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A HISTORICAL AND LINGUISTIC PERSPECTIVE OF AVIATION ENGLISH —AVIATION PHRASEOLOGY

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Introduction: Aviation English, as a specialised subset of English for Specific Purposes, is designed to ensure clear standardised communication in the international aviation context. Unlike General English, which serves broad communicative purposes, Aviation English operates under strict ICAO (International Civil Aviation Organisation) standards to mitigate risks stemming from linguistic misunderstandings in high-stakes environments.

Aim: The research aims to describe the key linguistic features of Aviation English, compare them with those of General English, and present a case study of a real-world aviation incident examined through the framework of Aviation English.

Materials and Methods: The paper uses descriptive methods to outline characteristics of Aviation English, primarily based on ICAO Document 9835. A comparative approach is used to contrast Aviation English with General English. Chapter "Wing-clipping incident, Changi airport, Singapore" adopts an empirical approach by analysing a real-life aviation incident. This case study examines over-reliance on automated and semi-automated technical systems and the need for verbal interaction to complement technical systems.

Results: Aviation English exhibits strong reliance on standardised phraseology, contrasting sharply with the flexibility of General English. It also shows simplified syntax, fixed phraseology, and places emphasis on clarity and conciseness in communication. To the author's knowledge, the "Wing-clipping incident, Changi airport, Singapore" chapter, a real-life incident at Changi airport in Singapore in 2017, represents the first investigation of the incident within the Aviation English context.

Conclusion: Aviation English shares its basic structure with General English, but it is deliberately constructed so that it promotes safety and efficiency in aviation. The real-life incident shows that excessive reliance on technical systems, without adequate verbal communication, can cause serious failures. This concludes the essential role of standardised Aviation English in complementing the technical systems.

Keywords: aviation; Aviation English; ICAO phraseology; safety; effectiveness; air traffic safety

INTRODUCTION

Over the past decades, there has been a dramatic increase in commercial flights. Commercial aviation is an extremely important component of the world's economic ecosystem. A personal, firsthand experience of effective communication in ensuring safe operational success has inspired the concept of linking language studies to aviation. This experience has deepened the author's appreciation for Aviation English (AE) and its evolution over time. This paper's task is not to provide complex linguistic analyses, but merely to give a historic and general overview of Aviation English standardised phraseology, in addition to a short analysis of a particular incident caused by the lack of verbalisation of phrase-

ology. Phraseology in linguistic studies analyses the structural and functional patterns of fixed phrases, idioms, and collocations. Conversely, standardised phraseology in Aviation English consists of a meticulously regulated collection of terms and phrases aimed at reducing ambiguity and efficient communication between pilots and air traffic controllers. The paper explores the latter. In the first part of the paper, the aim is to describe the first means of communication, codes in aeronautics, and then to introduce the international governing bodies and their history. In the second part of the paper, we will examine the development and implementation of standardised Aviation English phraseology, and lastly, discuss the Singapore incident. Overall, this paper intends to add to the larger discussion of specialised languages and their role in high-stakes environments.

LITERATURE OVERVIEW

To analyse the circumstances that led to the emergence of standardisation of AE and Aviation Phraseology (AP), we must look at the literature covering the historical, technological, and linguistic factors. Collectively, these sources offer a thorough overview of the evolution of AE and its significance in facilitating safe and effective air traffic management. Articles from "*Scientific American Magazine*" (1920) give us an overview of the historical circumstances of the beginnings of civil commercial aviation in the United States and Europe. Moser and Dreher (1955) performed important research on military alphabets. Their research established a solid basis for today's ICAO phonetic alphabet in use. Dobson (2017) offers an overview of the technological development in the "History of International Civil Aviation from its Origins through Transformative Evolution". Dobson (2017) also covers well the aviation challenge factors between the two wars. In Mackenzie's (2010) "ICAO: A History of the International Civil Organization", we discover numerous pieces of information concerning the governing bodies and significant events. Linguistic research has played a critical role in shaping Aviation English and aviation in general. Jovanović (2008) gives an overview of general definitions, which will be mentioned only in relation to AE. The linguistic dimensions of Aviation English have been particularly well-explored by researchers such as Moser and Dreher (1955), Estival et al. (2016), all of whom contributed to our wider understanding of aviation communication. Specifically, English used by the Air Traffic Control (ATC) has been well documented in analyses of Sumby (1960) and Ragan (1996), giving us primary examples of technical Aviation English being used as a specialised category of a sub-language.

HISTORICAL DEVELOPMENT

The necessity for an international organisation in commercial aviation has existed since aviation's inception (Mackenzie, 2010: 13). One of the important early mentions can be traced to the private society of jurists known as the "*Institut de Droit International*"[1], who met in Oxford in 1880 to debate aviation concerns. During World War I, aircraft manufacturers worldwide encountered a severe lack of financial resources, leaving the military sector as the only viable market during this period. (Morrow, 1993: 40). Technological advancements were made, as radio equipment was used inside the aircraft during the war. (Johnson, 1920: 3) At the Paris Peace Conference in 1919, the French government established an Aeronautical Commission that successfully set up two important initiatives — the International Air Navigation Convention (Paris Convention) and the International Commission for Air Navigation (ICAN) — to regulate and oversee postwar international commercial aviation. (Mackenzie, 2010: 14). Civil commercial aviation, in the period between the two world wars, faced three challenges: technological obstacles in

1 Institute of International Law

developing reliable aircraft and navigation systems, commercial difficulties in achieving financial sustainability for airlines, and political and governance challenges that infiltrated all facets of the sector. (Dobson, 2017: 17) In the United States, the lack of government support, according to Gaulois (Gaulois, 1920: 215, 230, 232), delayed progress, while Europe advanced in passenger, cargo, and postal services. (ibid.) The current structure of international civil aviation originates from the Chicago Conference, held on December 7, 1944, at the end of World War II. As a result, there were 52 nations as signatories of the Convention of International Civil Aviation, which led to the establishment of the International Civil Aviation Organization (ICAO) in 1947. (Farris, 2016: 55) The ICAO's primary goal is to produce worldwide Standards and Recommended Practices (SARPs) that will serve as a framework for civil aviation authorities to develop their rules and regulations. (Ibid.) One of the significant developments for aviation towards the end of World War II, apart from the formation of ICAO, was the rise of English as a lingua franca. (Gil, 2022: 100) This, as Gil (ibid.) states, is due to the historical and ongoing power and influence of Britain and the United States, respectively. (ibid.)

From the late 20th century to the present, aviation has undergone rapid technological advancements, with jet-powered aircraft like Boeing 707, Douglas DC-8, and Concorde revolutionising the industry. (Smith, 1989: xi) The next period of years, particularly from 1970 to the early 2000s, saw an increasing number of aviation accidents, many of which were due to an inadequate level of English language proficiency. The implications of this for the AE standardised phraseology shall be further elaborated in the Standardisation section of the next chapter.

STANDARDISATION

There is a growing body of literature that recognises the importance of English proficiency as a major factor in aviation. As Moder (Moder, 2013: 227) describes, Aviation English (AE) is the language used by the flight deck (FD)[2], air traffic controllers (ATC), and other professionals within the aviation industry. Moder (ibid.) further clarifies that AE is referred to as a radiotelephony language used in communication, specifically between the flight deck and air traffic controllers.

Similarly, Read and Knoch (2009: 21.2) recognise the fact that radiotelephony is the primary means of communication between the two, both in the air and on the ground. In addition, Read and Knoch (ibid.) state that in the late 1990s, accident analyses conducted by experts and reviewed by ICAO identified poor English-language proficiency as a significant contributing factor in a number of serious aviation incidents. It was not until, as Farris (Farris, 2016: 56) states, the 1998 ICAO Assembly, that the issue of English language ability was highlighted as one of the main factors in aviation safety. The result was the adoption of 28 resolutions regarding the safety and other issues of international civil aviation. (ICAO, 1998: 1) As Matthews (Matthews, 2020: 36) underlined, the Assembly prioritised the resolution by marking it a high-priority and putting more responsibility on the ICAO Council to resolve the issue, which would be done by devoting the appropriate resources. (ibid.)

In addition, due to a growing recognition of the significance of English language ability among pilots and air traffic controllers for the safety of aircraft, crew, and passengers, ICAO has established a set of language proficiency criteria (LPRs). This serves as a reference to an ICAO language competency scale, which provides minimum criteria for the language ability of air traffic controllers and pilots. (Alderson, 2009: 172). Hence, to effectively interact with English speakers from different countries, pilots, air traffic controllers, ground

2 Flight Deck refers to pilots

personnel, or other aviation professionals are expected to recognise and use words unique to their line of work. (Paltridge & Starfield, 2013: 2). English language proficiency (ELP) is graded by the European Union Aviation Safety Agency (EASA) as follows: Expert – Level 6; Extended – Level 5; Operational – Level 4. (CAE Oxford Aviation Academy ATPL, 2014: 542) The ICAO Operational Level 4, being the minimum accepted level, requires pilots and air traffic controllers to demonstrate clear pronunciation, fluency and vocabulary for work-related communication. (Moder, 2013: 228)

As for the other linguistic characteristics of aviation communication, it is important to mention that English is not the only language used and that Aviation English, using the standardised phraseology, is not the only means of communication among air traffic controllers. (Ragan, 1996: 35) As for the latter, Moder (Moder, 2013: 229) states aviation experts refer to "plain English" as the use of more ordinary English terminology and syntax, which is mentioned but not presented in much detail in the ICAO's Document 4444 Air Traffic Management, ICAO Document 9432 (ICAO, 2001). The rules state that plain language is to be used "only when standardised phraseology cannot serve an intended transmission" (ICAO Annex 10, Volume II, 5.1.1.1) and Manual of Radiotelephony (2007) adds that plain English phraseology is to be used in the same manner: "clearly, concisely and unambiguously." An example of such an instance of plain English use is noted in ICAO's Document 9835 as:

> "Pilot: "... I have, I have a request. Our patient is a victim of an automobile accident. Requesting immediate orthopaedic surgery for her severe condition. Do you know from our route of flight, as per our flight plan of any fields in name of (country) in the event of ... that we may divert into, where medical crews can meet the aircraft, with transportation by ambulance and immediate transport to surgery? We would like a request, of names of fields along our route of flight shortest distance from our positions along our continued route if you could please ask; we are not requesting a diversion at this time. However if it is approved by our controlling air force we'll then be requesting this diversion. How do you copy sir?"
> (ICAO 9835 document, 2010, Chapter 3, 3.3, 3.3.15)

CORE FEATURES OF AVIATION PHRASEOLOGY

Knowledge of the standardised ICAO phraseology is essential. (ICAO, 2001) In this subsection, we shall single out the alphabet, numbers, and distress/urgency signals, parallel with GE. As to what we mean by aviation phraseology, let us demonstrate how a speaker of GE, lacking a specific understanding of AE phraseology, might struggle to understand the following:

> "Delta ten nineteen, twelve miles south of the marker heading three two zero (,) maintain four thousand till established (,) one nine zero knots to the outer marker (,) cleared I-L-S approach runway three five right" (FAA Manual)

While an NNS and especially an NS recognise the words and numbers, when taken as a whole, it is difficult for them to deduce the meaning. This is because aviation phraseology relies heavily on the specific, technical structures, abbreviations, and procedural knowledge. This specific knowledge is not a common occurrence in everyday use of language. For instance, phrases such as "maintain four thousand till established" or "cleared for I-L-S approach" pose difficulty in interpretation without prior knowledge of aviation procedural phraseology. These phrases are deeply embedded in the specialised style of lexicon, which is tied to aviation communication.

Conciseness

The language of standardised aviation phraseology requires conciseness. Concise information is constantly seen in the communication of ATC and FD. We shall provide the following examples to further affirm our arguments:

> a) "Hold position" b) "Maintain 250 knots" c) "Cleared for takeoff" (Estival, et al., 2016)

The example a) is an instruction given by the ATC to stop immediately, b) is an utterance focusing solely on the speed restriction, and c) focuses only on the clearance for takeoff. We see here in the example c), how the information does not have any additional syntactic markers, e.g., pronouns "*you* are cleared for takeoff". We might say that no other syntactic feature is so little found in the AE phraseology as a pronoun. The rules of pronouns are a rare occasion in AE, according to Estival (Estival, 2016: 37), as the noun phrase (NP) is almost always repeated as it is. (ibid.)

Phonetic Alphabet

Phonetic alphabets have had a longstanding role in voice communication since their early introductions as naval flag identification. (IMO, 2005) The US-UK Able-Baker-Charlie alphabet, mainly used by the military and initially adopted by the International Telecommunication Union (ITU) in 1927, was later modified by the ICAN. Research by Moser and Dreher (1955) demonstrated that the ICAO alphabet was better suited, especially taking into account the non-native speakers. This led to ICAO alphabet adoption in 1956 (A-Alpha, B-Bravo, C-Charlie...) and continued to be in use for both maritime and aeronautical communication. (Estival, et al., 2016: 4) In contrast to GE, the pronunciation of the letter "A", using the Latin alphabet pronunciation is /AL-fah/, for "B" is /BRAH-voh/, "C" / CHAR-lee/ or /SHAR LEE/. The use of the phonetic alphabet in AE is primarily used for taxiway designations. An example: "continue on 31L K E" – "continue on three one left, kilo echo".

Distress / Urgency

According to the ICAO's Manual of Radiotelephony (2007), we are to differentiate between distress and urgency as follows: the latter denotes a situation involving the safety of an aircraft or individuals that, although critical, does not require immediate intervention, while the former refers to a state being under imminent threat and needing immediate assistance. The connection between the signals of distress, emergency call procedures, and restrictions on letter combinations in aircraft registration markings is further elaborated in Chapter Four of the Oxford Aviation Academy book. (CAE Oxford 2014: 64, 4, 4.5) The text explains that certain letter combinations for aircraft registration markings are forbidden to avoid conflicts with internationally standardised and recognised abbreviations like "PAN" or "Q" codes, i.e., "QNH", "QRT", "QUG", among others. All of which are integral to aeronautical communication. (ibid.) As per the ICAO manual, in case of an emergency, the code "MAYDAY" is to be said three times at the start of the call: "MAYDAY, MAYDAY, MAYDAY" and the pilots have to deliver it in the calmest manner possible and "maintain an even rate of speech not exceeding 100 words per minute". (ICAO, 2001) According to "ICAO Manual on the Implementation of ICAO Language Proficiency" (ICAO, 2010), when these types of situations arise, it is natural to turn to plain English use. An example of it is found in:

> ATC: You will let me know about your intentions for the main landing gear?
> Pilot: UD Wilco. We'll try to let the gear down again and if it remains up and I'm unable to

release the nose gear then we'll land with all three up.
ATC: Roger. So if you wish you may come for a go around and visual check of your landing gear.
Pilot: Okay, Roger.
ATC: UD have you got the field in sight?
Pilot: UD Affirm.
ATC: Roger. You will ... you will pass over the field and make a low pass over the runway 29 for landing gear check. (ICAO Manual on the Implementation of ICAO Language Proficiency, 3, 3.3.19) Numbers

When we talk about numbers in AE, the rules state that each digit needs to be pronounced separately, like in an example of "FL 350", it will read as: "flight level three five zero". The exception to this rule, as per ICAO (2007: 2, 2.4.3), is examples of "transmission of altitude, cloud height, visibility and runway visual range (RVR)[3] information". In the RVR information example of "1 700", it will be transmitted as "RVR one thousand seven hundred". (ibid.) Another example is when a transmission holds information on the altitude, e.g., "12,000", it will be transmitted as "one two thousand". (ibid.) This brings us to the 2006 survey of a group of 344 pilots and air traffic controllers, according to Wever et al. (2006: 82), in which participants recommended the pronunciation of call signs[4] in blocks as in "six twenty-one" (ibid.) Additionally, and all in the attempt of avoiding miscommunication, the use of "niner" instead of "nine" when pronouncing the number nine has been chosen as the standard. It stems from the observation of the use of the German word "nein", which in English means "no" and could be a source of dangerous miscommunication. (Tajima, 2004: 13) A notable difference between ICAO and the Federal Aviation Administration's rules (FAA)[5] lies in the difference between the pronunciation of the decimal points in radio frequencies. When giving the radio frequency, which contains a decimal point "." as per ICAO rules, it is to be pronounced "DECIMAL", while FAA rules assign "POINT" as a rule of pronunciation.

Order of information

We shall list a couple of examples regarding the importance of information order in AE. When there is a critical instruction to be given, it is given first, and the context in which it is given comes second: e.g., "Hold position, Runway 27 in use". (ICAO, Doc 9432) Next, we can see how the priority clearance for takeoff is given, followed by the additional important information: "Cleared for takeoff, caution wake turbulence". (Ibid.) Or in the following example of "Turn right heading 090, maintain 3,000 feet", we see how the heading change is prioritised, followed by the altitude instruction. (ibid.) Even when the situation arises and plain English might be used, there are still rules of order of information. In case ATC holds information of importance to others, e.g., when water was seen at or around the runway, the ATC shall forward the message in the following order: "WATER PATCHES REPORTED BY (aircraft type) AT (time) (ASSESSMENT OF BRAKING ACTION)".

Readback/hearback procedure exemplifies the importance of standardised phraseology and the information order. When the flight is en route, in a cruise[6] mode, FD listens to radio transmissions of ATC centres all the time. Once the ATC mentions their call sign,

3 the distance over which the pilot of an aircraft on the centreline of a runway can see the runway surface markings or the lights defining the runway

4 the aircraft identification for radio voice communications with air traffic

5 federal government agency within the U.S. Department of Transportation that regulates civil aviation in the United States

6 the phase of aircraft flight that starts when the aircraft levels off, until it begins to descend for landing

assigned to their flight, FD needs to repeat the pieces of information. This process of repeating is called readback. In case a readback contained an error and a wrong piece of information was repeated, it is called a "readback error". (Cardosi et al., 1998: 7). Further on, should the ATC fail to correct the readback error, it is called a "hearback". (ibid.) Information useful for this discussion is that, at the end of the repeated and understood information, the FD needs to mention their call sign. In a study of 386 ASRS reports, among them, readback/hearback errors accounted for 47%. (Cardosi et al., 1998: vii) Two important conclusions were given in this study: firstly, incorrect readbacks/hearbacks can lead to dangerous safety-related situations, and secondly, in case of any kind of doubt, both FD and ATC should ask to clear any kind of possible miscommunication. (ibid.)

IN CONTRAST TO GENERAL ENGLISH

In contrast to GE, certain word features carry a different meaning in AE. For example, the phrase "Approach" per Oxford dictionary (2011) means "movement nearer to somebody/something in distance or time", while in AE describes a phase of a flight when the aircraft prepares for landing. (ICAO, 2007) Similarly, "Roger" in GE may refer to a male name, in AE means "I have received all of your last transmissions". (ICAO, 2007, 4: 2., 2.7) We will now include additional phraseology from the ICAO's manual and see how, in contrast to GE, it carries different meanings in AE: "HOLD" – as a verb in GE "to have somebody/something in your hand", while in AE it is specific to taxi instructions given by the ATC for aircraft about their holding point on a taxiway. "HEAVY" – while in GE generally refers to "weighing a lot" (Oxford, 2011), in AE refers to: "aircraft in the heavy wake turbulence category shall include the word "HEAVY" immediately after the aircraft call sign in the initial contact..." (ICAO, 2007) While "OVER" as a preposition can refer to "resting on the surface of" (Oxford, 2011), in AE it refers to: "My transmission is ended and I expect a response from you". (ICAO, 2007) There are some phrase structures (abbreviations) not even found in GE, one of which is "WILCO", having its use in AE as a shorter version of "I Will Comply". (ICAO, 2007) Of all the phraseology specific to this register (Bieswanger, 2016: 83), it might be said that the phrase "take off" is of major critical importance. In order to maintain the highest level of safety, ICAO's Annex 10, volume II, and the PANS-ATM (Document 4444) state:

> "The word 'take off' is used only when an aircraft is cleared for takeoff, or when cancelling a takeoff clearance. At other times, the word 'departure' or 'airborne' is used."

In other words, to further assure the safety and make a distinction, e.g., when the aircraft is taxiing but the FD has not yet been instructed and given clearance for takeoff, the latter utterances are to be used. One of the most likely causes for the differentiation is the fact that the phrase "take off" has had a direct influence on the safety of commercial aviation. Needless to say, with such a dynamic industry, changes are often seen. When a danger of misunderstanding is recognised, ICAO and other governing research bodies may suggest changes. (Estival et al., 2016) The phrase "GO AHEAD" has proven to be a source of confusion among the ATC and pilots. Hence, it was removed from the standardised phraseology and "in its place, the use of the calling aeronautical station's call sign followed by the answering aeronautical station's call sign shall be considered the invitation to proceed with transmission by the station calling." (ICAO, 2007) Following Jovanović's (2008) coursebook on English morphology, we might deduce that the following AE phrase "WORDS TWICE" is, in part, an example of a GE reduplication7 process. The phrase "WORDS TWICE" in AP is defined as: (1) as a request: "Communication is difficult.

7 As per Jovanović (2008), the product of the reduplication process is called a "twin word" with two elements of equal status

Please send every word or group of words twice."

(2) As information: "Since communication is difficult, every word or group of words in this message will be sent twice." (ICAO, MOR, 2007: 2., 2.8) As for the prepositions in AE, a lot of them are in use, such as "FROM", "AT", "BEHIND", "ABOVE", as Estival (Estival, 2016: 35) notes. However, the preposition "TO" is excluded from the standardised phraseology, to avoid possible confusion with the similarly pronounced number two. Nevertheless, prepositions can naturally occur and integrate, like using them in a situation where one aircraft is to give position to another instead, as in: "Give way TO (aircraft)", or another example is "Cleared TO (destination)". (Estival, 2016: 35) It may be determined that negative syntactic constructs in AE are rare; however, they are certainly part of it. "NEGATIVE" has a clear meaning of "no" or "permission not granted", "that is not correct", or "not capable". (ICAO, Doc 9432, 2007) Similarly, the adjective "UNABLE" in the standardised phraseology is used to express inability to comply: "we cannot comply with your request, instruction, or clearance". (ibid.) Lastly, part of the AE phraseology is the use of the imperative. Since this is a high-stakes environment, there is little room left for extreme politeness in communication.

WING-CLIPPING INCIDENT, CHANGI AIRPORT, SINGAPORE

Having mentioned some technological and historical developments of aviation and its noteworthiness in some detail, attention can now be redirected to technology from the AE perspective. While there might be other challenging factors of importance, the focus here is on the relationship between verbalising the phraseology, as per the recommended, but not the procedural guidelines, and over-reliance on technical semi-automated systems. The 2017 wing-clipping incident between an Emirates Airlines (aircraft type: Airbus A380) and the Scoot Airlines (aircraft type: Boeing 787) at Singapore Changi airport will serve as an example.

According to the final report by the Government of Singapore, the incident occurred when the Scoot aircraft, while taxiing, came into contact with the A380, resulting in the left wing of the B787 and the right wing of the A380 being damaged. At the time of the incident, the ATC team consisted of two controllers. One of them was receiving on-the-job ground movement controller (GMC) training under the direction of the other, a qualified GMC (referred to in the CAAS report and hence hereafter as the OJT trainee). At about 01:33 hours (Singapore local time), the B787 was instructed to "taxi on greens" and hold short of taxiway WA (the taxiway consisted of Taxi lane A6 and Taxiway NC3). At the moment, the OJT trainee did not verbalise specifically the intended route. At around 01:34, the OJT trainee issued an instruction to the A380 to pushback and the pushback commenced at 01:37. At 01:38 the B787 informed the ATC that it was approaching the WA and NC3, the OJT trainee instructed the B787 to "continue on the greens and hold short V6" (as the trainee's intent was for the B787 to taxi on to the intended WP), after which the trainer and the OJT trainee switched their air traffic management attention to four other departing aircraft. The B787, as per the instructions, continued taxiing "on the greens", and as the green lights led the B787 to WA, because the red lights were on at the remaining section of the intersection, a left turn to WA was executed. As the A380 was being pushed out (tail first), while passing by, contact was made between the B787 and the A380. After the trainer and the trainee turned their attention back to the B787, they realised that it was taxiing on WA, instead of WP; however, seeing nothing else in error, they instructed the B787 to continue to taxi on WP. At 01:42 hours, the A380 flight crew requested to be returned to their previous parking space at the airport (C23) after learning that their wing was damaged, which can be characterised as a case of good leadership and situational awareness.

The investigation revealed that the OJT trainee did not have to say the complete information, since, as per the air traffic procedures at the time, he was not obliged to verbalise. However, despite this, the report suggests that, had the ATC verbalised the intended route, the incident could have been avoided.

The "taxiing on the greens" system directs aircraft to follow green centreline lights, which are intended to provide clear guidance and reduce the need for verbal instructions. Section 1.6.1.3 of the report provides an explanation for the use of the "taxiing on the greens":

> "According to ATC, this system would reduce radio communication over the air regarding the taxi route, provide flight crews with a clearer direction, and reduce the risk of making wrong turns." (TSIB, 2018)

The use of the "taxiing on the greens" system, as the report suggested, did not prevent the wrong turn in this instance. Furthermore, it was highlighted that similar incidents had occurred previously. A 2016 Air Accident Investigation Bureau Singapore (AAIB) report on an attempted takeoff incident in January 2015 recommended that ATC verbalise the main taxi route in addition to the "taxi on the greens" instruction. This recommendation was reiterated in the 2018 Transport Safety Investigation Bureau (TSIB) report following the 2017 wing-clipping incident. The 2016 report's recommendation:

> "It is recommended that the ATC consider verbalising the main taxi route in addition to the instruction to "taxi on the greens" in the taxi clearance." (AAIB, R-2016-005)

The report illuminates the critical importance of verbalising the intended route. Although the OJT trainee followed the procedures and was aware of the recommendation, the lack of verbal clarification contributed to the incident. In addition, while the "taxiing on the greens" system provides a reduction of possible errors because of the overload of information on the ATC transmissions, its effectiveness still relies on visual clues. Ambiguity in ATC phraseology may have worsened the automation reliance. Therefore, without verbal confirmation, it may lead to miscommunication. Adding to the discussion, the cognitive load of the two ATCs is also a significant factor, as it was a team of two managing multiple aircraft, with one undergoing training. Additionally, lack of experience may have limited the ability to anticipate possible risks.

A couple of recommendations have been highlighted in the report. For ATC to be required to receive additional training, to review the importance of verbalising and not solely relying on the "taxi on the greens" system, previous and other similar incidents should be re-analysed to identify possible recurring events and ensure continuous improvement.

CONCLUSION

This paper has examined the historical evolution and linguistic features of Aviation English. By contrasting Aviation English with General English, key distinctions emerge: strong reliance on standardised ICAO phraseology, fixed expressions, and a strong focus on clarity to mitigate risks in high-stakes environments. The 2017 wing-clipping incident at Singapore's Changi Airport, examined here for the first time through the lens of Aviation English, illustrates a key observation: automated systems reduced the need for verbal cross-checks. This highlights the ongoing challenge of balancing technological integration with verbal protocols.

The findings confirm that, although technological progress improves operational performance, standardised Aviation English remains an essential safety mechanism. It is important to recognise the challenging and highly responsible roles fulfilled daily by flight

crew and air traffic controllers. Their consistent use of precise phraseology supports the safety of air traffic. In summary, the study affirms the critical role of linguistic standardisation in aviation safety and recommends further investigation into the integration of emerging technologies with comprehensive phraseology training.

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APPENDIX I – LIST OF ABBREVIATIONS

AAIB – Air Accident Investigation Bureau Singapore
AE – Aviation English
AP – Aviation Phraseology
ATC – Air Traffic Control
CAAS – Singapore Civil Aviation Authority
EASA – European Union Aviation Safety Agency
EFL – English as a Foreign Language
ESL – English as a Second Language
ESP – English for Specific Purposes
FAA – Federal Aviation Administration
FD – Flight Deck
ICAN – International Commission for Air Navigation
ICAO – International Civil Aviation Organisation
IMO – International Maritime Organisation
ITU – International Telecommunication Union
LRP – Language Proficiency Requirements
NA – Native Speaker
NNA – Non-Native Speaker
NP – Noun Phrase
SARPs – Standards and Recommended Practices

ISTORIJSKI I LINGVISTIČKI PREGLED VAZDUHOPLOVNOG ENGLESKOG – VAZDUHOPLOVNA FRAZEOLOGIJA

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Uvod: Vazduhoplovni engleski jezik kao dio engleskog jezika za posebne namjene, osmišljen je da obezbijedi jasnu i standardizovanu komunikaciju u međunarodnom vazduhoplovnom kontekstu. Za razliku od opšteg engleskog jezika koji služi širokim komunikativnim svrhama, vazduhoplovni engleski funkcioniše pod strogim standardima ICAO-a (Međunarodne organizacije civilnog vazduhoplovstva) kako bi se umanjili rizici koji proizilaze iz jezičkih nesporazuma u okruženjima visokog rizika.

Cilj: Istraživanje ima za cilj da opiše ključne jezičke karakteristike vazduhoplovnog engleskog jezika, uporedi ih sa karakteristikama opšteg engleskog jezika i prikaže studiju slučaja stvarnog incidenta.

Materijal i metode: Rad se oslanja na deskriptivne metode kako bi se prikazale karakteristike vazduhoplovnog engleskog jezika, prije svega na osnovu ICAO dokumenta 9835. Pored toga, primjenjuje se komparativna metoda radi poređenja vazduhoplovnog i opšteg engleskog jezika. U poglavlju „Wing-clipping incident, Changi airport, Singapore" primijenjen je empirijski pristup analizom stvarnog vazduhoplovnog incidenta. Ova studija slučaja ispituje propuste u verbalnoj komunikaciji, prekomjerno oslanjanje na automatizovane i poluautomatizovane tehničke sisteme, kao i potrebu za verbalnom interakcijom koja treba da služi kao dopuna tehničkim sistemima.

Rezultati: Vazduhoplovni engleski pokazuje snažno oslanjanje na standardizovanu frazeologiju, što se značajno razlikuje od fleksibilnosti opšteg engleskog jezika. Takođe, pokazuje pojednostavljenu sintaksu i stavlja naglasak na jasnoću i sažetost u komunikaciji. Prema autorovom saznanju, poglavlje „Wing-clipping incident, Changi airport, Singapore" koje se bavi stvarnim incidentom sudara krila na aerodromu Čangi u Singapuru, 2017. godine, predstavlja prvu analizu tog događaja u kontekstu vazduhoplovnog engleskog jezika.

Zaključak: Vazduhoplovni engleski dijeli osnovnu strukturu sa opštim engleskim, ali je namjerno konstruisan tako da podstiče bezbjednost i efikasnost u vazduhoplovstvu. Stvarni incident pokazuje da prekomjerno oslanjanje na tehničke sisteme, bez adekvatne verbalne komunikacije, može dovesti do ozbiljnih propusta. Ovo potvrđuje suštinsku ulogu standardizovanog vazduhoplovnog engleskog jezika kao dopune tehničkim sistemima.

Ključne riječi: vazduhoplovstvo, vazduhoplovni engleski jezik, ICAO frazeologija, sigurnost, efikasnost, bezbjednost vazdušnog saobraćaja.