or the following part of your last transmission.' (AIP, GEN 3.4, 4.13.1) (9) is an example of (8) from a flight simulator

(9) Pilot (P19): Say again the heading, CIA.

The phrase 'SAY AGAIN' serves as a question mark, while the phrase (9 implies the question 'What was the heading (you gave me)?' Instead of 'SAY AGAIN,' this phrase is sometimes used. A 'STAND BY' response, however, indicates that a station is too busy to respond. It is possible to interpret the transmission's words 'WORDS TWICE' either as information or as a request. In this context, it means communication may be difficult (in terms of requests). The same words or groups of words need to be sent twice. Furthermore, this phrase implies 'information.' Since communication is difficult, every word in this message must be accurate. It means 'Wait for me to contact you.' (AIP, GEN 3.4, 4.11.1). In the imperative 'REPORT', pilots are instructed to provide certain information to ATC, such as "Report passing Hamilton VOR". Command 'SAY ALTITUDE' determines a specific flight level/altitude. The pilot rounds to the nearest hundred feet when indicating altitude. ATC requests an aircraft's heading using the 'SAY HEADING' command. In the pilot's opinion, the aircraft is

actually heading in the right direction. It is used in verbal communication to request a slower speech rate by saying 'SPEAK SLOWER'.

8.1.4 The Question Categories in the Aviation Language Register

According to Moder (2013: 234), the regulations do not allow questions, but they specify the syntax of questions and the form of exchanges that constitute question-answer pairs. As illustrated in (10), (11), (12) and (13) below, formulaic questions are included in the phraseology.

(10) Pilot: Okay, and how can the engine fire be avoided? Can it be avoided?

As far as I know, it can be avoided, but I can only speak about modern aircraft types. This is a very old model. The fire and stagnation are things I don't know about.

-Is there anything that could happen next?

-Who signs off 432? We have slipped off taxiway B1. We are on the grass.

-In a situation like this, what airport services are alerted?

-Do you think this is a problem?

-9015 Can you please say again the exact location of the noise?

(11) The question is, 'HOW DO YOU READ?' Essentially, 'Can you read my transmission?'

(AIP, Gen 3.4, Sub 4.13.1).

(12) 'ARE YOU READY FOR IMMEDIATE DEPARTURE?' (AIP, GEN 3.4, 5.14.6)

(13) 'DO YOU WANT VECTORS?' (AIP, GEN 3.4, 5.14.3).

As a question marker, 'CONFIRM' functions as an imperative in (14). It is requested that the other station repeat an instruction or read back information. This phrase means 'Have I understood you correctly? Or 'Did you receive this message correctly?' (AIP GEN 3.4, 4.13.1). 'CONFIRM' is sometimes used by ATC as a verb to request an aircraft read back an incorrect readback in its ordinary context. In the pilot's case, the word 'CONFIRM' serves as a question marker, and there are no possible questions at that moment. Accordingly, 'CONFIRM' means a. 'to query something' (According to the AIP, standard aviation terminology). b. 'to rectify a mistake' (informally, plain English).

The use of questions is common in Pilot-ATC exchanges (Hinrich, 2008), whether they involve content questions (using Wh-words) or yes/no questions. In (14), the tower offered an alternative runway when the pilot reported a loss of power during the initial climb to ATC.

(14) A. Pilot: Tower Lufthansa 234. TLS. Change of intentions. Will turn downwind for Runway 22. Loss of power.

b. ATC: RUH understood. Do you want to take Runway 06?

According to example (15), ATC offers additional information to a pilot who has only requested one piece of information (the QNH, i.e., sea level barometric pressure).

(15) a. Pilot: Current Centre. Cherokee IMX. Request area QNH for area 25.

b. ATC: IMX. Area QNH for area 25 is 1018. Do you want amended winds for the area?

Nevertheless, pilots outside controlled airspace (OCTA) can talk to each other without getting through ATC, and there are many examples of questions in plain English.

8.1.5 The Negation Categories in the Aviation Language Register

In (16) below, a negative construction indicates an unexpected situation in which ATC, or the pilot cannot fulfill a request. Whenever a negation is necessary, the English words 'no' and 'not' must be avoided. Due to their shortness and phonological weakness, these words can be misunderstood and can cause serious misunderstandings when transmitted. In (16.b), as opposed to conveying a negative answer, the term 'NEGATIVE' conveys a negative statement followed by a corrective statement.

(16) a. pilot: Lufthansa 42 negative at the moment. We will call you back in a minute.

b. ATC: Negative at the moment.

c. Pilot: *No, that's negative at the moment.

This rule, however, does have a few exceptions. Despite the fact that the phrases in (17) consist of the words "no" and "not," the regulations recommend them.

(17) a. 'CLEARANCE NOT AVAILABLE.' (AIP, GEN 3.4, 5.10)

b. 'NO DELAY EXPECTED.' (AIP, GEN 3.4, 5.12)

Conversely, an affirmative response starts with 'AFFIRM', emphasizing the first syllable, not 'YES', which can be misconstrued (Moder, 2013). Philps (1991) described phraseology as a two-system system combining structural and referential systems shared by speakers within and outside the domain (ATC). From a syntactic perspective, in aviation language register norms and rules, grammatical elements such as determiners, auxiliary verbs, coordinators, complementizers are omitted or deleted. Although grammatical words, mostly prepositions, are included. ATC messages have rigid syntax that takes into account the small semantic contribution of omitted elements, so there is no greater potential for miscommunication.

9. The Lexical Categories in the Aviation Language Register

The purpose of this section is to explore the lexical content of verbs, nouns, adjectives, and adverbs. A limited vocabulary is available for verbs, nouns, adjectives, and adverbs within each of the four lexical categories. In the ICAO Manuals and the AIP, along with proper names, this vocabulary is detailed, except for those found in more specialized documents like

aeronautical charts. In addition, it provides methods for expressing different units of measurement, time, and the well-known 'Clock Code'. In this section, the most salient items in each lexical category are presented with examples of their use within context.

There are five lexical categories in English: Noun, Verb, Adjective, Adverb, and Preposition. Meaning is conveyed through words, and they often share a similar (synonymous) or opposite meaning (antonymous). In most cases, the noun refers to a person, place, or thing, while the verb refers to an action or event. The following are examples of these sentences: "Cleared to land, Report when ready, Say your rate of climb, Request a low pass, Heading is good". (The ICAO Manual on Implementing Language Proficiency Requirements: 3.10).

9.1. Nouns and proper names in the Aviation Language Register

There is an extensive list of nouns in the ICAO Manuals and the AIP. Place names and location designators are included in nouns, however, so they are more comprehensive than verbs. Location designators and proper names can be found on various aviation charts and aeronautical publications, including the ERSA (En Route Supplement Australia) and the DERS (Digital En Route Supplement USA). There are three water reservoirs in the area: Mayfield Lake, Prospect Reservoir, and Warragamba Dam. According to Appendix B to the Manual on Implementing B-5 ICAO Language

Proficiency Requirements, Table (3) illustrates examples of nouns for events and domains.

Nouns of Events and Domains	Related Meanings
Airmiss(es)	Regulations for air traffic; flight paths/trajectories; speed; distance/range; aircraft characteristics; position.
Air shows	Detailed information about traffic, acrobatics, formation flights, and procedures.
Approach delays	CAT 3; all-weather landing; holding instructions; holding procedures; aerodrome circuit; endurance; diversion/alternate; necessary conditions..
Belly landing	Manoeuvres attempted; lights status; visual check (low pass); landing gear position; endurance, fuel remaining, fuel dumping/jettisoning; speed; traffic information; runway state; aerodrome environment; airport installations; emergency evacuation (emergency slides/escape chutes, etc.); fire risk; damage; ground services.
Bomb threat/alert/scare	Passengers disembarking; diverting; identifying baggage; dumping/dumping; aircraft interior; crew actions/behavior; ground services; airport installations.

Table 3: illustrates examples of nouns for events and domains.

9.2. Call-signs and mistaken identities in the Aviation Language Register

Ground stations and airplanes are assigned unique identifiers. General aviation call-signs in Australia generally consist of three letters (e.g. RUH) or four digits (e.g. 4083). In other countries, digits are used in the USA, while letters are used in Europe. Designators assigned to commercial airlines don't identify aircraft; rather, they identify the flight (e.g. AV052).

According to the same principle, each station has only one designator. There is widespread recognition that confusion over call-signs is a major cause of errors despite the phonetic alphabet and specific pronunciation of letters and numbers (ATSB, 2009; EUROCONTROL, 2006).

The call-signs used by pilots, and less commonly by ATC, can be incorrect (e.g., Incorporate the terms 'Control Tower' and 'Control Ground' instead of 'Control Ground' and 'EPU' in place of 'APU'. Occasionally, pilots mistakenly identify themselves with the wrong designator. In the case of pilots using the wrong call-sign before landing, the phraseology does not address it, this lead to creative comments in plain English. In (18), the pilot operates the same type of aircraft during the day (circuit training) under the call-sign of the previous aircraft.

(18) a. Pilot: That's 573, Roger, downwind touch and go.

b. ATC: That's 573, Roger, Is that really who you are?

c. Pilot: … actually, 432 Roger.

9.3. Verb Categories in the Aviation Language Register

This phraseology register as norms and rules (ICAO Manuals and AIP) contains too many verbs to list them all. A large number of them appear in the examples given, including 'climb', 'descend', and 'maintain'. There are several more that need to be discussed on their own because they may cause confusion. There is a difference between 'REQUEST' and

'REQUIRE', for example. In (19), 'REQUEST' may convey an information request.

(19) 'REQUEST' means: 'I wish to know or obtain something.' (AIP, GEN 3.4, 4.13.1)

(19) a. Pilot: Kevin Grant, 21, uh, grabbed rent by 5 on July 1. Request taxi instruction.

The term 'REQUEST' can also indicate a preference for a particular runway, as in:

(19.b), Pilot: 506 request taxi.

ATC: 506 taxi to holding point, Runway 27 left via taxiway A1 give way to the 747.

It is clear from (20) that 'REQUIRE' is not subject to denial by ATC, unlike 'REQUEST,' which can be denied:

(20) 'REQUIRE' means: Pilots must inform ATC if they are required to execute a particular turn or circuit for the safety of the aircraft. (AIP, ENR 1.1, 4.7)

As (20) shows, the term 'REQUIRE' is used by a pilot if crosswinds on the runway exceed the aircraft's capabilities or what the crew is physically capable of dealing with safely. This request cannot be denied by ATC so long as the pilot in command considers it an operational requirement. Although, it may cast doubt on the pilot's judgement if it results in conflict that could have been avoided. The phraseology is carefully worded to avoid misunderstandings. When ATC uses the verb 'EXPEDITE,' it conveys that an instruction must be followed as quickly as possible.

9.4. Adjective Categories in the Aviation Language Register

There are very few adjectives in aviation phraseology. Two key terms are 'CLEAR' and 'UNABLE'. According to the definition, 'UNABLE' implies an inability to comply. The meaning of 'CLEAR' is somewhat ambiguous, as in 'Clear to Land'. This contrasts with its meteorological meaning in 'SKY CLEAR' to indicate there are no clouds. There will probably be no confusion in practice due to this ambiguity. The adjective 'VISUAL' also seems unambiguous and requires explanation in (21).

(21) "CLEARED VISUAL APPROACH" Meaning: after visualizing the runway, descend to circuit height at your discretion. There are many cases in which 'visual' is opposed to 'instrument', for instance, 'Visual Flight Rules' (VFR) against 'Instrument Flight Rules' (IFR). In (21) 'VISUAL' does not modify the noun 'approach'; the clearance is used at Class D aerodromes to allow pilots to decide when to descend. Due to this, they are instructed to descend immediately, even if there is no runway to be seen. (22 and 23) illustrate the contrast between the two adjectives 'EARLY' and 'LATE', which, unlike 'MID', refer to positions on one of the legs of the circuit pattern (i.e., Downwind, Base, or Final); they also stand out from one another.

(22) a. ATC: 3123 current tower continues approach. Expect late landing clearance.

b. Pilot: Roger expected late landing clearance 123.

(23) a. Pilot: LSI, Downwind runway 24.

Pilot: Early to say lift via takes away A1.

b. ATC: Midland 178, Roger, Follow the Citabria mid-downwind.

9.5. Adverb Categories in the Aviation Language Register

Through aviation language, few adverbs express modification. In both (25 and 26), the most salient adverb is 'IMMEDIATELY', 'STOP IMMEDIATELY'. In an emergency, stop your flight immediately. An imminent danger is indicated by this command (AIP, Chapter 3.4, Section 5.14.6,

37).

(24) 'TAKE OFF IMMEDIATELY OR VACATE RUNWAY.' if clearance has not been given (AIP, GEN 3.4, 5.14.6).

As in (P. 196), Philips (1991) fronts 'immediately' in an attempt to convey an urgency to the pilot, which is contrary to 'natural' English where such fronting does not occur. Phillips (1991) suggests that the instructions themselves were justified before the justification was expressed.

(25) 'IMMEDIATELY TURN (in the direction of the HEADING (degrees).' (AIP, GEN 3.4, 6.15.1)

9.6. Prepositions Categories in the Aviation Language Register

There are a number of prepositions included in standard phraseology norms and rules such as

'FROM', 'TO', 'ON', 'THROUGH', 'IN', 'THROUGHPAST', 'BY', 'BY AFTER'. The following examples are listed in (26).

(26) a. 'UH-506 On point Runway 27 left request LINE UP.'

b. '6000 feet and it's a minimum and roads safety altitude is ABOVE 11,000,'

c. '506 you are CLEARED FOR departure to.

d. '506 taxi TO holding point, Runway 27 left VIA taxiway A1 GIVE WAY TO the 747. (AIP, GEN 3.4, 5.14)

In natural English, a preposition like 'TO' is often omitted because it might be confused with 'two' (and perhaps with the adverb 'too'). Air traffic controllers and pilots use it despite ICAO manuals and AIPs prohibiting it (27.a).

(27) a. *Climb to 4600.

b. Climb 4600.

c. Climb to Flight Level 80

It is incorrect to use (28.a) since the QRNH uses barometric pressure at sea level to measure altitudes in feet. The use of 'TO' before 'Flight Level' is also allowed when measuring altitudes based on standard atmospheric sea level pressure (28.c). Additionally, when pilots are "calling downwind" (i.e., on the approach to landing), it is discouraged to use the word

"FOR" between the runway number and the number, as in (28.a).

(28) a. Pilot: EgyptAir 384. Downwind for Runway 12. Touch and Go.

b. Pilot: EgyptAir 384. Downwind Runway 24. Touch and Go.

Finally, it is worth pointing out that "Over and out" is often heard on the radio and thought to be a register expression as in (29).

(29) a. 'OVER': This means the pilot finished the transmission and looking forward to the response. (VHF communications do not usually use this frequency).

b. 'In VHF communications, 'OUT' means that my transmission has ended and I do not expect a response from you (AIP GEN 3.4, 4.13.1).

Language norms and rules of aviation communication register emphasize the importance of lexical items and phrases. According to Estival and Molesworth (2012), pilots are trained in R/T (radio-telephony) procedures, including how to use calls and readbacks, because they have long been standardized - to varying degrees in different countries. In addition, it provides specified methods for expressing time, units of measure, and the well-known 'Clock Code'. A summary of the most salient lexical categories is presented in this section along with examples of contextual usage.

9.7. Expressions of time and Clock Code Categories in the Aviation Language Register

Aviation time is expressed in UTC, the same time as Greenwich Mean Time (GMT). UTC is used to express flight plans, weather forecasts, arrival and departure times, avoiding time zone confusion. UTC is denoted by ZULU, which is one of 24 time zones around the world. According to (30.b), Bankstown (YSBK) weather forecasts (TAF = Terminal Area Forecast) have a date and time format.

(30) a. TAF YSBK 062257Z 0700/0712

b. based on the ZULU time zone (i.e. UTC), the Bankstown Terminal Area Forecast is valid from 07 (day) 00 (hour) to 07 (day) 12 (hour). Two 4-digit time groups indicate the validity period, while a 6-digit date-time group indicates the creation time (062257Z). To read or give these over the radio, it is pronounced as in (31).

(31) a. 0401: zero four zero one

b. 0392: zero tree niner two

The hour, however, is understood to be the current hour in most radio communications. (31.a) indicates the estimated time of arrival at Goulburn as 'four two', e.g., 04:42. (31.b) shows the arrival time as a two-digit number (pronounced "zero two"). (31) a. Goulburn traffic. LSI 10 nautical miles (NM) NM to the East, 5500. Expect overhead at 42.

b. Carborne traffic. CIA 10 NM to the West, 4400. Expect overhead at 07.

In logbooks, pilots record the time of flight, while aircraft maintenance documents display the engine time in decimal form, with one tenth of an hour equaling six minutes. Therefore, 3.6 hours means '3 hours and 36 minutes', while .5 hours means 'half an hour' or '30 minutes'. In this process, there is sometimes a lack of transparency. For those who have watched action movies or war films, the 'clock code' may become familiar. The image resembles a traditional clock face with numbers around a circle, expressing relative position rather than time. Therefore, 'at 2 o'clock' refers to '60 degrees to the right', and 'at 9 o'clock' refers to '90 degrees to the left'. Pilots use digital watches as a reference.

10. Grammatical Categories in the Aviation Language Register

Determiners and auxiliaries are two features of the grammatical categories regardless of coordinators and complementizers. According to aviation language norms and rules, they are very few. The purpose of these structures is to tie together the lexical categories.

10.1. Determiner Categories in the Aviation Language Register

As a matter of aviation language, determiners are usually omitted with the exception of a few instances of 'the' in prescribed forms (32.a,b). To be consistent with the norms and rules of phraseology, the specific determiners to be used are 'OWN' and 'THIS'.

(32) a. 'Juliet contacted our OWN 118 decimal one over.'

b. ‘OK, THIS aircraft approaching to the airport then into the cloud.

10.2. Auxiliary and Modal Verb Categories in the Aviation Language Register

In the phraseology, auxiliary verbs and modal verbs are excluded. 'UNABLE TO COMPLY' is used by the crew to explain why they cannot adhere to an instruction in (33).

(33) Another aircraft was also blocked from communicating with the terminal as it vacated the runway, but second arriving traffic was able to continue determining their stance on taxiways Charlie and B2.

However, modal verbs are also used in plain English communications as well. (34.a) below shows how the pilot uses 'will' to inform ATC he will return to the airfield if he loses power shortly after takeoff.

(34) a. Pilot: 2687 Roger, you heading will be 065.

There are also modal verbs that can be used for mitigation and politeness (Hinrich, 2008; Moder, 2013; Sanne,1999).

11. Phonological level, Pronunciation and Numerical Values in the Aviation Language Register

In aviation language, the International Phonetic Alphabet (IPA) plays an instrumental role. Using this system, each letter of the alphabet will have an unambiguous word. Moreover, the regulations specify both the pronunciation and the placement of stress to avoid ambiguous pronunciations. In (35), stressed syllables are given in uppercase.

(35) According to radiotelephony (AIP, GEN 3.4, 4.9.1), the Phonetic Alphabet is pronounced as follows in table (5):

The Phonetic Alphabet	English phonemes	Pronunciation	The Phonetic Alphabet	English phonemes	Pronunciation
A	ALFA	ˈælfə	B	BRAVO	bɹˈɑːvo͡ʊ
C	CHARLIE	t͡ʃˈɑːɹli	D	DELTA	dˈɛltə
E	ECHO	ˈɛko͡ʊ	F	FOXTROT	fˈɑːkstɹɑːt
G	GOLF	gˈɑːlf	H	HOTEL	ho͡ʊtˈɛl
I	INDIA	ˈɪndiə	J	JULIETT	d͡ʒˌuːlɪˈɛt
K	KILO	kˈiːlo͡ʊ	L	LIMA	lˈiːmɐ
M	MIKE	mˈaɪk	N	NOVEMBER	no͡ʊvˈɛmbɚ
O	OSCAR	ˈɑːskɚ	P	PAPA	pˈɑːpə
Q	QUEBEC	kwɬbˈɛk	R	ROMEO	ɹˈo͡ʊmɪˌo͡ʊ
S	SIERRA	siːˈɛɹə	T	TANGO	tˈæŋgo͡ʊ
U	UNIFORM	jˈuːnɪfˌɔːɹm	V	VICTOR	vˈɪktɚ
W	WHISKY	wˈɪski	X	X-RAY	ˈɛks-ɹˈe͡ɪ
Y	YANKEE	jˈæŋkiː	Z	ZULU	zˈuːluː

Table 5: the Phonetic Alphabet used in Aviation Phraseology Register

In order to minimize the possibility of confusion, certain sounds, such as those represented by the letters 'M' and 'N', 'B' and 'P', 'S' and 'TH', 'TH' and 'T', and 'F'/'N', are pronounced in different ways. The following three examples are included in (34):

(36) A. The words 'five' and 'nine' are pronounced as 'fife' and 'niner', respectively

B. The word 'three' is pronounced as 'tree'

C. The word 'thousand' is pronounced as 'tousand'

As illustrated in table (6) below, numbers and their pronunciation are particularly significant to avoid confusion that could have disastrous consequences.

Number	Pronunciation	Number	Pronunciation	Number	Pronunciation
0	zˈɪəɹo͡ʊ	5	fˈa͡ɪf	Decimal	dˈɛsɪmə͡l
1	wˈʌn	6	sˈɪks	Hundred	hˈʌndɹɪd
2	tˈuː	7	sˈɛvən	Thousand	tˈa͡ʊsænd
3	tɹˈiː	8	ˈe͡ɪt		
4	fˈo͡ːɹ	9	nˈa͡ɪnɚ		

Table 6: Illustrates Numbers and their Pronunciation in Aviation Phraseology Register.

12. Conclusion

The language of the aviation register is peculiar and crucial to those in the aviation profession. Because it contains abbreviations and numbers, it is technical in nature. Professionals themselves may not understand the importance of learning the aviation register. There is an increasing link between aviation registers and general languages. The purpose of this is, among other things, to enhance the credibility of information. There is no attempt here to make the non-professional understand vocabulary at a level equivalent to the professional. It is rather a recognition of this

register's diffusion into everyday speech. There is therefore an increasing understanding of aviation lexical items that have a significant impact on daily life as a result of this growth.

As a result of this study, it appears that there is a general pattern of linguistic analysis dominated by nouns, verbs, and prepositions. Radiotelephony uses natural language, which introduces subjectivity into air-ground communication. Furthermore, there are distinct grammatical and syntactic categories, semantics, phonology, and phonetics. ATC controllers and pilots use the aviation language differently in these examples. The results of this study suggest that standard phraseology and its practical uses can be used effectively in air traffic control. ICAO's language proficiency requirements can be met by preparing controllers and pilots to deal with a variety of languages.

For a particular subdomain of international transportation, aviation language norms and rules govern the whole world of aviation. Specifically, it belongs to the aviation language family. A linguistic perspective is employed to describe aviation register from a discourse to a phonological viewpoint. There are examples of natural radio communications as well as phraseology from the AIP. In addition to ICAO manuals and AIPs, aviation language extends beyond those documents. Aviation languages include rules for turn-taking and pronunciation, as well as examples

of plain language being used to describe problematic situations and when appropriate phrasing is unavailable.

Finally, it is obvious that all air-ground environments adhere to the meanings of certain special registers in aviation discourse. As a result, these standards and rules interfere with the process of communication. This can lead to fatal accidents in the air or ground, as well as problems with ATC commands. ATC communication errors, procedural checklist errors, and radio errors are three of the most common types of errors caused by not following these rules.

In the absence of aviation norms and rules registers, the ATSB (2009, p. 3) lists the following threats to aviation safety:

The ATSB recommends pilots follow the following recommendations in this context: Along with its recommendations relating to ATC/communications, the ATSB also recommends pilots follow Regarding radio congestion, similar call signs, and pilot-to-pilot communications, the following recommendations are made.

-ATCs and pilots can communicate more effectively if they follow these tips:

-Use the correct terminology

-Communicate when the cockpit is not distracted

-Be clear and slow in your speech

Get feedback if needed.

There are goals for the ICAO organization. Consequently, procedures, norms, rules, and regulations are more important to enable it to accomplish its goals. In this way, the ICAO ends up hoarding more information than it is actually allowed to divulge because it strictly adheres to procedures, norms, rules, and regulations. This study concludes that phraseology of aviation register differs from plain language used for everyday communication in the following ways: 1. Controllers' messages are omnipresent in the imperative form 2. Forms of interrogation and negation are rare. 3. Modals are almost nonexistent. 4. Prepositions, subject pronouns, and determiners are deleted 5. Delete the auxiliary verbs (be and have) in the forms (be + past participle), (be + –ing), and (have + past participle). 6. Verbs are nominalized 7. Lexicon that is highly specialized, univocal, and finite. 8. The alphabet is specifically designed for aeronautical use. 9. Numbers are spelled and pronounced differently than in conversational speech in order to prevent misunderstandings. 10. Metaphors, humour, politeness, and figures of speech cannot be expressed in aviation register.

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