

Standard and Nonstandard Lexicon in Aviation English: A Corpus Linguistic Study

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Abstract

This study aims at investigating the lexical items in Aviation Phraseology that has both standard and nonstandard meanings when Pilot and Air Traffic Controller (ATC) use them in radiotelephony. A collection of Cockpit Voice Recorder or Quick Access Recorder transcripts with 26,421 words from the Civil Aviation Authority of the Philippines (CAAP) and from International Airlines' accessible transcripts has been the primary data for scrutiny. Through a corpus-based analysis and a survey research, the present study reveals that the lexical items *go ahead*, *hold short*, *priority*, and *affirm* are used sporadically in nonstandard ways that might lead to ambiguity, and thus posing potential errors. In the survey conducted for Pilots and ATCs, both affirm the occurrence of nonstandard use in Aviation Phraseology. ATCs assert that the nonstandard use of such lexical items frequently occur during Route or En-route Clearance while Pilots confirm that these transpire during Takeoff Clearance, Altitude Clearance, Approach

Clearance, and Landing Clearance. Precisely, the nonstandard use of Aviation Phraseology in this study shows nonconformity in the efforts of the International Civil Aviation Organization to provide "maximum clarity, brevity, and unambiguity". Furthermore, awareness of this phenomenon must be heightened among aviation students who are future aeronautical professionals in the field.

1 Introduction

English started as the official language of the International Civil Aviation Organization (ICAO) in 1951, and only in 2011 has the ICAO implemented language requirements on aviation personnel including the usage of standard phraseology in all radio communication. In recent years, the majority of aviation disasters have been caused by human errors, and one of the most common forms is miscommunication, which can potentially lead to catastrophic repercussions. One contributing factor to the occurrence of miscommunication is the wrong interpretation of instructions. For instance, the controller may use a certain word with standard definition to command,

but the pilot may interpret the word in non-standard way. Consequently, a single miscommunication may result in a bigger problem due to wrong interpretation.

In June 2014, the Transportation Safety Board of Canada (TSB) reported a runway incursion at Ottawa International airport between a Medevac helicopter and A300 cargo plane. The airport controller amended LF 4 Medevac's IFR clearance by stating: "LF 4 Medevac Roger, *while we wait* amend your Ottawa 3 for a right turn heading 290° balance unchanged". The tower controller observed that AW139 was taxiing across the hold short line while FDX 152 Heavy (A300) was landing on runway 25. According to the findings, Medevac helicopter was given an amendment to its instrument flight rules clearance. The airport controller's first transmission to LF4 Medevac began with non-standard phraseology "*while we wait*", which can be confused with "*line up and wait*". As a result, the Medevac pilot expected that a clearance to take off would follow the amendment to the instrument flight rules clearance. Another factor is that the Medevac pilot did not check if runway was clear before taxiing across the hold short line, leading to the runway incursion with FDX 152 Heavy (A300) approaching to land.

In March 2013, another case occurred when the non-standard phraseology "*actually standby ah*" was used in Boeing 727. The freighter was cleared to takeoff on a runway occupied by two snow clearance vehicles. The cancellation of take-off clearance was not received, but a successful high speed rejected takeoff was accomplished on sight of the vehicles before their position was reached. The controller's failure to 'notice' the runway blocked indicator on his display and to his non-standard use of Radio-Transmission communications, i.e. "*actually standby ah*" when he cleared B727 for takeoff and saw the vehicles on the runway, added to the occurrence. The right phraseology should be "*takeoff clearance cancelled*", and any such cancellation issued after the aircraft has started to roll should take the form "*abort takeoff*". It was found out that the controller had never been required to use either of these phrases since qualifying.

In the light of these cases, it is vital to analyze the discourse between pilots and ATCs, who may be native or non-native English speakers, and to recognize the standard phraseology used in non-

standard ways, which may probably lead to ambiguity and thus posing potential errors to communication.

The ICAO puts a great emphasis on non-native English speakers in acquiring a certain level of ATC proficiency, whereas native speakers of English are not prompted by ICAO to adhere to the standard phraseology. According to Hyejeong and Elder (2009), the ICAO considers the level of English proficiency of non-native aviation personnel before implementing the ICAO language policies. The article emphasizes that the responsibilities for miscommunication in aviation where English is used as a *lingua franca*, are distributed across native and non-native English speaking ATCs and pilots.

Tewtrakul and Fletcher (2010, cited in Swinehart, 2013) conducted a study in Bangkok International Airport with 312 flight recorded citing for common error among three groups: Thai ATC-Thai pilot, Thai ATC-native English speaking pilot, and Thai ATC-foreign pilot who is a non-native English speaker and does not speak Thai. The study revealed that radiotelephony misunderstandings arise most often among non-native English speakers. Indeed, it is worth noting that the responsibilities shared by pilots and ATCs must adhere to the use of standard phraseology. However, some lexical items (e.g. hold short, priority, etc.) in aviation phraseology could be used in non-standard ways. Mendez-Naya (2006) investigated the evolution of the term *right* over time. While the word *right* has a standard use as an adjunct of direction, other definition has also been espoused as "correct" and "exactly". Furthermore, it also functions as a discourse marker, locative or time expressions, adverbs, prepositional phrases, or clauses modifier, making the term more ambiguous. More recently, Swinehart (2013), who expanded Mendez-Naya's study, examined a particular lexical item *right* and examined its usage in standard and non-standard ways through a corpus of Cockpit Voice Recording (CVR) transcripts from National Transportation Safety Board (NTSB). Surprisingly, only 18.2% of occurrences of "*right*" in CVR transcripts were used in standard ways. This is a very alarming since almost 80% are generally used in various nonstandard ways. It can be concluded that this is an apparent deviation from the ICAO's efforts to provide "maximum clarity, brevity, and

unambiguity” (p. 3-2), creating ambiguity in a field of discourse where clarity of communication is vital. Although Swinehart’s (2013) corpus-based study looked into how the lexical item *right* was used in non-standard ways, the present study broadly investigates other lexical items irrespective of their typologies (Bratanić & Ostroški Anić, 2009). In addition, Swinehart’s (2013) study still needs theoretical underpinnings as regards the nonstandard use of such lexical items. This occurrence can be explicated by the emergence of the world Englishes across the globe where pilots and ATCs who may be native or non-native English speakers use English in their own right. The pioneering model of World Englishes formulated by Braj Kachru in early 1980s, also known as the Kachru’s Concentric model, allocates the presence of English: the inner circle, where language functions as a native language (ENL); the outer circle, where English functions as a secondary language (ESL); and lastly, the expanding circle where English serves as foreign language (EFL). This model may politically show the nativeness and non-nativeness of English speaking ATCs and pilots in different nations. However, Rosenberger (2009:23) argued that, “while some nations may never have been easy to classify in this tripartite system, the world-wide use of English has produced increasingly overlapping areas of the three circles.” Although there is a need to revisit Kachru’s three-circle model in this regard, it is still vital to be taken into account since pilots and ATCs either native or non-native speakers of English coming from different nations speak different varieties of English. Precisely, there is a need to understand the World Englishes paradigm and use it as a theoretical underpinning in describing the lexical items in standard phraseology having non-standard definition. These alarming problems led the researchers to investigate the most common lexicon in standard phraseology with nonstandard definition in aviation discourse that may pose potential problems in communication. Despite the importance of communication for aviation safety, there is a lack of research that would systematically examine the language of pilots and ATCs.

2 Methodology

This study primarily used corpus linguistic approach in order to answer the questions and to yield findings that are implicative for improving the radiotelephony communication of ATCs and pilots in the Philippines. The corpus is a collection of CVR or QAR transcripts from the CAAP (2016), and transcripts from international airlines’ accessible transcripts. It is worth noting that all of these transcripts were obtained on the basis of availability due to high confidentiality. While the Air Traffic Services (ATS) of the CAAP agreed to accommodate interviews with the pilots and ATCS, it could not provide or release copies of the conversation transcripts. However, due to strong requisition of the study, the ATS released only three transcripts, ensuring that the airline companies remained anonymous.

In addition, the study adapted the survey of Said (2011) from the International Air Transportation Association (IATA). Through convenience sampling, the survey was launched for the ATCs and pilots who provided necessary information as regards the use of standard phraseology with nonstandard definition and the situations in which this phraseology typically occurs.

3 Results and Discussion

The study investigated lexical items used in Aviation Phraseology that has both standard and nonstandard meanings.

3.1 Lexical Items Utilized in Standard and Nonstandard Ways

The lexical item *go ahead* with standard definition predominantly appeared in the corpus, having only one occurrence of its nonstandard counterpart. On the other hand, the lexical item *hold short* with standard definition also predominantly occurred in the corpus, having only one occurrence of its nonstandard counterpart. The lexical items *priority* and *affirm* were both used in nonstandard ways

Lexical Items	Standard Use	Non-standard Use
Go ahead	87.50% (7)	12.50% (1)
Hold short	85.71% (6)	14.29% (1)
Priority	0%	100% (1)
Affirm	0%	100% (1)

Table 1: Identified Lexical Items

3.2 Standard and Nonstandard Definitions of Identified Lexical Items

The lexical items *go ahead*, *hold short*, *priority* and *affirm* were identified in the corpus with standard and nonstandard definitions. The standard definitions were based on Radiotelephony Manual ICAO’s Standard Phraseology while the nonstandard definitions of the identified lexical items were based on the analyses in the ATCs Air Traffic Controllers’ and Pilots’ surveys and on the ICAO Phraseology Reference Guide.

Lexical Items	Standard Use	Nonstandard Use
Go Ahead	to give permission to state a request	to move forward
Hold Short	to not cross or enter the mentioned runway	to proceed or to continue
Priority	to state emergency situation that is often mentioned together with the terms “MAYDAY” or “PAN-PAN”	considered nonstandard if it does not state the kind of emergency
Affirm	used to define “yes”	should be “affirmative” which is often misheard as “negative”

Table 2: Standard and Nonstandard Definitions of the Identified Lexical Items

3.2.1 Go ahead

An example of lexical item *go ahead* in nonstandard use appeared in the recorded conversation from the Air Traffic Controller and flight crew between Asiana 222 and Etihad 513.

Listing 1

Asiana 222: hold short at Juliet, Asiana 222
ATC: ETD 513 follow Oceania on holding short Juliet Runway
ETD 513: I make a report
ATC: Go ahead
ETD 513: Echo tango delta 513 at hoel give us regional chart from your left.
ATC: Regional chart from left T523
ATC: Asiana 222, there ah.. call the ramp and see hold
Asiana 222: Repeat Asiana 222

In the transcript, the pilot of Asiana 222 misunderstood the instruction when the Air Traffic Controller said the phraseology *go ahead*. The pilot of Asiana 222 assumed it was their aircraft that was instructed to proceed in the mentioned runway using the phraseology *go ahead*, not knowing that the instruction to go ahead and make a report was for ETD 213.

3.2.2 Hold short

The nonstandard use of *hold short* also appeared in the conversation between the Air Traffic Controller and the pilot of Asiana 222. The pilot of Asiana 222 was instructed to hold short at Juliet. However, the aircraft was seen to have kept moving because the pilot misinterpreted the phraseology *go ahead* as *to proceed* or *to continue*.

Listing 2

ATC: Asiana 222, you are supposed to **hold short** at Juliet, sir.
ATC: Asiana 222
Asiana 222: (unreadable)
ATC: I can make a report, so hold short of Juliet, you’re already passing
Asiana 222: Ah.. I though you made some alignment on empire
ATC: The empire is not moving. I told you to hold short and call the ramp
Asiana 222: Copy
ATC: Echo tango delta 513 what’s the ramp on you?

ETD 513: Okay that's a hotel 523
ATC: Okay. Will it be open sir.
ETD 513: (unreadable)

3.2.3 Priority

The lexical item *priority* appeared in the corpus once. In this situation, the pilot used the word *priority* to state his concern where ICAO highly advised that when stating an emergency, the pilot and air traffic controllers must use the standard phraseology, i.e. in any instances that need an immediate assistance, *MAYDAY* is used while *PAN-PAN* can be used in situations that do not require an immediate assistance but can be considered as an urgency message.

Listing 3

27 TWR: Blue Jay Six-Zero-Four-Four, hold short Fox-one
30 SRQ6044: Hold short Fox-one
33 RP-C1432: Tower, One-Four-Three-two we requested **priority** because of a losing oil pressure you made go around
44 TWR: RP-C One-Four-Three-Two climb four thousand runway heading contact one-two-one-one say again last

3.2.4 Affirm

Another phraseology that may lead into misunderstanding on the Radio telecommunication between pilot and air traffic controllers is the use of the phrase *affirmative*. In ICAO Standard Phraseology, the use of *affirm* phraseology is defined as *yes*. Some nations use the word *affirmative* which can be considered as a non-standard phraseology because of the fact that *affirmative* can be heard as *negative*.

Listing 4

UA224: it's UA224, do you have weather at Manchester and Bradley?
BOS APP: **Affirmative**, stand by.

3.3 Situations where Nonstandard Use Occurs: Air Traffic Controller Survey

28.57% of the respondents picked Route or En-route Clearance where nonstandard phraseology is most commonly used in the corpus. However, it is during Taxi Clearances, Landing Clearances, and Approach Clearances where nonstandard phraseology is seldom used with 3.57%

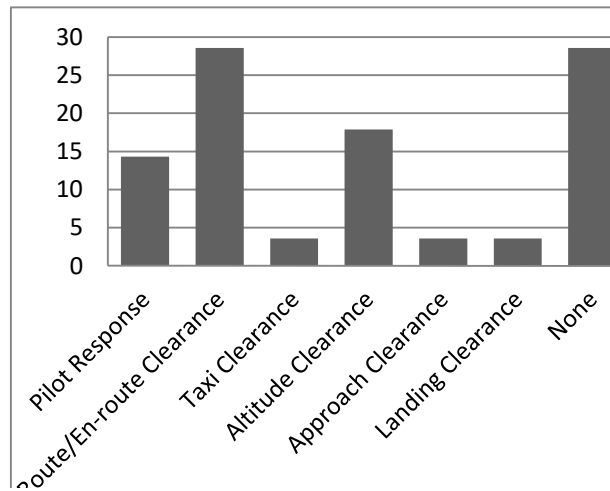


Figure 1: Air Traffic Controllers Survey

3.4 Situations where Nonstandard Use Occurs: Pilot Survey

It is during Takeoff Clearances, Altitude Clearances, Approach Clearances, and Landing Clearances where nonstandard phraseology is commonly used with 15.79% in the corpus. However, the pilot agreed that it is during Route or En-route Clearances and Taxi Clearances where nonstandard phraseology is seldom used.

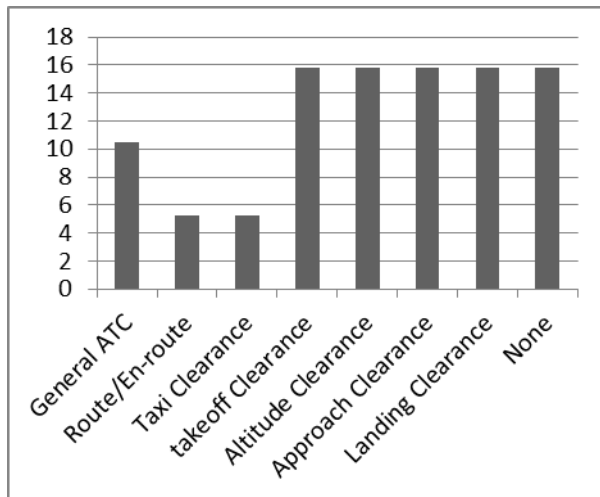


Figure 2: Pilots Survey

4 Conclusion and Recommendation

This study investigated lexical items in aviation phraseology with standard and nonstandard definitions as used by ATCs and pilots. As revealed in the corpus, these are *hold short*, *go ahead*, *affirm* and *priority*. According to the surveys conducted with ATCs and pilots in the Philippines, it is during Route Clearances or En-route Clearance where nonstandard phraseology is mostly encountered while the least used occurs during clearances for General ATC.

According to the Air Traffic Controllers and Pilots and on the ICAO radiotelephony manual, Air Traffic controllers, pilots and aviation students should be aware that there are existing lexical items with standard and non-standard definition or use. In using the lexical item *go ahead*, the air traffic controller and the pilot must state the aircraft call sign to avoid the confusion in radio telephony communication. In using the lexical item *hold short*, the pilot should read back the last message transmitted by the air traffic controller to clarify that the message is fully understood. In using the lexical item *priority*, the pilot should state the reason of requesting a priority. Using the word *priority* may lead into a confusion with the phraseology *Mayday. Mayday. Mayday.* and *Pan-Pan. Pan-Pan. Pan-Pan*, which can also be used to request an urgent message. In using the lexical item *affirm*, the pilot and air traffic controller should avoid the use of *affirmative* to avoid instances where it can be misheard as “negative”.

Air traffic controllers, pilots and aviation students should also know that the nonstandard definition of a lexical item can create confusion and should know the proper phraseology for each situation during flight operation, so that there will be a pellucid communication in giving clearances to prevent confusion.

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