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Manual on the Implementation of ICAO Language Proficiency Requirements

Approved by the Secretary General
and published under his authority

Second Edition — 2010

International Civil Aviation Organization

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AMENDMENTS

Amendments are announced in the supplements to the *Catalogue of ICAO Publications;* the Catalogue and its supplements are available on the ICAO website at www.icao.int. The space below is provided to keep a record of such amendments.

RECORD OF AMENDMENTS AND CORRIGENDA

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FOREWORD

Safety experts are constantly seeking to identify means of improving safety in order to reduce the already low accident rates. With mechanical failures featuring less prominently in aircraft accidents, more attention has been focused in recent years on human factors that contribute to accidents. Communication is one human element that is receiving renewed attention.

In 1998, the ICAO Assembly, taking note of several accidents and incidents where the language proficiency of pilots and air traffic controllers were causal or contributory factors, formulated Assembly Resolution A32-16 in which the ICAO Council was urged to direct the Air Navigation Commission to consider, with a high level of priority, the matter of English language proficiency and to complete the task of strengthening the relevant provisions of Annexes 1 and 10, with a view to obligating Contracting States to take steps to ensure that air traffic control personnel and flight crews involved in flight operations in airspace where the use of the English language is required are proficient in conducting and comprehending radiotelephony communications in the English language.

Subsequently, the Air Navigation Commission established the Proficiency Requirements in Common English Study Group (PRICESG) to assist the Secretariat in carrying out a comprehensive review of the existing provisions concerning all aspects of air-ground and ground-ground voice communications and to develop new provisions as necessary. In March 2003, the Council adopted amendments to Annexes 1, 6, 10, 11, and the PANS-ATM relating to language proficiency in international civil aviation.

In 2004, the first edition of this manual, compiling comprehensive information on a range of aspects related to language proficiency training and testing, was published in order to support States' efforts to comply with the strengthened provisions for language proficiency.

In 2007, the ICAO Assembly adopted Assembly Resolution A36-11, Proficiency in the English language used for radiotelephony communications, which directed the Council to support Contracting States in their implementation of the language proficiency requirements by supporting globally harmonized language testing criteria.

Over the past several years much activity has been undertaken on a worldwide basis to meet ICAO language proficiency requirements, including regional initiatives by Eurocontrol, EANPG, ASECNA and COCESNA. Other initiatives include those of numerous airlines and air navigation service providers on all continents to set up or acquire training and testing programmes. Aircraft and equipment constructors have also assisted their customers in choosing or setting up testing and training. The language training and testing professions, both commercial and academic, have contributed to the accelerated development of programmes, learning materials and testing services in accordance with ICAO language proficiency requirements. These have most notably emerged from countries where English is the native language. Finally, professional associations such as ICAEA and IALCO have provided fora for the exchange of information and ideas on implementation.

ICAO has been equally active in supporting States in their implementation of language proficiency requirements. Such efforts include the publication in June 2009 of ICAO Circular 318 — *Language Testing Criteria for Global Harmonization,* Circular 323 — *Guidelines for Aviation English Training Programmes* and a second edition of this manual in 2010.

This second edition has been updated and reorganized into seven chapters and eight appendices, which have been significantly augmented. Several appendices have been formatted to facilitate the detachment of certain documents (checklists and tips) for reproduction and use as practical tools by stakeholders.

Chapters 1, 2 and 3 introduce the subject of language proficiency and specific features of radiotelephony communications. Chapter 3 is a useful introduction to aviation radiotelephony for the language training and testing community. While Chapters 1, 2 and 3 are of primary interest to training managers and to training and testing service providers they are also highly recommended reading for State regulators and for operators and air navigation service providers for a full understanding of the implications of the implementation guidelines in subsequent chapters and for a linguistic perspective on the aviation field.

Chapters 5 to 7 provide guidance on how to achieve compliance with the language proficiency requirements. Chapters 4 and 5 give the background to the Standards and Recommended Practices (SARPs) relating to language proficiency and explanations of their meaning and implications. Chapter 6 integrates the material originally published in Circular 318 and, along with Chapter 7, aims to provide practical guidance enabling successful implementation of the SARPs from the points of view of testing and training. These chapters provide information on best practice in all domains and warn against identified pitfalls and substandard practices.

References throughout the document are to “language” proficiency requirements in general regardless of the specific language concerned. While it is understood that proficiency in English will be the major preoccupation in the implementation of the requirements, it is recognized that many States will be concerned with ensuring compliance also for local languages.

Comments on this manual, particularly with respect to its application and usefulness, would be appreciated from all States. These comments will be taken into account in the preparation of subsequent editions. Comments concerning this manual should be addressed to:

The Secretary General
International Civil Aviation Organization
999 University Street
Montréal, Quebec H3C 5H7
Canada

GLOSSARY OF LANGUAGE PROFICIENCY AND LANGUAGE TESTING TERMS

Accent. A distinctive pronunciation of a language which is usually associated with a geographical region (for first language speakers) or with the phonological influence of another mother tongue (for second or foreign language speakers). All speakers of all languages have an accent.

Administration. The date or period during which a test takes place.

or

Administration. The actions involved in the delivery of a test to a group of candidates under specified conditions. Specifications might include registration procedures, instructions for candidate seating arrangements, equipment needed, time parameters for each test task, etc.

Cue. The spoken input from an audio recording or a live interlocutor which requires the candidate in an oral test to provide a spoken response.

Descriptor. A brief description accompanying a band on a rating scale, which summarizes the degree of proficiency or type of performance expected of a candidate to achieve that particular score. The band may contain several descriptors.

Dialect. A distinctive variety of a language, usually associated with social or geographical distinctions, which is characterized by differences in accent, vocabulary and grammar with regard to other varieties of the same language.

Discrete item. A test item which is not linked to any other item in the same test.

Formulaic speech. A restricted or coded use of language comprising fixed standard phrases or lexical and syntactical routines, developed either by consensus for highly repetitive communications (e.g. everyday exchanges of greetings) or formally prescribed for special or professional purposes. (ICAO standardized phraseology is an example of formally prescribed formulaic speech.)

Interlocutor. A suitably qualified and trained person with whom a candidate interacts during a test in order to complete a speaking task.

Inter-rater reliability. The consistency or stability of scores between different raters.

Intra-rater reliability. The consistency or stability of scores given by a single rater to the same performances at different moments in time.

Item. Each testing point in a test which is given a separate mark.

Language proficiency skills. The knowledge and abilities which impact on the capacity of a given individual to communicate spontaneously, accurately, intelligibly, meaningfully and appropriately in a given language.

Note.— Six individual skills are identified in the ICAO Rating Scale.

Operational language assessment. (A term specific to ICAO Doc 9835). The assessment of language proficiency using a procedure developed for a different purpose (for example during a flight check or ATC exam). Such assessments however must be carried out in accordance with recognized principles of language testing best practice.

Operational rater *or* ***Operational assessor.*** A rater/assessor whose assessment will focus not only on the linguistic features of a candidate's performance but also on the appropriateness of a candidate's performance in a test with regard to professional standards and procedures (compare with "language rater/assessor").

Note.— Knowledge of operational procedures is not tested in language tests.

Passing score. The lowest acceptable score in a test. Candidates scoring below the pass mark fail the test.

Plain language. The spontaneous, creative and non-coded use of a given natural language.

Note 1.— Plain language shall be used "only when standardized phraseology cannot serve an intended transmission" (Annex 10, Volume II, 5.1.1.1).

Note 2.— The choice of the term "plain" originated from existing ICAO documentation at the time of the formulation of language proficiency requirements and was preferred to other test-taker terms such as "general", "common", "extended" or "natural".

Note 3.— There is no intended association of this usage with the "Plain English" movement in the United Kingdom and the United States which aims to provide an alternative to unnecessarily complicated language by government, business and other authorities.

Rate. To assign a score or mark to a candidate's performance in a test using a subjective assessment.

Note.— The potential for unreliability induced by individual subjectivity is countered by providing initial and maintenance training of raters, regular reference to a standard rating scale and the use of multiple raters.

Rater or ***Assessor.*** A suitably qualified and trained person who assigns a score to a candidate's performance in a test based on a judgement usually involving the matching of features of the performance to descriptors on a rating scale.

Rating scale. A scale consisting of several ranked categories used for making judgements of performance. They are typically accompanied by band descriptors which make their interpretation clear.

Register. A style of speech (involving distinctive vocabulary, syntax, speech rate, etc.) that is adopted by the speaker to be appropriate for a given situation or activity.

Reliability. The consistency or stability of the measures from a test.

Response. The candidate's linguistic performance elicited by the input of a test item (e.g. an answer to a question).

Score or ***mark.*** The numerical or coded result of a candidate's performance in a test enabling comparisons to be made with regard to other candidates of the same test or with regard to a fixed standard.

Specialized language testing. (A term specific to ICAO Doc 9835). The assessment of language proficiency using a procedure which has been developed for that purpose alone and in accordance with recognized principles of language testing best practice.

Test construct. A hypothesized ability or mental trait which cannot necessarily be directly observed or measured, for example, in language testing, listening ability. Language tests attempt to measure the different constructs which underlie language ability.

Test delivery. The physical means by which test input is made available to the test-taker during test administration (e.g. paper documents, computer screen, audio sound-source, face-to-face encounter, etc.).

Testing system. A combination of all provisions for administrating a given test, including the test materials, but also the organization of test maintenance, test delivery, rating and marking.

Test maintenance. The activities of a testing organization intended to preserve the reliability, validity and security of the test over time. These activities include monitoring test results and rater reliability, designing and trialling new test items, issuing new versions of the test, reviewing instructions for test administrators, etc.

Test objective. The language behaviours for which a test requires candidates to demonstrate their ability.

Test-taker or ***Candidate.*** The person who is tested.

Test task. The combination of a single rubric and the associated cue(s) and response(s).

Test user. The persons or institutions making use of a test and to whom test results are made available in order to inform choices or actions.

Validate. To undertake actions during test development and test maintenance that demonstrate the validity of a test.

Validity. The extent to which scores on a test enable inferences to be made about language proficiency which are appropriate, meaningful and useful given the purpose of the test.

Washback effect. The influence of the format or content of tests or examinations on the methods and content of teaching and learning leading up to the assessment.

ACRONYMS AND ABBREVIATIONS

ACTFL	American Council on the Teaching of Foreign Languages
ADREP	Accident/incident data reporting system
ALTE	Association of Language Testers in Europe
ASECNA	Agency for Air Navigation Safety in Africa and Madagascar
ASRS	Aviation safety reporting system
CAA	Civil aviation authority
CALL	Computer-assisted language learning
CBLT	Content-based language learning
CEFR	Common European Framework of Reference for Languages: Learning, Teaching, Assessment
CHIRP	Confidential Human Factors incident reporting programme
COCESNA	Central American Corporation for Air Navigation Services
CRM	Cockpit resource management
EANPG	European Air Navigation Planning Group
ECCAIRS	The European Coordination Centre for Aviation Incident Reporting Systems
EFL	English as a foreign language
EIL	English as an international language
ELPAC	English language proficiency aeronautical communication
Eurocontrol	The European Organization for the Safety of Air Navigation
FSF	Flight Safety Foundation
FSIX	Flight safety information exchange website
IALCO	International Airline Language and Communication Organization
IATEFL	International Association of Teachers of English as a Foreign Language
ICAEA	International Civil Aviation English Association
IELTS	International English Language Testing System
ILR	Inter-agency Language Roundtable
ILTA	International Language Testing Association
IT	Information technology
LPR	Language proficiency requirement
LSP	Language for specific purposes
MORS	Mandatory occurrence reporting system
NAS	National aviation system
NGO	Non-governmental organization
OPI	Oral Proficiency Interview
PRICESG	Proficiency Requirements in Common English Study Group
SARPs	Standards and Recommended Practices
SME	Subject matter experts
TESL	Teaching English as a second language
TESOL	Teachers of English to speakers of other languages
TOEFL	Test of English as a foreign language
TOEIC	Test of English for international communication
TSP	Testing service provider
VFR	Visual flight rules

PUBLICATIONS

(referred to in this manual)

Convention on International Civil Aviation (Doc 7300)

Annexes to the Convention on International Civil Aviation

Annex 1 — *Personnel Licensing*

Annex 6 — *Operation of Aircraft*
Part I — *International Commercial Air Transport — Aeroplanes*
Part III — *International Operations — Helicopters*

Annex 10 — *Aeronautical Telecommunications*
Volume II — *Communication Procedures including those with PANS status*

Annex 11 — *Air Traffic Services*

Procedures for Air Navigation Services

*ATM — Air Traffic Management (*Doc 4444)

Manuals

Human Factors Training Manual (Doc 9683)

Manual of Radiotelephony (Doc 9432)

Safety Management Manual (SMM) (Doc 9859)

Circulars

Guidelines for Aviation English Training Programmes (Cir 323)

Language Testing Criteria for Global Harmonization (Cir 318)

Chapter 1

THE SAFETY CASE FOR INTRODUCING INTERNATIONAL AVIATION LANGUAGE PROFICIENCY REQUIREMENTS

1.1 INTRODUCTION

This chapter briefly presents the historical background and the safety case for the introduction of ICAO language proficiency requirements. It will be of interest to all stakeholders involved in the implementation of language proficiency requirements, including language training and testing services.

1.2 BACKGROUND TO STRENGTHENED ICAO LANGUAGE PROFICIENCY REQUIREMENTS

1.2.1 Over 800 people lost their lives in three major accidents (one collision on the ground, one accident involving fuel exhaustion and one controlled flight into terrain). In each of these seemingly different types of accidents, accident investigators found a common contributing element: insufficient English language proficiency on the part of the flight crew or a controller had played a contributing role in the chain of events leading to the accident. In addition to these high-profile accidents, multiple incidents and near misses are reported annually as a result of language problems, instigating a review of communication procedures and standards worldwide. Such concern was heightened after a 1996 mid-air collision in which 349 passengers and crew members were killed in an accident in which insufficient English language proficiency played a contributing role.

1.2.2 Accident investigators usually uncover a chain of events lining up in an unfortunate order and finally causing an accident. In some instances, the use (or misuse) of language contributes directly or indirectly to an accident. At other times, language is a link in the chain of events which exacerbates the problem. There are three ways that can be a contributing factor language in accidents and incidents:

a) incorrect use of standardized phraseologies;

b) lack of plain language proficiency; and

c) the use of more than one language in the same airspace.

1.2.3 ***Incorrect use of standardized phraseologies.*** The purpose of phraseologies is to provide clear, concise, unambiguous language to communicate messages of a routine nature. One study of real en-route radiotelephony communications (Mell, 1992) revealed that 70 per cent of all speech acts uttered by native and non-native speakers, and for which a phraseology is prescribed, are not compliant with the recognized standards. For phraseologies to have the most significant safety impact, all parties need to use ICAO standardized phraseology. The importance of adhering to ICAO standardized phraseology is discussed further in Chapter 4. However, while ICAO standardized phraseology has been developed to cover many circumstances, it cannot address all pilot and controller communication needs. It is widely acknowledged by operational and linguistic experts that no set of standardized phraseologies can fully describe all possible circumstances and responses.

1.2.4 ***Lack of plain language proficiency.*** This is often cited as having played a contributing role in some accidents. In one example, the controller last in contact with the unilingual English-speaking crew which strayed off course and crashed into a mountainside acknowledged to accident investigators that the flight's position reports were incongruent with where he understood their position to be. However, by his own admission, he lacked plain English proficiency to clarify his doubts or to notify the crew that they were off course.

1.2.5 ***The use of two languages in the same airspace.*** This can have an impact on the situational awareness of flight crews who do not understand all the languages used for radiotelephony in that airspace and has been cited in several accident reports as a contributing factor.

1.2.6 While the focus of ICAO language proficiency requirements is on improved aeronautical radiotelephony communications, language also plays a role in cockpit resource management (CRM) and has been cited as a contributing factor in incidents/accidents where miscommunication happened within a flight crew. By meeting language proficiency requirements, flight crews, especially multi-national flight crews, will have the added safety benefit of better CRM.

1.2.7 Concern over the role of language in aviation accidents and incidents has been expressed from several quarters. Data obtained from the ICAO Accident/Incident Data Reporting System (ADREP) database, United States National Transportation and Safety Board reports (ASRS), the United Kingdom Mandatory Occurrence Reporting System (MORS) and Confidential Human Factors Incident Reporting Programme (CHIRP) corroborate that the role of language in accidents and incidents is significant. A number of fatal and non-fatal accidents appear in the ICAO ADREP which cite "language barrier" as a factor. These data are further supported in two recent reports by Eurocontrol (Van Es, 2004 and Van Es, Wever and Verbeek, 2006).

1.2.8 Academic studies in such fields as natural language processing (Cushing, 1994) and sociolinguistics (Linde, 1988) have also examined and highlighted the role of language proficiency and language use in aviation incidents and accidents.

1.3 REVIEW OF PROVISIONS PRIOR TO ADOPTION OF AMENDMENTS CONTAINING LANGUAGE PROFICIENCY REQUIREMENTS

1.3.1 Until March 2003, provisions relating to the use of language were addressed through two Recommended Practices in Annex 10 and a Standard in Annex 1. Annex 10 recommended that English be made available whenever an aircraft station was unable to communicate in the language used by the station on the ground. There was also an attachment to Annex 10 dealing with specific language issues. Annex 1 stipulated that air traffic controllers demonstrate knowledge of "the language or languages nationally designated for use in air-ground communications and ability to speak such language or languages without accent or impediment which would adversely affect radio communication". These SARPs did not include similar requirements for the flight crew and did not provide a clearly defined required proficiency level, making harmonization difficult and assessment uneven.

1.3.2 At the time, there were hopes that the requirements for pilot and controller communications would be achieved once a radiotelephony speech based on simplified English had been developed. Linguistic research now makes it clear that there is no form of speech more suitable for human communication than natural language. Artificial languages such as Esperanto have had little impact decades after their introduction. Computer-aided voice recognition and translation technologies remain unproven in the context of the demand for high reliability in aviation (Eurocontrol, 2001). Human language is characterized, in part, by its ability to create new meanings and to use words in novel contexts. This creative function of language is especially useful in accommodating the complex and unpredictable nature of human interaction, including in the context of aviation communications. There is simply no more suitable form of speech for human interactions than natural languages.

1.4 ACTION TAKEN BY ICAO

1.4.1 Concern over the role of language in accidents led to the adoption of ICAO Assembly Resolution A32-16, in which the ICAO Council was urged to direct the Air Navigation Commission to consider this matter with a high degree of priority and complete the task of strengthening relevant ICAO provisions concerning language requirements, with a view to obligating Contracting States to take steps to ensure that air traffic control personnel and flight crews involved in flight operations in airspace where the use of the English language is required are proficient in conducting and comprehending radiotelephony communications in the English language.

1.4.2 In 2000, the Proficiency Requirements in Common English Study Group (PRICESG) convened for the first time. PRICESG was established by the Air Navigation Commission to assist ICAO in advancing the language competency task, which included, among other elements, the following aspects:

a) carry out a comprehensive review of existing provisions concerning all aspects of air-ground and ground-ground voice communications in international civil aviation, aimed at the identification of deficiencies and/or shortcomings;

b) develop ICAO provisions concerning standardized English language testing requirements and procedures; and

c) develop minimum skill level requirements in the common usage of the English language.

The study group brought together, from Contracting States and international organizations, operational and linguistic experts with backgrounds in aviation (pilots, air traffic controllers and civil aviation authority representatives), aviation English training and applied linguistics. The PRICESG met throughout 2000 and 2001, presenting the Secretariat with a set of recommendations in the fall of 2001.

1.4.3 Amendments to Annex 10 and the PANS-ATM (Doc 4444) regarding the harmonization of radiotelephony speech and improvement in the use of standardized phraseology became applicable on 1 November 2001. The 33rd Session of the ICAO Assembly (Montréal, 2001) noted that provisions related to language proficiency were being developed and considered that the objective should not be limited to the English language.

1.4.4 To complete the assigned task, the Secretariat proposed amendments to Annexes 1, 6, 10 and 11 and the PANS-ATM which were adopted by the ICAO Council in March 2003.

1.4.5 While data-link applications are improving, and some experts hope that they will mitigate the need for a common language, there are reasons why data links will not eliminate the requirement for pilots and controllers to have good language proficiency. First, they are not yet sufficiently developed for universal use in all applications. Second, they require language reading proficiency, and translation technology also remains unproven in the face of the rigorous demand for reliability. Finally, flight crews and controllers will always need natural language proficiency in case of data-link equipment failure.

1.4.6 Alternative measures to circumvent the need for common language proficiency similarly fall short of safety requirements: interpreters on the flight deck or in the control room add an additional layer between the two key agents — controller and pilot — further complicating communication. In routine situations, the use of an interpreter might suffice, but in unusual circumstances or during an emergency, any procedure that slows down communication becomes unacceptably cumbersome and perhaps even dangerous. Therefore, left with human language as the best vehicle for pilot and controller communications, the ICAO language proficiency requirements seek to improve communications thereby enhancing safety.

Chapter 2

GENERAL INTRODUCTION TO LANGUAGE PROFICIENCY AND LANGUAGE ACQUISITION

2.1 INTRODUCTION

This chapter provides a brief overview of the major concepts and theories of language proficiency and language acquisition. It provides a description of the basic concepts upon which the ICAO language proficiency requirements were developed by the Proficiency Requirements in Common English Study Group (PRICESG). The material in this chapter will be familiar to the language training and testing communities. It will serve as an introduction to the field for operational and regulatory stakeholders, facilitating their understanding of the ICAO Operational Level 4 requirement. It is intended to provide a common understanding of the field for all parties in order to facilitate implementation.

2.2 COMMUNICATION

2.2.1 A major component of communication is language proficiency. The traditional model of communication consists of a sender, a channel and a receiver. Figure 2-1 illustrates this model emphasizing spoken verbal (oral) communication, which is the form of communication that is addressed by the ICAO language proficiency requirements. The speaker and hearer participate in a given phase of communication. The speaker encodes his or her intended meaning in a spoken utterance. The utterance is conveyed via the appropriate channel in the form of a sound-stream which is perceived and decoded by the hearer. The hearer's representation of the meaning of the utterance will, in the case of successful communication, be a perfect or near-perfect match of the speaker's intended meaning.

2.2.2 Note however that this unidirectional model of spoken communication would need to be elaborated to take into account bidirectional, multi-level links between the speaker and hearer in order to be a more accurate reflection of spoken dialogue. These include the speaker's initial and ongoing representations of the hearer, the expectations of the hearer regarding message content, the opportunities for the hearer to provide feedback (backchannel) to the speaker on the state of the hearer's understanding. Also the ideal speaker, ideal channel and ideal hearer represented here do not include source random disturbances to communication such as interruptions of attention and background noise. It is clear that the speaker's ability to encode utterances and the hearer's ability to decode utterances will be crucial to successful communication. This is the field of language proficiency.

2.3 LANGUAGE PROFICIENCY

2.3.1 General

2.3.1.1 Language proficiency is not merely knowledge of a set of grammar rules, vocabulary and ways of pronouncing sounds. It is a complex interaction of that knowledge with a number of skills and abilities. In this, it differs substantially in nature from many of the other subjects in school education and in aviation training.

2.3.1.2 Oral language proficiency refers to:

a) the performance of a skill based on underlying competences as opposed to the simple reproduction or display of learned knowledge;

b) the performance of a complex skill resulting from the integration in real time of a number of subskills constituting communicative competence. These subskills include (among others):

1) the activation of stored words and phrases belonging to the language's lexicon;

2) the application of learned grammatical rules;

3) the perception and articulation of the sounds and tones that constitute a meaningful sound-stream; and

4) the adjustment, in the context of interactive communication, to numerous discourse, social, cultural and professional norms.

The successful integration of these subskills constitutes communicative competence, which is very closely linked to, and to a great extent built upon, general knowledge (of the world, of culture, etc.) and general skills (social, occupational, cultural, etc.). Language proficiency does not exist in isolation from other abilities.

2.3.2 Communicative competence

2.3.2.1 In the 1980s, applied linguists developed a working definition of communicative competence that continues to be refined and elaborated. According to that definition, overall communicative competence includes linguistic, socio-linguistic and pragmatic competences.

2.3.2.2 Linguistic competence refers to the knowledge and meaningful use of the linguistic features of a given language or languages. For speaking and hearing, linguistic competence can be broken down into four distinct subskills:

a) lexical (single words, fixed expressions);

b) grammatical (rules of syntax, morphology);

c) semantic (meanings, meaning relationships); and

d) phonological (sounds, syllable structure, sentence stress, rhythm, intonation).

2.3.2.3 Sociolinguistic competence involves understanding the social (including occupational) context in which language is used. This involves being sensitive to or being able to make appropriate use of markers of social relations, politeness conventions, register differences, dialect and accent.

2.3.2.4 Pragmatic competence refers to a number of skills used to make or give meaning to language in a given situation or context. These include:

a) strategic competence refers to how language users mobilize or balance their resources to activate skills and procedures, in order to fulfil the demands of communication in context and successfully complete the task in question in the most comprehensive or most economical way feasible;

b) discourse competence refers to the ability to combine sentences or utterances to make coherent, whole texts;

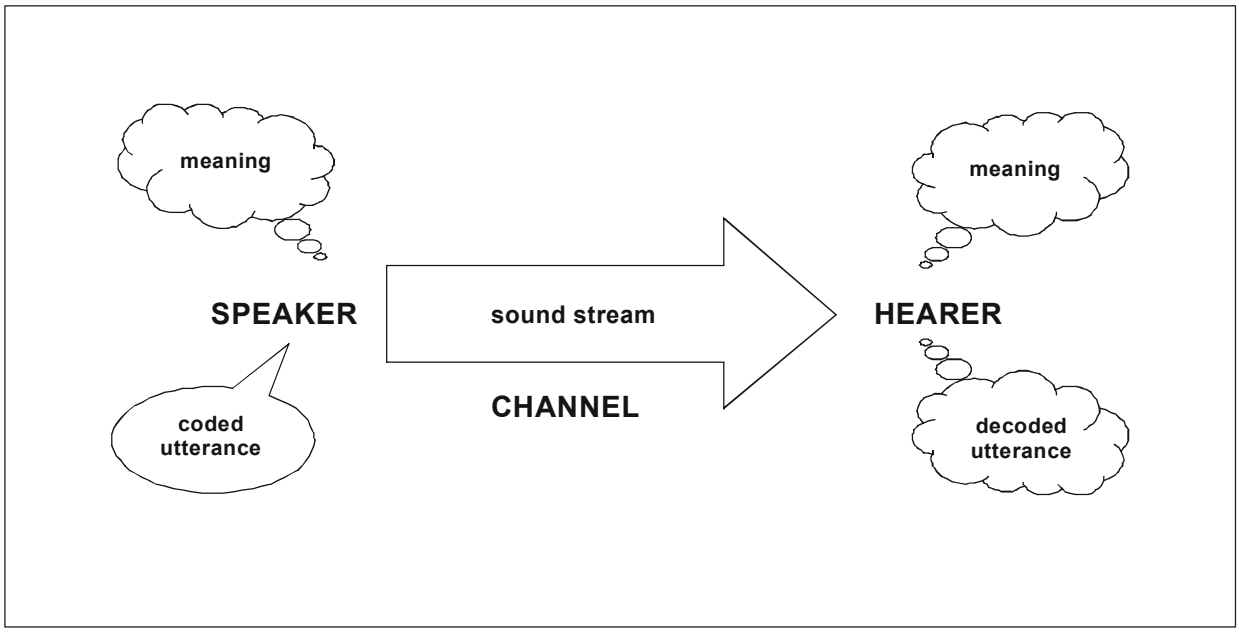

Figure 2-1. Traditional model of communication

c) functional competence refers to the awareness of and ability to make use of the rules governing the way in which language structures are interpreted conventionally or in a given context — "language functions" — and the ways in which these functions are commonly sequenced to establish conversational structures (interactive scripts or schemata); and

d) evaluation of outcomes of the use of language in the real world, for example, impacts on safety or impacts on efficiency.

2.3.3 Language performance

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

2.3.3.2 Performance then is not the same as competence, but provides the only opportunity by which competence and language proficiency can be inferred and assessed.

2.3.4 Language errors and miscommunication

2.3.4.1 Language errors, in both reception (understanding) and production (speaking), are failures to comply with a norm of the language system or subsystem being used. Performance in natural language is rarely completely error-free. Errors in language performance, their frequency in an individual's performance and their impact on understanding are one characteristic of language proficiency. Errors may be local (isolated to one language item) or global (negatively

affecting the meaning of a whole message). The recognition of these errors contributed to the construction of ICAO Operational Level 4 which is considered to be the minimum level acceptable to ensure safe operations.

2.3.4.2 Inevitable language errors should always be considered and judged in the wider context of miscommunication or failure to communicate successfully. In the model of communication presented in Figure 2-1, the location of failure may be found in one or more of its stages. Table 2-1 lists communication failures and where they may be located.

Table 2-1. Communication failures

Speaker	*Channel*	*Hearer*
Propositional failure: this includes factual errors or inaccurate assumptions about the degree of contextual knowledge shared with the hearer.	Channel failure: this includes disturbances to the transmission of a sound-stream coming from garbling, background noise, static, capacity (bandwidth), signal strength and directionality, as well as clipping through incorrect use of microphones.	Decoding failure: this involves incorrect perception or non-perception of the incoming sound-stream, which may be caused by insufficient language proficiency or by limitations of attention or short-term memory or by false expectations.
Encoding failure: this includes errors in choice of vocabulary or syntax at the moment of encoding the message, as well as inappropriate choices of register, lack of directness due to considerations of politeness or non-avoidance of ambiguity, and contextually inappropriate uses of slang, jargon or idioms.		Interpretation failure: this includes the consequences of speaker encoding failures as well as the consequences of insufficient language proficiency, a lack of contextual knowledge shared with the speaker or simply unwillingness to understand.
Delivery failure: this includes inappropriate speech rate, pausing, pronunciation, stress and intonation, the organization of information, as well as slips of the tongue.		Feedback failure: this implies the omission of signals to the speaker that keep the speaker informed of the state of understanding by the hearer.

2.4 LANGUAGE USER STATUS AND LEVELS OF PROFICIENCY

2.4.1 Native speaker/non-native speaker

2.4.1.1 Monolingualism is no longer the norm in the world at large. Bilingualism and multilingualism are conventional in many, if not most, nations and cultures. In a multilingual context, it can become difficult to clarify with precision what is an individual's native language because there may legitimately be more than one. The terms "native speaker" or "first language" (L1) or "mother-tongue" (MT) speaker are essentially useful only when referring to those individuals who speak only one language (monolingual speakers).

2.4.1.2 The expectation that all native speakers will consistently perform at the highest level of proficiency in all areas of the language is not founded on real observations. Native speakers may lack the vocabulary to discuss certain themes or may speak with a regional accent that is an impediment to intelligibility for those from outside that region. They may fail to take into account or use appropriate sociolinguistic differences in register. They may be inefficient users of the language in terms of their pragmatic competence.

2.4.1.3 Finally, native speakers may be perceived as the "owners" of a language through whom ultimate standards for proficiency are set. In the modern world of global communication, and particularly in the case of the English language, this point of view is becoming difficult to defend (see 2.5).

2.4.2 Second/foreign language speakers

2.4.2.1 Non-native speakers (including multilingual speakers) are frequently classified into two groups. Second-language (L2) speakers are those in whose country a given language is used alongside a first language for internal communications. Usually, they have used the language from a very young age and, in these areas, a distinct variety of the language has usually evolved (for example, Caribbean or South Asian varieties of English). Foreign-language (FL) speakers are those who have learned to use a language for communication with speakers from other countries. Their learning has usually begun in late childhood or adulthood.

2.4.2.2 As with native speakers, however, these distinctions fail to be supported by observations of real performance. Both categories of non-native speaker can display a wide variety of levels of proficiency.

2.4.3 Levels of proficiency and rating scales

2.4.3.1 Taking into account the preceding remarks on native and non-native speakers, it becomes apparent that actual descriptions of different levels proficiency, without reference to geographical or biographical distinctions, are needed.

2.4.3.2 Language trainers and testers are mostly in agreement on three distinct levels of proficiency in language. These are variously labelled low/mid/high or beginner/intermediate/advanced. Further distinctions may also be made within a given level, giving for example lower-intermediate/intermediate/upper-intermediate. However these distinctions have been found to be of limited usefulness due to their lack of explicit meaning in terms of actual language performance. In recent years this has resulted in several different initiatives involving the creation of detailed descriptions of levels.

2.4.3.3 Attempts to describe levels of language proficiency in performance terms have most notably been made by the Interagency Language Round Table (USA) and the Council of Europe. These have given rise, respectively, to the Oral Proficiency Interview (OPI) scale and the Common European Framework of References for Languages (CEFR), which are now widely used as guides to direct assessment or as references for the interpretation of scores in language tests. These scales focus on general (social or academic) uses of language. The need for a specific scale for ICAO language proficiency requirements, and its resulting development, are discussed in Chapters 4, 5 and 6 of this manual.

2.4.3.4 The texts that make up such scales are called descriptors. They summarize significant features of language performance that allow distinctions between one level and another. Broadly speaking, there are two types of language proficiency rating scales in use in language training and testing: those which use a "can do" approach and those which describe specific features of language use. While the "can do" descriptors describe the types of real-world communication tasks that are successfully accomplished at each level, descriptions of language use are generalizations about the quality of language used. These generalizations may focus separately on individual features of language use. Thus one level may be characterized by several different features such as pronunciation, structure, vocabulary, fluency, comprehension or interaction.

2.4.3.5 In these descriptions, characteristics of accuracy and fluency are commonly differentiated. Accuracy refers to the correctness of the language and its use. Fluency refers to the ease and spontaneity with which the language is used. At a given stage of progression, accuracy and fluency may be at different levels. The assessment criteria based on the rating scale presented in Chapter 4 must enable accuracy and fluency to be discriminated.

2.5 THE CASE OF ENGLISH AS A LINGUA FRANCA

2.5.1 English is a first language or a widely used national language in approximately sixty States and is an important second language in many more. There are more speakers worldwide of English as a second or foreign language than as a first language, and most of the contexts in which English is used occur among speakers of English as a second or foreign language. Non-native users of English outnumbered native users at the start of the 21st century by approximately 3 to 1 (Graddol, 1997; Graddol, 2006).

2.5.2 In this context, it is no longer appropriate to use first-language or “native” speakers as the model for pronunciation. Most users of English will not be communicating with a native speaker of English but with another English-as-a-second-language speaker, and very few adult language learners achieve so-called “native-like” pronunciation. Thus, we are now seeing the emergence of English as an international language (EIL) or lingua franca, which sets its own standards of proficiency to ensure mutual understanding between multi-cultural users with different levels of proficiency. This evolution is particularly pertinent for language proficiency requirements in aeronautical radiotelephony communications.

2.5.3 EIL research (Jenkins, 2000) points out that “native-like” pronunciation is not only unlikely but also unnecessary. However certain features of the pronunciation of English are identified as being crucial to intelligibility for international users (lingua franca “core phonology”). These features include:

a) long/short vowel length distinctions (e.g. hit/heat);

b) the correct placing of nuclear stress (e.g. radar);

c) the marking of tone boundaries (i.e. significant changes in voice pitch or the direction of intonation which identify new components of a message); and

d) the avoidance of simplification or reduction of some consonant clusters (e.g. the cluster “st fl” linking the two words of “test flight” may be reduced in rapid speech to “tes’ flight”).

2.5.4 Research also points to the need, especially for highly proficient speakers, to focus on skills of accommodation in speaking. Accommodation is a natural process of adapting speech habits to the constraints of the context and the perceived ability of the hearer to understand. This involves:

a) the perception of an interlocutor’s possible linguistic difficulties; and

b) the replacement of high-risk (possibly unclear or ambiguous) features of the language to increase communicative efficiency.

2.5.5 Much of the general public attitude to dialect or accent is a matter of bias, with some accents favoured and others perceived negatively. Such bias, however, is attitudinal and not supported by linguistic knowledge; there is no single language or dialect or accent that is inherently better or worse than any other. However, popular attitudes to accent variety are difficult to dislodge.

2.5.6 It has been determined that, in an English-as-a-second-language context, speakers often do not share background knowledge. This means that pronunciation becomes even more important when two non-native English speakers are communicating. Mutually comprehensible pronunciation is desirable and, in the context of aviation communications, necessary.

2.6 ACQUIRING LANGUAGE PROFICIENCY

2.6.1 Basic principles of language learning

This section outlines some basic concepts about language learning in order to assist aviation language programme administrators. More detailed guidance on language training is provided in Chapter 7 and in Circular 323. Much research has been conducted in linguistics and language acquisition. Many professional organizations, university programmes, seminars, books and journals are devoted to language acquisition and teaching, particularly to the teaching of second languages. See Appendix F for a listing of useful and readily available resources.

2.6.2 Language learning versus language acquisition

2.6.2.1 Researchers have distinguished two cognitive processes in the ways in which people develop language proficiency that are partially related to age and environment. These processes are distinguished by the terms “learning” and “acquisition”.

2.6.2.2 The process of language “learning” is analytical and conscious and is typically set in motion by adults needing to use a foreign language. It involves moving progressively from simple to complex features (following a syllabus), often with a stronger focus on language forms than on meaningful use of language. Early language production and intensive practice of individual features, leading to habit-forming, are features of this process, with a high priority being given to correction of errors. While rapid progress is an important advantage of this process, one hypothesis is that the results of this process are unstable and do not enable the user to spontaneously speak or understand the language, but only to monitor or check the accuracy of language as it is used (Krashen, 1981; Krashen, 1982). Some features of linguistic competence, such as vocabulary memorization or applying grammatical rules, are better served by the language learning process than others, such as developing pronunciation skills or sociolinguistic competence.

2.6.2.3 The process of language “acquisition” is the one whereby infants learn their first language, or immigrants in a new community learn a second language. It comes about unconsciously through meaningful contact with and use of a language (for example mother-child or social interaction). Acquisition takes place over fairly long periods of time, involves an early “silent period” in which little language is produced, follows to some extent a “natural order” of language features, and progresses in response to natural feedback as opposed to formal correction. The results of the language acquisition process tend to be more stable and are considered to be the foundations of spontaneous uses of language. However one disadvantage of this process is the possible “fossilization” of skills. This means that a user’s level of proficiency in certain skills (frequently pronunciation) may stop developing at a level where the user unconsciously remains comfortable. This level might not however meet the proficiency requirements of the community.

2.6.2.4 Both processes therefore have their advantages and disadvantages. Adolescents and adults attempting to develop proficiency in a new language will need to mobilize both processes. Learning activities will allow rapid progress and help to improve accuracy through careful monitoring, but this will initially be at the cost of fluency and speed of speech processing and at the risk of not developing certain competences. Acquisition activities will help to improve spontaneous fluency through natural practice and provide a stable foundation for proficiency but, initially, at the cost of accuracy and at the risk of not progressing beyond certain levels of fossilization.

2.6.2.5 Generally speaking, progress in language proficiency is uneven. Typically the early stages provide opportunities to observe very rapid progress, but this can be followed by a period when progress seems to be much slower. Movement from one level to a higher one may often come about suddenly after long periods of seemingly fruitless efforts.

2.6.2.6 It should be remembered that errors are a natural feature of language development and an essential contribution to learning as a result of feedback in the communication loop or correction in a training environment. The correction of errors needs to be considered in the light of their developmental status as well as their seriousness with regard to successful communication.

2.6.3 Acquiring listening and speaking skills

2.6.3.1 Linguistic proficiency in listening and speaking can be broken down into component skills which are described below with their associated learning processes. These are the skills that appear in the ICAO rating scale.

a) ***Pronunciation (phonological competence).*** The basic elements of pronunciation (therefore of accent) are the individual sounds (phonemes) of the language, the patterns for stressing and unstressing syllables and words, and the patterns governing the rhythm and intonation of sentences or utterances. Pronunciation is particularly susceptible to the influence of a first language or regional variations and plays a very important role in the intelligibility of messages. The learning processes involved in the development of pronunciation include:

   1) listening and perception of meaningful phonemes and patterns;

   2) reproduction through repetition and rehearsal;

   3) adjustment in accordance with overt correction or feedback on communicative success.

b) ***Structure (grammatical competence).*** This skill addresses the accurate and appropriate use of basic and complex syntactic structures and grammatical features of the language, such as tenses and modality. Grammar and syntax are fundamental to conveying meanings and intentions. The accuracy of their use is a strong indicator of proficiency. The learning processes involved in the development of grammatical competence are:

   1) discovery of syntactic and grammatical rules by presentations and explanations or by induction;

   2) productive use of structures in isolation;

   3) productive use within context.

c) ***Vocabulary (lexical competence).*** The elements of vocabulary are words and fixed expressions comprising several words. They are often separated into function words (usually fulfilling a grammatical role) and content words related to topics being discussed. The level of proficiency will be apparent in the accuracy, range and speed of access to the vocabulary required in a given situation. This skill also includes paraphrasing skills. The learning processes involved in the development of lexical competence are:

   1) identification and memorization of new items;

   2) recognition and retrieval in context;

3) application of rules for word formation (morphology);

4) application of "collocational" knowledge (words frequently occurring together in pairs or in word clusters);

5) correct use of words in their grammatical and syntactic context.

d) ***Fluency.*** This skill addresses the ability to produce unrehearsed speech at an appropriate pace. Non-functional hesitations and fillers, due to language processing or excessive self-monitoring, gradually diminish as proficiency increases. Also speakers increase their ability to guide listeners through their discourse using lexical, structural and phonological resources of the language. The learning processes involved in the development of fluency are:

1) mastery of other subskills;

2) rehearsal, repetition;

3) production practice with reduced monitoring.

e) ***Comprehension.*** This skill addresses the ability to recognize and understand speech. Development of this skill will result in decreasing difficulty when dealing with complex discourse, with unexpected or unfamiliar topics, unfamiliar accents or delivery styles and with unfavourable conditions of reception (due to background noise, etc.). Proficiency in comprehension can be characterized by the degree of detail and speed of understanding. The learning processes involved in the development of comprehension are:

1) mastery of other subskills;

2) progression from simplified to natural speech;

3) graduated listening tasks (word recognition, overall meaning, complex meanings, inferences).

f) ***Interaction.*** This skill addresses the ability to engage in spontaneous spoken dialogue and to successfully achieve communicative goals. Increasing proficiency in this skill results in reduced allowance or effort on the part of an interlocutor to maintain a conversation. It is characterized by the rapidity and appropriateness of responses, the ability to volunteer new information, to take conversational initiatives, to be responsive to feedback from an interlocutor, and to detect and to resolve misunderstandings as they occur. The learning processes involved in the development of interaction are:

1) exercises to acquire fluency and comprehension;

2) observation of interaction by others;

3) active situational practice with varied interlocutors.

2.6.3.2 It can be helpful to consider the above skills as forming a pyramid structure as illustrated in Figure 2-2. In this representation, the three linguistic subskills, structure, vocabulary and pronunciation, at the base of the pyramid are used by speakers and hearers and provide the foundation for the performance skills of speaking (fluency) and listening (comprehension). These two performance skills are further combined to ensure proficiency in interaction.

2.6.4 Language loss and language maintenance

2.6.4.1 It is known from experience and practical observation that language loss occurs. Deterioration to some degree in the language proficiency of individuals who do not use their second or foreign language for a long time is a common experience. What is not known is at what rate such loss occurs or at what point language loss does not occur. While loss of a second or foreign language is a commonly observed occurrence, people do not normally lose fully acquired first languages (barring disability or injury).

2.6.4.2 It is important therefore, where language proficiency is part of a career-long requirement, for it to be considered over time, with periodic renewals of assessment associated with the provision of sufficient opportunities for practice and skill-refreshment.

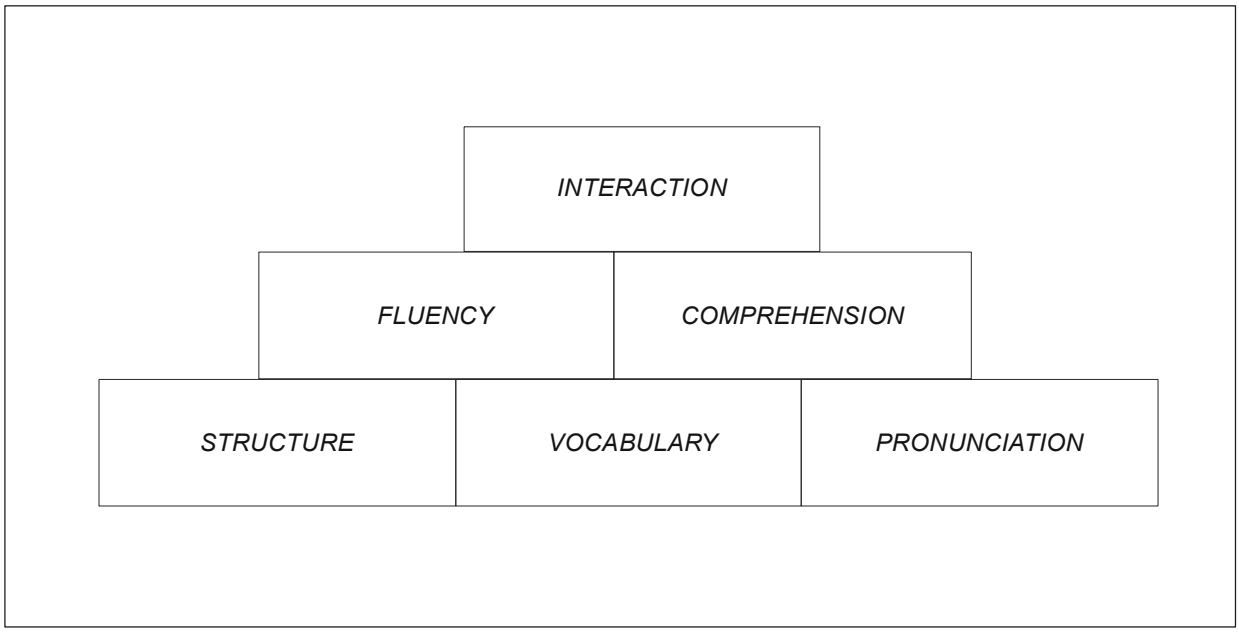

Figure 2-2. A pyramid structure of language proficiency skills

Chapter 3

AERONAUTICAL RADIOTELEPHONY COMMUNICATIONS

3.1 INTRODUCTION

This chapter briefly outlines the features of language and language proficiency that characterize aeronautical radiotelephony communications. This will be of particular interest to language training and testing specialists and to operational managers aiming to provide to the aviation industry, or acquire from it, professionally appropriate services in the implementation of ICAO language proficiency requirements. It will also assist them to raise the awareness of pilots and controllers of their professional use of language (phraseology and plain language) and of the dangers inherent in voice communications, particularly in cross-cultural communications. The brief outline provided in this chapter can be supplemented by the studies referred to in Appendix F, Section I.

3.2 GENERAL LANGUAGE AND SPECIAL PURPOSE LANGUAGE

3.2.1 Language proficiency is necessarily linked to particular uses of the language. Even the most general uses of language (for example, social conversation, reading newspapers or watching films), serving as environments for the natural acquisition of languages or for the exercise of already acquired proficiency, are specific in many ways. No effective language-teaching programme would attempt to expose learners to a language without referring to examples of actual language use. All uses of a language and all language-learning environments have unique characteristics that are the consequence of the context of communication and the tasks and purposes of the users.

3.2.2 The context of the communication includes features such as:

a) domains (personal, occupational, etc.);

b) situations (physical location, institutional conventions, etc.);

c) conditions and constraints (acoustic interference, relative social status of speakers, time pressures, etc.);

d) mental contexts of the user and of the interlocutor (i.e. filtering of the external context through different perceptual mechanisms);

e) language activities (receptive/productive/interactive/mediating); and

f) texts (spoken/written).

3.2.3 The tasks and purposes of the users determine:

a) communication themes or topics;

b) dominant speech acts or language functions to be understood or produced;

c) dominant interactive schemata or speech-act sequences and exchange structures;

d) dominant strategies (e.g. interaction: turn-taking, cooperating, communication repair, etc.).

3.2.4 Proper implementation of ICAO language proficiency requirements depends on an accurate understanding of the characteristics of the language of aeronautical radiotelephony communications.

Sub-languages

3.2.5 Highly specialized uses of language may give rise to subsystems of a given language, or sub-languages. The term is not intended to be pejorative. It does not convey a notion of inferiority, but of linguistic dependence, since sub-languages are derived from the linguistic material of natural or plain languages. Sub-languages are characterized by the use of "non-standard" linguistic forms and highly specialized vocabularies. As a result, they may be difficult or impossible to understand by those who are not members of the specialized community of users. Sub-languages may arise spontaneously, they may be designed and implemented artificially, or they may be the product of a combination of spontaneous and artificial processes. An example of an artificial sub-language is Seaspeak which has been designed for maritime ship-to-shore and ship-to-ship communications (Weeks et al., 1983).

Aviation language

3.2.6 The field covered by the term "aviation language" is relatively broad. It could include all of the language uses of many different professions (engineers, technicians, commercial staff, flight crews, etc.) within the aviation domain, which itself includes specializations such as aircraft construction, aircraft maintenance, aircraft operations, air traffic control, regulation, airport activities, passenger care, and flight crew operations.

3.2.7 The sole object of ICAO language proficiency requirements is aeronautical radiotelephony communications, a specialized subcategory of aviation language corresponding to a limited portion of the language uses of only two aviation professions — controllers and flight crews. It includes ICAO standardized phraseology and the use of plain language. The standardized words and phrases of ICAO phraseology approved for radiotelephony communications have been developed over years and represent a true sub-language as defined above. It may be useful to consider aviation language, radiotelephony language, and phraseologies as increasingly smaller subsets within the larger category of "language".

3.3 GENERAL FEATURES OF THE LANGUAGE OF AERONAUTICAL RADIOTELEPHONY COMMUNICATIONS

3.3.1 Aeronautical radiotelephony communications can be characterized as follows:

a) they require speaking and listening skills, but not reading and writing (although data link applications will undoubtedly require these additional skills in the near future). Receptive, productive, interactive and mediating activity (in the case of relayed messages) are all required;

b) they are highly context-dependent since they rely on a great deal of specific technical knowledge related to aviation themes or topics such as aircraft, navigation, air traffic control procedures and equipment;

c) the absence of a visual/kinetic channel puts increased reliance on clear and accurate speech, since the usual conversational supports of gesture, posture, gaze, etc., are unavailable;

d) the separation of speakers in space, and the resulting absence of common points of reference, mean that much more information needs to be exchanged in order to establish common ground;

e) only one speaker can transmit a message at any one time. Speakers are therefore unable to interject remarks or comments that may serve to monitor effective mutual understanding;

f) the acoustic conditions under which communication takes place is generally poorer than in face-to-face communications due to the narrow bandwidth which can obscure some sounds (for example “s” and “f”), background noises such as static interference or the cockpit working environment. Imperfect microphone technique on the part of speakers, who may, for example, switch their microphone on some moments after commencing a message, will “clip” part of that message.

3.3.2 While pilots and controllers are communication partners, they approach the task from different perspectives, and therefore their communication differs in purpose and standpoint. Controllers, with an overall view of traffic within an airspace, are concerned with ensuring the safety of all aircraft in that airspace, with additional secondary consideration to the efficient management of their own workload. Meanwhile, flight crews are focused on the progress of their individual flight, with additional secondary consideration given to the efficiency and expeditiousness of that flight. This divergence of standpoint and purpose causes a certain degree of negotiation in radiotelephony communications and is one of the reasons why plain language is needed.

3.3.3 Radiotelephony communications bring together an international community of speakers whose pronunciation of the common language, English, will be influenced by regional varieties or by their mother tongue and whose levels of proficiency are unequal. This aeronautical community is defined by its shared knowledge of the aeronautical domain and, in particular, the conventions of radiotelephony communications. This shared knowledge is however counterbalanced by differences in language proficiency levels. This places different responsibilities on the shoulders of all users:

a) users with low proficiency must undertake training in order to reach the minimum level acceptable to ensure safe operations; and

b) users with high proficiency must accommodate their use of language so as to remain intelligible and supportive to less proficient users.

3.3.4 In addition to all of these constraints, one overriding feature needs to be taken into account: unlike social conversations or intellectual discussions, inaccuracy and misunderstandings in aviation radiotelephony communications represent a danger to human lives.

Misunderstandings in aeronautical radiotelephony

3.3.5 Most humans use language readily and usually successfully without knowledge about the nature of language. Studies of miscommunications in air traffic control highlight how the ease with which we use language to communicate in our daily lives without serious consequences for miscommunication masks the fragility of human language as a vehicle for safety-critical communications. The apparently simple use of language actually requires a sophisticated interaction of complex processes, and our usually successful daily experience with language belies its complexity. Breakdowns occur for any number of reasons, for example:

a) two words may sound the same;

b) there may be significant pronunciation differences, even among native speakers;

c) a speaker’s message may be too indirect so that the intent is missed; and

d) a speaker may have inadequate familiarity with the language and so is unable to communicate effectively.

3.3.6 In daily life, miscommunication occurs but rarely results in anything other than minor inconvenience, embarrassment or lost time. In aeronautical radiotelephony communications, however, the stakes are dramatically higher and communication errors have the potential for far more serious consequences. Subsequent to an accident in 1977 where miscommunication was identified as a contributing factor, ICAO published changes to phraseologies and procedures based on lessons learned from an analysis of the communication prior to the accident. Nonetheless, miscommunication continues to occur decades later as numerous incidents and a number of other high-profile accidents in the intervening years attest.

3.3.7 The accumulated experience of decades of aviation have provided many examples of actual misunderstandings between pilots and controllers. In most cases, these were resolved. However, in a number of cases, unresolved misunderstandings contributed to serious damage to property and loss of life. The following two examples of messages illustrate misunderstandings due to errors in their production:

a) *Controller: Descend two four zero zero feet.*
In this message, the similarity ("homophony") between "two" and "to" led the pilot to understand 400 feet instead of 2 400 feet. The aircraft crashed into high ground.

b) *Pilot: We are at take-off.*
In this message, the controller understood that the pilot was waiting in position to begin the take-off, whereas the aircraft had actually begun to accelerate along the runway. It collided in foggy conditions with another aircraft.

Phraseology

3.3.8 The chances of such confusion arising are greatly reduced by the use of standardized phraseology which is intended to be employed by all those involved in aeronautical radiotelephony communications. The rules for this language are located in Annex 10, Volume II, and Chapter 12 of Doc 4444. These are the basis of a "restricted" sub-language for routine situations. They contain rules for when to say something, what to say (words and sentence patterns), what to understand and how to pronounce and utter messages. The use of phraseology is further illustrated in Doc 9432.

3.3.9 Standardized ICAO phraseology is sometimes referred to as a kind of jargon, a specialized code specific to air traffic controllers and flight crews. Yet, as a formalized code, ICAO phraseology does not serve the same function as informal jargon. Rather, phraseology has the specific technical function of ensuring efficient and safe communications. Informal jargon, jargons from other specialized fields of activity (for example, military) or anything else which may make comprehension more difficult should be avoided, given the potential consequences of misunderstandings within the radiotelephony environment.

3.3.10 The principal linguistic characteristics of standardized phraseology (Philps, 1991) are a reduced vocabulary (around 400 words) in which each word has a precise meaning, often exclusive to the aviation domain, and short sentences resulting from the deletion of "function words" such as determiners (the, your, etc.), auxiliary and link verbs (is/are), subject pronouns (I, you, we) and many prepositions. Sentences also frequently contain nominalizations (verbs transformed into nouns). A high proportion of sentences (around 50 per cent) are imperative or passive. Examples of such sentences are:

Cleared to land.
Report when ready.
Say rate of climb.
Requesting low pass.
Heading is good.

3.3.11 However, compliance with ICAO standardized phraseology is not fully harmonized on a worldwide basis. States publish differences with respect to ICAO Standards. Additionally, users, particularly expert speakers of a language, for all sorts of respectable reasons such as pressure of work, and less respectable reasons such as carelessness and insensitivity, fail to adhere to prescribed ICAO standardized phraseology, thereby creating possibilities for misunderstanding in a busy international environment. One example of such failure would be to identify a runway by saying “Runway ten left” instead of “Runway one zero left”. The word “ten” could very easily be heard as “turn”, with obvious risks for the safety of ground movements.

3.3.12 While standardized phraseology is a linguistic phenomenon and thus susceptible to linguistic analysis, it is also important to acknowledge that it represents a set of operational procedures. The linguistic analysis of phraseology must therefore recognize these operational constraints, whose adequate description belongs solely in the hands of qualified operational personnel.

Plain language

3.3.13 Standardized phraseology should therefore provide the tools for communication in most of the situations encountered in the daily practice of ATC and flight. However, sometimes the unexpected happens. For example an inexperienced pilot gets lost, a technical problem develops on the aircraft, a passenger falls sick, someone provokes a bomb alert, ATC equipment fails or the truly unexpected arises. In these cases, where phraseology provides no ready-made form for communication, pilots and controllers must resort to plain language.

3.3.14 Plain language in aeronautical radiotelephony communications means the spontaneous, creative and non-coded use of a given natural language, although constrained by the functions and topics (aviation and non-aviation) that are required by aeronautical radiotelephony communications, as well as by specific safety-critical requirements for intelligibility, directness, appropriacy, non-ambiguity and concision.

3.3.15 Below is an example of plain language as actually used by a military pilot to explain an unusual problem to a civil air traffic controller:

> 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?

3.3.16 The features of plain language, as illustrated above, can be far from plain and present a challenge to listening skills. They include the use of a wider vocabulary referring (often with less precision) to domains and topics outside the aviation area (medicine, military organizations, etc.), references to complex notions such as hypothesis (we may divert), indirectness (we would like a request) and, under stressful conditions, much longer and less organized sentences.

3.3.17 While it is widely recognized that a need for plain language may quickly arise during emergency or unusual situations, the critical role of plain language in more or less routine situations is less recognized outside the relatively small circle of applied linguists who specialize in aviation communications. In fact, in addition to the need for plain language, which is readily acknowledged to occur during unusual or emergency situations, plain language is a requirement in many everyday situations. Pilots and controllers frequently need to share information or to negotiate a variety of matters. Consider, as an example, the following exchange:

ATC: Midland Five November Zulu, good morning. Radar contact. Proceeding into Kerky Vectoring 02.
Pilot: Direct Kerky 02, Midland Five November Zulu. Can we keep high speed?
ATC: For the time, yes.

While it is acknowledged that this transcript of an actual ATC communication represents imperfect use of available phraseology, it is also true that there is no ICAO phraseology for this pilot's request for permission ("Can we keep high speed?"). As such, this is an example of a situation that can occur which calls on plain language proficiency in order to meet the communicative requirements of the task at hand.

3.3.18 Another example of a non-urgent communication which would require plain language is given in this excerpt from an actual transcript, as two aircraft are descending towards the airfield:

Pilot: Who's ahead? Us or the Air Europe?

In this case, once again, there appears to be no ICAO phraseology to cover this request for information. While ICAO phraseologies should always be used in the first instance, there will always be situations, some routine, for which phraseologies do not exist.

3.3.19 Of course, the most critical need for plain language proficiency arises during urgent or emergency situations, when inadequate language proficiency simply becomes another barrier to the successful conclusion of a flight. One analysis of a pilot and controller dialogue in which a light, general aviation aircraft could not lower its landing gear reveals that fully 60 per cent of the dialogue required plain language. An examination of the transcripts of the dialogue highlights the important role that plain language proficiency plays in resolving a problem:

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.

3.3.20 Nevertheless, even when using plain language, speakers are required to be fluent, clear, concise and unambiguous so as to efficiently and safely give instructions, obtain and provide information, resolve misunderstandings and ensure the pilot's confidence in the service provided.

Code-switching

3.3.21 Code-switching is a common phenomenon of language use referring to the alternation between two or more languages, dialects or registers in a single conversation (or even a single utterance within a conversation) involving users who have more than one language in common. Pilots and controllers share two distinct registers of language for the purposes of radiotelephony communications — standardized phraseology and plain language. Unsurprisingly, code-switching is strongly present in radiotelephony communications, as pilots and controllers make alternating use of standardized phraseology and plain language. Some of the interfering effects of code-switching can be observed when utterances in standardized phraseology display the undesirable influence of plain language (for example, the use of non-standard vocabulary or the expansion of normally reduced syntactic structures). Plain language may equally sometimes display the influence of phraseology (the deletion of determiners, auxiliary verbs, etc.) in the interest of concision.

Bilingualism

3.3.22 In addition to code-switching phenomena, compliance with Annex 10, Volume II, 5.2.1.2.1, leads, in many parts of the world, to the creation of a bilingual environment in which controllers alternate between their local (usually native) language and the English language, while pilots may choose which of the available languages to use. In these environments, pilots who are proficient only in the English language may be unable to take into account exchanges taking place in the local language with other aircraft in the same airspace.

3.4 SPECIFIC FEATURES OF THE LANGUAGE OF AERONAUTICAL RADIOTELEPHONY COMMUNICATIONS

3.4.1 The specific nature of the language of aeronautical radiotelephony communications is apparent in the forms of the language that are dominant or most common. The most useful vocabulary for pilots and controllers is dependent on the themes and topics that are most commonly referred to. The most useful grammar is dependent on the language functions that are most commonly expressed and on the most characteristic exchange structures. This section provides a brief introduction to these dominant characteristics. Appendix B provides more detailed checklists. The primary purpose of these checklists is to enable language course planners and teachers to formulate linguistically appropriate objectives for training and testing. While the checklists are not exhaustive, their coverage has been cross-checked against the published results of a number of linguistic and Human Factors studies of pilot-controller communications.

Dominant themes and topics

3.4.2 The lexical competence required of pilots and controllers will concern words and phrases associated with dominant themes or topics. Below is a non-exhaustive list of priority themes and topics arising in aeronautical radiotelephony communications:

- Abbreviations, acronyms
- Animals, birds
- Aviation, flight
- Behaviour, activities
- Cargo, merchandise, packaging, materials
- Causes, conditions
- Geography, topographical features, nationalities
- Health, medicine
- Language, spoken communications
- Modality (obligation, probability, possibility)
- Numbers
- Perception, senses
- Problems, errors, accidents, malfunctions
- Rules, enforcement, infringement, protocol
- Space, movement, position, distance, dimension
- Technology
- Time, duration, schedules
- Transport, travel, vehicles
- Weather, climate, natural disasters

A more detailed inventory of domains and topics is provided in Appendix B, Part II.

Dominant communicative functions

3.4.3 The communicative function of an utterance corresponds to the speaker's intention in producing a given message (speech act) and can usually be described by a verb of communication. For example, the intention may be to request information, to thank or to deny approval. Since intentions are inherently linked to the activities that are being undertaken by the speakers, it follows that those tasks which are peculiar to the jobs of pilots and controllers will give rise to a limited range of communicative functions occurring with a high degree of frequency.

3.4.4 A speaker can convey an intended function through a variety of language forms. For example, the language function of "requesting an action" could be expressed in any of the following utterance forms in a non-radiotelephony context:

a) Bring me the file.

b) Could you bring me the file?

c) Would you hand me that?

d) Pass that here.

e) Where is the file?

f) How about that file?

3.4.5 A single function can be expressed by several different grammatical forms, while the same grammatical form can be employed to express a variety of functions. Very often, the correct interpretation by a listener of an utterance relies on additional cues provided by the speaker, particularly intonation and pausing. Knowledge of the immediate context of the utterance (the physical environment, the role of the speaker, etc.) also assists listeners in identifying the intended function of an utterance.

3.4.6 The dominant functions in a pilot-controller dialogue are presented in the checklist in Appendix B, Part I. The functions have been grouped into four categories corresponding to their role in carrying out ATC and piloting tasks. These categories are listed as communicative functions directed towards:

a) triggering actions;

b) sharing information;

c) managing the pilot-controller relationship;

d) managing the dialogue.

3.4.7 The "triggering actions" category is the core role of pilot-controller communications. Supporting the core is the "sharing information" category because appropriate actions can be triggered only if the pilot and controller share sufficient information about the current situation. The two last categories play a subordinate mediating role with regard to the first two. The functions in each category are listed in the checklist in Appendix B, Part I.

3.4.8 Due to the different roles of the pilot and controller within the overall context of their activities, some functions are typically uttered exclusively by one or the other. These functions are marked (P) or (C) in the checklist in Appendix B, Part I. Other functions, marked (C/P), may be uttered by either speaker in the course of their exchanges. In the training context, this distinction will determine whether given functions need to be learned for comprehension, for production or for both comprehension and production.

3.4.9 Contextual factors may result in certain functions being more or less “marked” for different attitudes, such as politeness or insistence. These markers, which may be lexical (“please”) or grammatical (“Could you possibly give me …?”), as well as the language structures for the basic functions, need to be learned and practised.

3.4.10 Many communicative functions are paired with one another; for example, a given function (e.g. request permission) is commonly adjacent to another given function (e.g. give permission) in the context of an exchange. These paired relationships are indicated in the checklist by displaying related functions in two columns.

Dominant exchange structures

3.4.11 Exchange structures (also called schemata or scripts) are based on the most frequently occurring conversational patterns in given contexts. They tell us, for example, who will open the exchange and how the exchange will be closed. They tell us what are the different steps of the exchange between opening and closing, and what meanings will be exchanged.

3.4.12 Familiarity with the scripts for a given situation plays an important role in the fluent and accurate production and comprehension of language in dialogue situations. It facilitates the ability to plan participation ahead of time on the basis of the expected course of the conversation. The principal components of these scripts are “moves” (separate messages from one speaker) and “exchanges” (combinations of several moves going from initiation to completion).

3.4.13 In aeronautical radiotelephony these scripts have been described (Mell, 1992; Sassen, 2005) and may be assumed to contribute to the shared knowledge of pilots and controllers. Exchange patterns are of three basic types:

a) two moves initiated by the controller (Maintain flight level 270/Maintain 270);

b) three moves initiated by the controller (Say heading/173/173 roger);

c) three moves initiated by the pilot (Requesting descent/Descend flight level 1 3 0/Descend flight level 1 3 0).

The examples given above are made up of “simple” moves — that is to say single short utterances each expressing a single communicative function.

3.4.14 One feature of communications in non-standard situations is the replacement of simple moves by “complex” moves such as the following:

Pilot: I’ve got an emergency, short on fuel, and I’m steering to the beacon on 112.3, and I’ve been told to tune onto the ILS to get me into an airfield. I have less than 15 minutes fuel supply sir. Have you copied? Over.

The linguistic challenge of complex moves is for the listener to locate and identify the core function of the move. By way of illustration the above example is reproduced below with the core function in bold characters:

Pilot: I’ve got an emergency, short on fuel, and I’m steering to the beacon on 112.3, and **I’ve been told to tune onto the ILS to get me into an airfield**. I have less than 15 minutes fuel supply sir. Have you copied? Over.

3.4.15 Furthermore, the basic exchange structures will sometimes be extended by the embedding of subordinate exchanges thereby producing complex exchanges. For example:

ATC: Are you direct BRC?
Pilot: Yes sir. Do we need to come right a little?
ATC: I think you proceed initially to ABB, if you wish ABB by the right.
Pilot: Understand turn right. We could go to ABB VOR, BRC.
ATC: Negative. Proceed ABB, BRC or if you prefer BRC direct.
Pilot: Direct to the BRC.

Knowledge of the basic script will enable users to track complex structures so as to locate and identify the core moves. By way of illustration the above example is reproduced below with the core moves in bold characters:

ATC: Are you direct BRC?
Pilot: Yes sir. Do we need to come right a little?
ATC: I think you proceed initially to ABB, if you wish ABB by the right.
Pilot: Understand turn right. We could go to ABB VOR, BRC.
ATC: Negative. Proceed ABB, BRC or if you prefer **BRC direct**.
Pilot: **Direct to the BRC**.

Chapter 4

ICAO STANDARDS AND RECOMMENDED PRACTICES CONCERNING LANGUAGE PROFICIENCY REQUIREMENTS

4.1 INTRODUCTION

This chapter explains the Standards and Recommended Practices (SARPs) related to language use and language proficiency in aeronautical radiotelephony communications. The material in this chapter will be of interest to administrators of civil aviation authorities, airlines and air traffic service providers. Information specifically relating to the language proficiency requirements — the holistic descriptors and Rating Scale — will be of use to training managers, language trainers and assessors.

4.2 OVERVIEW OF ICAO LANGUAGE PROFICIENCY SARPS

4.2.1 The purpose of the ICAO language proficiency requirements is to ensure that the language proficiency of pilots and air traffic controllers is sufficient to reduce miscommunication as much as possible and to allow pilots and controllers to recognize and solve potential miscommunication when it does occur. In short, language should be a tool to identify and help solve a potential problem before it becomes a disaster, rather than being one more attention-demanding obstacle. Rather than language playing a contributing role, the object of ICAO language proficiency requirements is for language to play a problem-alleviating or problem-avoiding role.

4.2.2 The ICAO language proficiency requirements cannot completely eliminate all sources of miscommunication in radiotelephony communications. Rather, the goal is to ensure, as far as possible, that all speakers have sufficient language proficiency to handle non-routine situations. It is unlikely that communication errors will ever be completely eliminated; however, compliance with the ICAO language proficiency requirements will enable speakers to more readily recognize errors and work towards the successful and safe resolution of misunderstandings.

4.2.3 The SARPs relating to language use for aeronautical radiotelephony communications that were adopted by the ICAO Council in March 2003 are found in Annex 1; Annex 6, Parts I and III; Annex 10, Volume II and Annex 11 (see Appendix A).

4.2.4 The language-related SARPs can be broadly categorized into three types: Annex 10 SARPs clarify which languages can be used for radiotelephony communications; Annex 1 SARPs establish proficiency skill level requirements as a licensing prerequisite; and Annexes 6 and 11 provide for service provider and operator responsibility.

4.2.5 The language proficiency requirements and Rating Scale were developed to assess speaking and listening proficiency specifically for aeronautical radiotelephony communications. The requirements were also developed for use in assessing proficiency in all languages used for radiotelephony communications, not just in the English language. Table 4-1 provides the references in the Annexes for the language provisions.

4.2.6 Other language-related information and guidance material are contained in the PANS-ATM (Doc 4444), Chapter 12, and in the Foreword to Doc 9432.

Table 4-1. References in ICAO Annexes concerning language provisions

Annex	*Reference*	*Focus*
1	1.2.9 5.1.1.2, XIII) Appendix 1 Attachment A	Language proficiency Licence endorsement Requirements for proficiency in languages used for radiotelephony communications ICAO Language Proficiency Rating Scale
6 Part I Part III	 3.1.8 Section II, 1.1.3	 Operators' responsibility Operators' responsibility
10 Volume II	 5.1.1 5.1.1.1 and 5.2.1.6.2.1.1 5.2.1.2.1 to 5.2.1.2.3 5.2.1.4.3 5.2.1.5	 Radiotelephony discipline Using standardized phraseology and plain language Language to be used in aeronautical radiotelephony Pronunciation of numbers Transmitting technique
11	2.29	Air traffic services providers' responsibility Language to be used between ATC units

4.3 ANNEX 10 SARPs RELATED TO LANGUAGE USE

4.3.1 The SARPs contained in Annex 10, Volume II (reproduced in Appendix A), lay the foundation for the language proficiency requirements, stipulating that English be made available for international radiotelephony communications. The key changes brought about by the Annex 10 amendments were:

a) stipulating the use of ICAO standardized phraseology specifically;

b) clarifying that both phraseology and plain language proficiency are required;

c) strengthening the provisions that English be made available in international operations.

4.3.2 The first important feature of Annex 10 language-related SARPs is that greater emphasis is placed on the importance of the use of ICAO standardized phraseology. The use of non-standardized phraseology increases the chances of miscommunication.

4.3.3 The second sentence in Annex 10, Volume II, Chapter 5, 5.1.1.1, establishes as an ICAO Standard what has previously been implicit in a number of ICAO SARPs and explicit in ICAO guidance: the need for plain language proficiency as a fundamental component of radiotelephony communications. While paragraph 5.1.1.1 specifies the need for plain language proficiency in addition to standardized phraseology, it should not be interpreted as suggesting that plain language can suffice instead of ICAO standardized phraseology. ICAO standardized phraseology should always be used in the first instance.

4.3.4 It is not possible, however, to develop standardized phraseology to cover every conceivable situation. When plain language is required, it should be delivered in the same clear, concise and unambiguous manner as standardized phraseology in emergencies or unusual situations, to clarify or elaborate on instructions or when the need

to negotiate information or instructions arises. While the Standard in 5.1.1.1 identifies and formalizes the need for the use of plain language, it should in no way be interpreted as permission to chat or otherwise ignore the formal and informal protocols that govern the use of standardized phraseology.

4.3.5 In Annex 10, Volume II, it is stipulated that radiotelephony communications shall be conducted either in the language of the station on the ground or in English, and that English shall be made available when pilots are unable to use the language of the station on the ground. The upgrading of provisions governing the use of language for radiotelephony communications from a Recommendation to a Standard emphasizes the important link between communications and safety. In Annex 10, Volume II, Chapter 5, Note 1 to 5.2.1.2.1, it is clarified that the language of the ground station may be different from the national language of the State, and that States in a particular region may also agree that a regional, common language be used. The Standards in 5.2.1.2 mean, in effect, that local, national and regional languages can be used for radiotelephony communications, but that English shall always be available at those stations serving routes and airports used by international air services. As an example, Spanish is spoken as the national language in States from Mexico through Central America and throughout much of South America. For international flights in such States, Spanish or English can be used, but English must be made available. International pilots flying in this airspace may use either English or Spanish. ICAO provisions do not in any way limit the use of a national, regional or local language but recognize the practical requirement for English to be available for the many pilots who do not speak the national language of a particular State.

4.3.6 It should be noted that the establishment, at this stage, of a single language in the radiotelephony environment that would rely only on the English language faces several challenges. It would require all users of airspace to have a sufficient knowledge of the English language (ICAO Operational Level 4). The new ICAO language proficiency requirements will certainly improve levels of language proficiency in aviation, but it is doubtful that the level of English proficiency among pilots and air traffic controllers worldwide at the moment the amendments were proposed would have permitted the implementation of such a policy without excluding a large number of currently active pilots. It must also be recognized that there are significant national, cultural, economic and organizational impediments that make such a move impractical. Because language use is so closely tied to a community's sense of national and cultural identity, language policies always require sensitive management.

4.4 ANNEX 1 SARPS RELATED TO LANGUAGE PROFICIENCY

4.4.1 Provisions governing required proficiency in the language(s) used for radiotelephony communications previously consisted of an Annex 1 Standard limited to controllers. Controllers were required to demonstrate knowledge of "the language or languages nationally designated for use in air-ground communications and ability to speak such language or languages without accent or impediment which would adversely affect radio communication". The intent of the provisions was clear but did not indicate what the "ability" to speak a language means.

4.4.2 The strengthened language proficiency requirements clarify what level of proficiency is appropriate. When more than one language can be used for radiotelephony communications, then all languages must be governed by the same proficiency requirements. The provisions also introduce evaluation requirements that apply equally to flight crews and air traffic controllers, as well as, in varying degrees, to aeronautical station operators, navigators and flight engineers.

4.4.3 The SARPs in Chapter 1, 1.2.9.1, 1.2.9.2 and 1.2.9.3 require flight crews and air traffic controllers to demonstrate language proficiency. The two Standards at 1.2.9.1 and 1.2.9.2 echo the previous provisions in Annex 1 regarding language proficiency and extend the provisions to most flight crews and some navigators. A Recommended Practice at 1.2.9.3 refers to the advisability that flight engineers and glider and free balloon pilots should have language proficiency. Guidance on appropriate assessment methods and methodologies can be found in Chapters 5 and 6 of this manual.

4.4.4 Paragraphs 1.2.9.4 and 1.2.9.5 specify proficiency level requirements and an implementation date of 5 March 2008 for flight crews, air traffic controllers and aeronautical station operators involved in international operations. These language proficiency requirements are found in the holistic descriptors in Appendix 1 to Annex 1 and Operational Level 4 in the ICAO Rating Scale contained in Attachment A to Annex 1. Commentary and additional information about the level requirements found in the holistic descriptors and Rating Scale are provided in 4.5 of this chapter.

4.4.5 Paragraphs 1.2.9.4 and 1.2.9.5 refer to a level of proficiency as described in Operational Level 4 of the Rating Scale. How States ensure that personnel demonstrate proficiency in this case may vary to some extent but, again, must be related to language proficiency rather than knowledge about language and must be directly linked to the ICAO Rating Scale. Testing requirements are described in Chapter 6 of this manual.

4.4.6 Although the heaviest training and testing burden will fall in the area of English as a second or foreign language, the language proficiency requirements apply to any language used in international aeronautical radiotelephony communications, but not to any language used in domestic operations.

4.4.7 The ICAO minimum proficiency requirements described in Operational Level 4 do not require “native” or “native-like” proficiency. As Operational Level 4 is significantly below Expert Level 6, it can be assumed that language loss as described in Chapter 2, 2.6.4, of this manual, can occur in individuals with Level 4 proficiency. Therefore, a Standard requiring recurrent language testing and a Recommended Practice recommending a schedule for re-evaluation were introduced into Annex 1 (Annex 1, 1.2.9.6 and 1.2.9.7).

4.4.8 The Standard at 1.2.9.6 stipulates that personnel who demonstrate language proficiency below Expert Level 6 on the ICAO Rating Scale shall be formally evaluated at intervals. The Recommended Practice at 1.2.9.7 indicates a schedule for re-evaluation, and Note 1 clarifies that recurrent evaluation is not required of anyone who is able to demonstrate language proficiency at Expert Level 6.

4.4.9 Annex 1, Chapter 2, 2.1.1.3.1, and Chapter 4, 4.1.2, stipulate that, for initial licensing and rating purposes, licensing authorities shall determine the way in which language proficiency is to be demonstrated. However, 1.2.9.6 stipulates that recurrent evaluations required for personnel who demonstrated Operational Level 4 and Extended Level 5 shall be formal.

4.4.10 The language provisions came into effect on 27 November 2003 and became progressively applicable as a result of the Council decision to apply Article 42 of the Convention on International Civil Aviation, whereby testing requirements for flight crews shall be applicable five years after adoption of the Standard to provide existing licence holders with “grandfather” rights.

4.4.11 As of 5 March 2008, aeroplane, airship, helicopter and powered-lift pilots, air traffic controllers and aeronautical station operators shall demonstrate the ability to speak and understand the language used for radiotelephony communications to the level specified in the language proficiency requirements in Appendix 1 to Annex 1. Flight navigators who are required to use the radiotelephone aboard an aircraft shall demonstrate the ability to speak and understand the language used for radiotelephony communications.

4.4.12 There is no language proficiency Standard applicable for glider and free balloon pilots and flight engineers. However, Annex 1, Chapter 1, 1.2.9.3, recommends that “Flight engineers, and glider and free balloon pilots should have the ability to speak and understand the language used for radiotelephony communications.”

4.4.13 Several States invested considerable resources and efforts to comply with the provisions by 5 March 2008. While some States were not compliant by March 2008, the applicability date established a milestone that helped to retain the focus required to implement the safety Standards related to language proficiency as soon as practicable.

4.4.14 In June 2007, the ICAO Council considered the consequences of non-compliance, including the impact on multilateral recognition of pilots’ licences provided for under Article 33 of the Convention on International Civil Aviation

when a State is unable to meet the minimum Standards prescribed in Annex 1. The Council proposed and the Assembly adopted Resolution A36-11, Proficiency in the English language used for radiotelephony communications, which urged Contracting States that are not in a position to comply with the language proficiency requirements by 5 March 2008 to post their language proficiency implementation plan, including their interim measures to mitigate risk.

4.4.15 The intent of the implementation plan is to provide a means of communicating the steps that States are taking to meet the language proficiency requirements and mitigate risk during the transition period from the applicability date of 5 March 2008 to 5 March 2011. Contracting States not compliant by 5 March 2008 were to provide their implementation plans to ICAO for posting on the flight safety information exchange website (FSIX) at www.icao.int/fsix/lp no later than 5 March 2008 and to regularly update them until full implementation. In this way, all other States would be aware of the implementation plans and able to make informed decisions.

4.5 ANNEX 1 DESCRIPTORS OF THE ICAO LANGUAGE PROFICIENCY REQUIREMENTS

4.5.1 The ICAO Language Proficiency Requirements consist of a set of holistic descriptors (Appendix 1 to Annex 1) and Operational Level 4 of the ICAO Rating Scale (Attachment A to Annex 1). Both are reproduced in Appendix A to this manual. Five holistic descriptors provide characteristics of proficient speakers and establish context for communications. The Rating Scale describes the discrete features of language use. ("Holistic" refers to the communicating person as a "whole", in contrast to the descriptors in the Rating Scale which instead examine individual, discrete features of language use.) A language proficiency Rating Scale may be thought of as a guide to good judgement and an important step towards harmonization of language standards to which pilots and air traffic controllers are held.

4.5.2 A note in Appendix 1 to Annex 1 states that "The language proficiency requirements are applicable to the use of both phraseologies and plain language." This statement refers only to those characteristics of language use to which ICAO standardized phraseology conforms. Appropriate application of the language proficiency requirements to the use of phraseology should include the following criteria:

a) pronunciation of phraseology according to ICAO recommended pronunciations as found in Annex 10, Volume II, 5.2.1.4.3, Doc 9342 or otherwise in accordance with the ICAO Operational Level 4 pronunciation descriptor of the Rating Scale;

b) using a speech transmitting technique (enunciation, rate of speech, pausing, and speaking volume) in accordance with Doc 9342 or otherwise with the ICAO Operational Level 4 fluency descriptor of the Rating Scale.

Appendix 1: Holistic descriptors

4.5.3 The holistic descriptors and descriptors in the Rating Scale are designed as a frame of reference for trainers and assessors to be able to make consistent judgements about pilot and controller language proficiency. Each descriptor is explained below.

a) ***Proficient speakers shall communicate effectively in voice-only (telephone/radiotelephone) and in face-to-face situations.*** Radiotelephony communications lack the facial cues, body language and listening cues found in usual face-to-face situations. Communications without such cues are considered to be more difficult and challenging, requiring a higher degree of language proficiency than face-to-face interactions. In addition, other features of radiotelephony communications make it a unique kind of communicative event. For example, the sound quality may be poor, with distracting

sounds and the communicative workload of the air traffic controller or a pilot may be heavy, with a corresponding need for efficiency and brevity. This holistic descriptor draws attention to the need for training and testing to provide voice-only settings to exercise or demonstrate language proficiency, as well as face-to-face settings that allow broader uses of language.

b) ***Proficient speakers shall communicate on common, concrete and work-related topics with accuracy and clarity.*** Context is an important consideration in communications, and an individual's language proficiency may vary in different contexts. This holistic descriptor limits the domain of the communicative requirements to work-related topics; that is, air traffic controllers and pilots are expected to be able to communicate about issues in their field of professional practice. Language proficiency should not be limited to standardized phraseology and should range across a relatively broad area of work-related communicative domains. Appendix B provides a non-exhaustive list of topics and domains appropriate to the work-related requirements of pilot and air traffic controller communications. It is meant as a guide to curriculum development. The assessment of radiotelephony communications should not be limited solely to those topics.

c) ***Proficient speakers shall use appropriate communicative strategies to exchange messages and to recognize and resolve misunderstandings (e.g. to check, confirm, or clarify information) in a general or work-related context.*** Linguists have identified strategic competence as an important part of language proficiency (see Chapter 2, 2.3.2.4, for a definition of strategic competence). One aspect of strategic competence important to air traffic controllers and flight crews is the ability to recognize and resolve potential misunderstandings, e.g. having strategies to check for comprehension in a meaningful way, such as asking for a readback. Equally important is the ability to rephrase or paraphrase a message when it is apparent that a message was not understood. Sometimes the phraseology "Say again" should be understood as a request for clarification rather than repetition. Air traffic controllers and flight crews should understand that silence does not always indicate comprehension. On the part of native-speaking air traffic controllers and flight crews, strategic competence can include an appreciation of the threats presented by cross-cultural communications and a sensitivity to strategies to confirm comprehension.

d) ***Proficient speakers shall handle successfully and with relative ease the linguistic challenges presented by a complication or unexpected turn of events that occurs within the context of a routine work situation or communicative task with which they are otherwise familiar.*** One of the more challenging events in all communications, including those involving the use of a second language, is when the unexpected happens. Human Factors experts have emphasized the threat of letting our expectations hinder our interpretation of reality. Sometimes, a complication or an unexpected event can lead to a communication breakdown. It is important for air traffic controllers and flight crews to have sufficient language proficiency and the strategic skills to manage a dialogue through any unexpected event. It is the nature of the work of controllers and pilots to adhere to strictly defined procedures and regulations and yet to be able, when confronted with a new situation, to demonstrate substantial flexibility in their response. This holistic descriptor emphasizes the need for language skills practised and demonstrated in this context.

e) ***Proficient speakers shall use a dialect or accent which is intelligible to the aeronautical community.*** A first and natural response to this holistic descriptor is to inquire which dialects or accents would be considered intelligible. One answer is to consider how this issue has traditionally been handled among native-speaker controller populations. In the United Kingdom, for instance, a great variety of regional dialects and differences exist. Air traffic control applicants and trainees are informally screened for use of a dialect appropriate to the international aviation context. A determination of what constitutes a strong regional dialect or marked accent is based on the extensive experience and good judgement of the trainer or assessor. When an individual demonstrates a strong regional dialect or marked accent, one determined to be easily understood only by those most familiar

with the dialect, that individual is counselled to use a dialect more widely acceptable or is provided with additional elocution or speech training.

4.5.4 If the native speaker as model and judge of appropriate dialect and accent is discarded (see Chapter 2, 2.4.1), then who is eligible to determine intelligibility? If the aeronautical community is considered as one to which an applicant gains admission through the demonstration of any number of competencies determined to be important to the community, then language proficiency is simply another competency. Based on their extensive experience, coupled with some standardized guides to qualifications, pilot and air traffic controller trainers and assessors use good judgement to make decisions regarding the readiness of applicants to enter the field. A similar methodology can be applied to the use of language. (See Chapter 6 for a more complete treatment of language proficiency rating and the role of "guided good judgement".)

Attachment A: ICAO Rating Scale

4.5.5 The scope and focus of the ICAO Language Proficiency Rating Scale are specific and unique in several important ways:

a) the ICAO Rating Scale addresses only spoken language (speaking and listening); it does not address reading and writing skills;

b) the ICAO Rating Scale has a distinct aeronautical radiotelephony focus; it addresses the use of language in a work-related aviation context, voice-only communications, using strategic competences for safe communications in case of complications or unexpected turn of events, and emphasizing intelligibility in an international community of users;

c) ICAO Operational Level 4 does not target high degrees of grammatical correctness or native-like pronunciation. Grammar, syntax, vocabulary and pronunciation are judged primarily to the extent that they do not interfere with effective oral communication; and

d) the final rating is not the average or aggregate of the ratings in each of the six ICAO language proficiency skills but the lowest of these six ratings.

4.5.6 The ICAO Rating Scale contained in Attachment A to Annex 1 describes language use as opposed to "can do" statements. Professional language teaching or testing specialists are familiar with this form. The ICAO Rating Scale delineates six levels of language proficiency ranging from Pre-elementary (Level 1) to Expert (Level 6) across six skill areas of linguistic performance: pronunciation, structure, vocabulary, fluency, comprehension and interactions.

4.5.7 The number of levels was determined as sufficient to show adequate progression in developing language proficiency without exceeding the number of levels between which people are capable of making meaningful distinctions. It is not an "equal interval" scale; the amount of time required to progress between levels will vary, i.e. moving from Elementary Level 2 to Pre-operational Level 3 may take longer or more training than moving from Operational Level 4 to Extended Level 5.

4.5.8 Levels 1 to 3 of the Rating Scale have been provided in order to assist Contracting States in setting language proficiency standards for recruitment and training purposes, whereas Levels 4 to 6, in addition to providing the minimum operational standard (Level 4), also provide the basis for determining intervals between recurrent formal evaluation or dispensation from the need to be re-evaluated.

4.5.9 It should also be noted that the descriptors for Expert Level 6 exceed the demands of aeronautical radiotelephony communications. Level 6 has a very wide coverage since it is intended to account for most first-language

speakers with native or native-like proficiency as well as second- or foreign-language speakers with a high level of proficiency. Attainment of Level 6 should be considered as being beyond the realistic expectations of most second- or foreign-language learners. Furthermore, it is not an indispensable requirement for successful aeronautical communication.

4.5.10 It is important to note that the Rating Scale does not refer to native or native-like proficiency, resulting from a principled decision that native speech should not be privileged in a global context. All participants in aeronautical radiotelephony communications must conform to the ICAO proficiency requirements, and there is no presupposition that first-language speakers necessarily conform. An additional reason for avoiding the use of the term native language or referring to a native speaker is because of the proven difficulty in defining just precisely what a native speaker is (see Chapter 2, 2.4).

4.5.11 It is assumed that anyone awarded a particular rating level demonstrates proficiency better than the descriptors contained in each level below. Failure to comply with descriptors in one category in one level indicates that the next lower proficiency level should be awarded. A person's overall proficiency rating is determined by the lowest rating assigned in any of the language proficiency skills of the rating scale. This is essential because the Operational Level 4 descriptors were developed as the safest minimum proficiency skill level for aeronautical radiotelephony communications. A lower score on any one feature indicates inadequate proficiency; for example, pilots with Operational Level 4 ratings in all areas except pronunciation may not be understood by the air traffic controllers with whom they must communicate. In summary, an individual must demonstrate proficiency at Level 4 in all categories in order to receive a Level 4 rating.

4.5.12 A cautionary note: some descriptors at the higher levels of the rating scale refer to the ability to use complex structures or idioms. These statements should not be considered as a contradiction of the requirement to adhere to standardized phraseology in its published form when the situation demands this.

Irrelevance of correlations to other existing language proficiency rating scales

4.5.13 A number of well-known and widely available English language tests exist. It is tempting to correlate the new ICAO Language Proficiency Rating Scale with results from these existing tests, so that the ICAO requirements can be moved into a familiar context. It would certainly be convenient if an ICAO Operational Level 4 could be said to be "equal" to a certain score on any number of existing tests.

4.5.14 Since its publication in March 2003, a number of attempts have been made to establish a correlation between the ICAO Language Proficiency Rating Scale and other widely used English language rating systems (e.g. Test of English as a Foreign Language (TOEFL), Test of English for International Communication (TOEIC), Association of Language Testers in Europe (ALTE), International English Language Testing System (IELTS), and Common European Framework (CEF). Although some qualified general correlations may be made in certain areas of language use, it is not possible to make an overall correlation.

4.5.15 Tests are usually different from one another in what they set out to evaluate. For example, many popular and available tests do not test speaking proficiency, a requirement for any testing designed to meet ICAO requirements. Other tests may include a speaking and/or listening element but are designed to test speaking proficiency in a different context such as university academics or office/business communications. The ICAO Rating Scale was developed with the specific requirements of pilot and air traffic control communication in mind, and an assessment process has to address these features of the ICAO descriptors. Other rating scales or test scores, including those mentioned in the preceding paragraph, may at best provide useful information for initiating a training process in that they will indicate the point of departure for progression towards Level 4 on the ICAO Rating Scale (see references to test purpose and test types in Chapter 6, 6.2.5).

4.6 EXPLANATION OF RATING SCALE DESCRIPTORS (LEVEL 3 AND ABOVE)

4.6.1 General

The following explanations of the ICAO Rating Scale descriptors focus on Level 3 (Pre-operational), Level 4 (Operational), Level 5 (Extended) and Level 6 (Expert).

4.6.2 Pronunciation

The six levels of pronunciation descriptors are applicable at all levels to native and non-native speakers. This implies that native English speakers may demonstrate Elementary Level 2 proficiency if their regional dialect is so localized that it is not readily understood by those outside of that particular region. On the other hand, speakers whose speech patterns clearly identify them as non-native speakers (having a so-called "accent") may demonstrate Expert Level 6 proficiency, as long as this meets the criterion of "almost never" interfering with ease of understanding.

Pre-operational 3: *Pronunciation, stress, rhythm and intonation are influenced by the first language or regional variation and frequently interfere with ease of understanding.*	***Operational 4:*** *Pronunciation, stress, rhythm and intonation are influenced by the first language or regional variation, but only sometimes interfere with ease of understanding.*	***Extended 5:*** *Pronunciation, stress, rhythm and intonation, though influenced by the first language or regional variation, rarely interfere with ease of understanding.*	***Expert 6:*** *Pronunciation, stress, rhythm and intonation, though possibly influenced by the first language or regional variation, almost never interfere with ease of understanding.*
Accent at this Pre-operational Level 3 is so strong as to render comprehension by an international community of aeronautical radiotelephony users very difficult or impossible. It should be noted that native or second-language speakers may be assessed at this level in cases where a regional variety of the language has not been sufficiently attenuated.	Operational Level 4 speakers demonstrate a marked accent, or localized regional variety of English. Occasionally, a proficient listener may have to pay close attention to understand or may have to clarify something from time to time. Operational Level 4 is certainly not a perfect level of proficiency; it is the minimum level of proficiency determined to be safe for air traffic control communications. While it is not an Expert level, it is important to keep in mind that pronunciation plays the critical role in aiding comprehension between two non-native speakers of English.	Extended Level 5 speakers demonstrate a marked accent, or localized regional variety of English, but one which rarely interferes with how easily understood their speech is. They are always clear and understandable, although, only occasionally, a proficient listener may have to pay close attention.	An Expert Level 6 speaker may be a speaker of English as a first language with a widely understood dialect or may be a very proficient second-language speaker, again with a widely used or understood accent and/or dialect. The speakers' accent or dialect may or may not identify them as second-language users, but the pronunciation patterns or any difficulties or "mistakes" almost never interfere with the ease with which they are understood. Expert speakers are always clear and understandable.

4.6.3 Structure

Relevant grammatical structures and sentence patterns are determined by language functions appropriate to the task. Users may refer to the communicative aeronautical language functions, to the list of controller communicative tasks and to the classification of basic and complex structures in Appendix B for guidance. Language teaching specialists generally categorize grammatical errors into two classes: “global” and “local”. Global errors are those which interfere with meaning; local errors are those which do not interfere with meaning.

Pre-operational 3: *Basic grammatical structures and sentence patterns associated with predictable situations are not always well controlled. Errors frequently interfere with meaning.*	***Operational 4:*** *Basic grammatical structures and sentence patterns are used creatively and are usually well controlled. Errors may occur, particularly in unusual or unexpected circumstances, but rarely interfere with meaning.*	***Extended 5****: Basic grammatical structures and sentence patterns are consistently well controlled. Complex structures are attempted but with errors which sometimes interferes with meaning.*	***Expert 6:*** *Both basic and complex grammatical structures and sentence patterns are consistently well controlled.*
A weak command of basic grammatical structures at this level will limit available range of expression or result in errors which could lead to misunderstandings.	Operational Level 4 speakers have good command of basic grammatical structures. They do not merely have a memorized set of words or phrases on which they rely but have sufficient command of basic grammar to create new meaning as appropriate. They demonstrate local errors and infrequent global errors and communication is effective overall. Level 4 speakers will not usually attempt complex structures, and when they do, quite a lot of errors would be expected resulting in less effective communication.	Extended Level 5 speakers demonstrate greater control of complex grammatical structures than do Operational Level 4 speakers and may commit global errors from time to time when using complex structures. The critical difference between the Level 4 and Level 5 requirements concerns the use of basic grammatical structures and sentence patterns compared to the use of complex structures (see the glossary of basic and complex structures in Appendix B, Part IV). At Level 5, the structure descriptors refer to consistent control of basic structure, with errors possibly occurring when complex structures and language are used. There is actually a big jump between Level 4 and Level 5. Level 5 speakers will have a more sophisticated use of English overall, but will exhibit some errors in their use of complex language structures, but not in their basic structure patterns.	Expert Level 6 speakers do not demonstrate consistent global structural or grammatical errors but may exhibit some local errors.

4.6.4 Vocabulary

Vocabulary includes individual words and fixed expression. Vocabulary can be classified by the domains of meaning to which it refers. A partial list of vocabulary domains related to aviation communications is found in Appendix B of this manual. While memorizing phraseologies is neither an acceptable means of demonstrating language proficiency nor an effective or recommended language learning strategy, it is undeniable that *context* is a relevant factor in language proficiency. Therefore, learning or testing that focuses on, or is designed to elicit vocabulary related to, aeronautical radiotelephony communications is preferable.

Pre-operational 3: *Vocabulary range and accuracy are often sufficient to communicate on common, concrete or work-related topics, but range is limited and the word choice often inappropriate. Is often unable to paraphrase successfully when lacking vocabulary.*	***Operational 4:*** *Vocabulary range and accuracy are usually sufficient to communicate effectively on common, concrete and work-related topics. Can often paraphrase successfully when lacking vocabulary in unusual or unexpected circumstances.*	***Extended 5:*** *Vocabulary range and accuracy are sufficient to communicate effectively on common, concrete and work-related topics. Paraphrases consistently and successfully. Vocabulary is sometimes idiomatic.*	***Expert 6:*** *Vocabulary range and accuracy are sufficient to communicate effectively on a wide variety of familiar and unfamiliar topics. Vocabulary is idiomatic, nuanced and sensitive to register.*
Gaps in vocabulary knowledge and/or choice of wrong or non-existent words are apparent at this level. This has a negative impact on fluency or results in errors which could lead to misunderstandings. The frequent inability to paraphrase unknown words or in the process of clarification makes accurate communication impossible.	An Operational Level 4 speaker will likely not have a well-developed sensitivity to register (see glossary on page (ix)). A speaker at this level will usually be able to manage communication on work-related topics, but may sometimes need clarification. When faced with a communication breakdown, an Operational Level 4 speaker can paraphrase and negotiate meaning so that the message is understood. The ability to paraphrase includes appropriate choices of simple vocabulary and considerate use of speech rate and pronunciation.	Extended Level 5 speakers may display some sensitivity to register, with a lexical range which may not be sufficient to communicate effectively in as broad a range of topics as an Expert Level 6 speaker, but a speaker with Extended proficiency will have no trouble paraphrasing whenever necessary.	Level 6 speakers demonstrate a strong sensitivity to register. Another marker of strong proficiency seems to be the acquisition of, and facility with, idiomatic expressions and the ability to communicate nuanced ideas. As such, use of idioms may be taken into account in assessment procedures designed to identify Level 6 users in a non-radiotelephony context. This is not however intended to imply that idiomatic usages are a desirable feature of aeronautical radiotelephony communications. On the contrary, use of idioms is an obstacle to intelligibility and mutual understanding between non-expert users and should therefore be avoided by all users in this environment.

4.6.5 Fluency

For our purposes, fluency is intended to refer to the naturalness of the flow of speech production, the degree to which comprehension is hindered by any unnatural or unusual hesitancy, distracting starts and stops, distracting fillers (em … huh … er …) or inappropriate silence. Levels of fluency will be most apparent during longer utterances in an interaction. They will also be affected by the degree of expectedness of the preceding input which is dependent on familiarity with scripts or schemata described in Chapter 3.

Pre-operational 3: *Produces stretches of language, but phrasing and pausing are often inappropriate. Hesitations or slowness in language processing may prevent effective communication. Fillers are sometimes distracting.*	***Operational 4:*** *Produces stretches of language at an appropriate tempo. There may be occasional loss of fluency on transition from rehearsed or formulaic speech to spontaneous interaction, but this does not prevent effective communication. Can make limited use of discourse markers or connectors. Fillers are not distracting.*	***Extended 5:*** *Able to speak at length with relative ease on familiar topics but may not vary speech flow as a stylistic device. Can make use of appropriate discourse markers or connectors.*	***Expert 6:*** *Able to speak at length with a natural, effortless flow. Varies speech flow for stylistic effect, e.g. to emphasize a point. Uses appropriate discourse markers and connectors spontaneously.*
The slowness of speech flow at this level is such that communication lacks concision and efficiency. Long silent pauses frequently interrupt the speech flow. Speakers at this level will fail to obtain the professional confidence of their interlocutors.	Speech rate at this level may be slowed by the requirements of language processing, but remains fairly constant and does not negatively affect the speaker's involvement in communication. The speaker has the possibility of speaking a little faster than the ICAO recommended rate of 100 words per minute if the situation requires (Annex 10, Volume II, 5.2.1.5.3 b)).	Rate of speech and organization of discourse at this level approach natural fluency. Under appropriate circumstances, rates significantly higher than the ICAO recommended rate of 100 words per minute can be achieved without negatively affecting intelligibility.	Fluency at this level is native-like or near native-like. It is notably characterized by a high degree of flexibility in producing language and in adapting the speech rate to the context of communication and the purposes of the speaker.

4.6.6 Comprehension

This skill refers to the ability to listen and understand. In air traffic control communications, pilots rely on the clear and accurate information provided to them by controllers for safety. It is not sufficient for air traffic controllers to be able to handle most pilot communications; they must be ready for the unexpected. Similarly, pilots must be able to understand air traffic controller instructions, especially when these differ from what a pilot expects to hear. It is during complications in aviation that communications become most crucial, with a greater reliance upon plain language. While comprehension is only one out of six skills in the Rating Scale, it represents half of the linguistic workload in spoken communications.

Pre-operational 3: *Comprehension is often accurate on common, concrete and work-related topics when the accent or variety used is sufficiently intelligible for an international community of users. May fail to understand a linguistic or situational complication or an unexpected turn of events.*	***Operational 4:*** *Comprehension is mostly accurate on common, concrete and work-related topics when the accent or variety used is sufficiently intelligible for an international community of users. When the speaker is confronted with a linguistic or situational complication or an unexpected turn of events, comprehension may be slower or require clarification strategies.*	***Extended 5:*** *Comprehension is accurate on common, concrete and work-related topics and mostly accurate when the speaker is confronted with a linguistic or situational complication or an unexpected turn of events. Is able to comprehend a range of speech varieties (dialect and/or accent) or registers.*	***Expert 6:*** *Comprehension is consistently accurate in nearly all contexts and includes comprehension of linguistic and cultural subtleties.*
Level 3 comprehension is limited to routine communications in optimum conditions. A pilot or controller at this level would not be proficient enough to understand the full range of radiotelephony communications, including unexpected events, substandard speech behaviours or inferior radio reception.	As with all Operational Level 4 descriptors, comprehension is not expected to be perfectly accurate in all instances. However, pilots or air traffic controllers will need to have strategies available which allow them to ultimately comprehend the unexpected or unusual communication. Unmarked or complex textual relations are occasionally misunderstood or missed. The descriptor of Operational Level 4 under “Interactions” clarifies the need for clarification strategies. Failure to understand a clearly communicated unexpected communication, even after seeking clarification, should result in the assignment of a lower proficiency level assessment.	Level 5 users achieve a high degree of detailed accuracy in their understanding of aeronautical radiotelephony communications. Their understanding is not hindered by the most frequently encountered non-standard dialects or regional accents, nor by the less well-structured messages that are associated with unexpected or stressful events.	Level 6 users achieve a high degree of detailed accuracy and flexibility in their understanding of aeronautical radiotelephony communications regardless of the situation or dialect used. They further have the ability to discern a meaning which is not made obvious or explicit (“read between the lines”), using tones of voice, choice of register, etc., as clues to unexpressed meanings.

4.6.7 Interactions

Because radiotelephony communications take place in a busy environment, the communications of air traffic controllers and pilots must not only be clear, concise and unambiguous, but appropriate responses must be delivered efficiently and a rapid response time is expected. The interactions skill refers to this ability, as well as to the ability to initiate exchanges and to identify and clear up misunderstandings.

Pre-operational 3: *Responses are sometimes immediate, appropriate and informative. Can initiate and maintain exchanges with reasonable ease on familiar topics and in predictable situations. Generally inadequate when dealing with an unexpected turn of events.*	***Operational 4:*** *Responses are usually immediate, appropriate and informative. Initiates and maintains exchanges even when dealing with an unexpected turn of events. Deals adequately with apparent misunderstandings by checking, confirming or clarifying.*	***Extended 5:*** *Responses are immediate, appropriate and informative. Manages the speaker/listener relationship effectively.*	***Expert 6****: Interacts with ease in nearly all situations. Is sensitive to verbal and non-verbal cues and responds to them appropriately.*
The interaction features at this level are such that communication lacks concision and efficiency. Misunderstandings and non-understandings are frequent leading to possible breakdowns in communication. Speakers at this level will not gain the confidence of their interlocutors.	A pilot or air traffic controller who does not understand an unexpected communication must be able to communicate that fact. It is much safer to query a communication, to clarify, or even to simply acknowledge that one does not understand rather than to allow silence to mistakenly represent comprehension. At Operational Level 4, it is acceptable that comprehension is not perfect 100 per cent of the time when dealing with unexpected situations, but Level 4 speakers need to be skilled at checking, seeking confirmation, or clarifying a situation or communication.	Interactions at this level are based on high levels of comprehension and fluency. While skills in checking, seeking confirmation and clarification remain important, they are less frequently deployed. On the other hand speakers at this level are capable of exercising greater control over the conduct and direction of the conversation.	Expert speakers display no difficulties in reacting or initiating interaction. They are additionally able to recognize and to use non-verbal signs of mental and emotional states (for example, intonations or unusual stress patterns). They display authority in the conduct of the conversation.

4.7 *PROCEDURES FOR AIR NAVIGATION SERVICES — AIR TRAFFIC MANAGEMENT* (PANS-ATM, DOC 4444)

4.7.1 Chapter 12 of PANS-ATM (Doc 4444) provides a list of model patterns and structures for messages in ICAO standardized phraseology. That chapter along with parts of Annex 10, Volume II, provides the reference for ICAO standardized phraseology.

4.7.2 Doc 4444, Chapter 12, 12.2, underlines that the list is not exhaustive and that clear and concise use of plain language to the level specified in Annex 1 will be required. The requirements of Chapter 12, 12.2, also extend to other ground personnel.

Chapter 5

IMPLEMENTATION

5.1 INTRODUCTION

This chapter provides guidance on the implementation of ICAO language proficiency requirements from the organizational and operational perspectives. The material in this chapter will be of interest to administrators of civil aviation authorities, airlines and air traffic service providers. Licensing authority personnel responsible for the development of implementation plans as urged in Assembly Resolution A36-11, Proficiency in the English language used for radiotelephony communications, will also find this information useful.

5.2 GUIDELINES FOR THE DEVELOPMENT OF A LANGUAGE PROFICIENCY IMPLEMENTATION PLAN

5.2.1 Following the adoption of Assembly Resolution A36-11, Contracting States that were not in a position to comply with the language proficiency requirements by 5 March 2008 were urged to post their language proficiency implementation plans including their interim measures to mitigate risk. The intent of the implementation plan is to provide a means of communicating the steps that States are taking to meet the language proficiency requirements and mitigate risks during the transition period from the applicability date of 5 March 2008 to 5 March 2011. These plans and instructions to develop these plans were posted on ICAO's flight safety information exchange website (FSIX). In this way, all other States were made aware of the implementation plans and could make informed decisions.

5.2.2 A State's language proficiency implementation plan should consist of the following components:

a) a regulatory framework to support the implementation of the requirements;

b) an estimate of the national level of implementation;

c) language proficiency training programmes;

d) a language proficiency assessment plan for licensing purposes; and

e) interim measures to mitigate risks.

Content of the regulatory framework

5.2.3 A regulatory framework is essential to support the implementation of the language proficiency requirements. States that do not have a regulatory framework in place should establish a plan to enact the necessary framework on a timely basis. The regulatory framework could consist of a combination of legislation, regulations or other documentary evidence (e.g. orders, advisory circulars) that a State's civil aviation authority (CAA) deems would be sufficient to implement and enforce the language proficiency requirements.

5.2.4 Beyond the establishment of a regulatory framework for language requirements, CAAs are responsible for the oversight of language proficiency assessments when issuing a licence or rendering valid a licence issued in another State. They should ensure that language assessments required for licensing purposes are conducted in a manner that provides valid and reliable results concerning the level of proficiency of the prospective licence holder. CAAs should develop procedures to collect and analyse language test/assessment results and analyse the safety occurrence reporting system, as well as any other safety data, as regards language proficiency.

5.2.5 Each State should appoint a CAA staff member as the focal point for the implementation of language proficiency requirements. The focal point should:

a) collect all the necessary information to complete the implementation plan;

b) post the implementation plan with ICAO;

c) assist in notifying any differences to ICAO and updating the AIP as necessary;

d) liaise with ICAO and other Contracting States requesting information on the national implementation plan;

e) liaise regularly with national airlines and service providers, language testing and training organizations, pilots and controllers, and any other stakeholder involved in the implementation of language proficiency requirements within the State;

f) report any discrepancy or delay in the implementation plan with the accountable managers and the appropriate authority; and

g) amend the implementation plan as progress towards full compliance is achieved.

Estimate of national level of implementation

5.2.6 In order to describe the degree of implementation of language proficiency requirements, the plan should provide an estimate, or snapshot, of the existing level of proficiency of pilots and controllers involved in international operations. This estimate should be revised at regular intervals and updated with ICAO accordingly.

5.2.7 States, with the assistance of operators and service providers, should determine the number of pilots and controllers that are involved in international operations including the number of pilots holding airline transport pilot licences, multi-crew pilot licences, commercial pilot licences and private pilot licences and the number of controllers working in aerodrome, approach and area control facilities. These numbers should be further broken down by the level of language proficiency in accordance with the ICAO Rating Scale and included in the implementation plan.

5.2.8 States are implementing the language proficiency requirements in varying degrees: from minimal implementation to nearly full compliance. Thus, some States may not have developed or acquired a capability to determine the level of language proficiency of their personnel using assessment best practices. Those States should provide estimates to ICAO, to the best of their capability, and update their numbers as their capacity to assess language proficiency in accordance with the ICAO Rating Scale is developed or acquired. If training programmes have been established, estimates based on training assessments may be provided. Some States may have begun to conduct tests and assessments for licensing purposes and thus would be in a position to confirm a level of proficiency for some of their personnel. In all cases, the manner in which the level of proficiency was estimated should be described (e.g. diagnostic tests, interviews, sampling, personnel linguistic history, licensing tests).

Language proficiency training programmes

5.2.9 In many States language proficiency training programmes are an essential component in ensuring that personnel achieve and maintain ICAO Operational Level 4. States should ensure, through oversight of training providers, that training is appropriate, effective and efficient. Language training programmes can be developed within the resources of a State, air operator or air navigation service provider, or procured through private organizations. In any case, language training providers should ensure that the programmes:

a) address the holistic descriptors of Annex 1, Appendix 1, and the ICAO Rating Scale;

b) take into account the considerations on language training found in Chapter 7 of this manual; and

c) use Circular 323 which provides principles by which aviation English training can be developed and/or assessed.

Language proficiency assessment (or testing) for licensing purposes

5.2.10 The high stakes nature of language proficiency assessments (also referred to as tests) for licensing purposes are well recognized. Chapter 6 provides more detailed information on the impact and requirements of these tests. These requirements apply whether all or part of the assessment process has been established within the resources of a State, air operator or air navigation service provider, or procured through a private organization. States should therefore include information in their implementation plan concerning the process they are using or will be using for the initial and recurrent licensing assessments.

Interim measures to mitigate risk

5.2.11 States that were not in a position to comply with the language proficiency requirement by March 2008 should provide information on the interim risk-mitigating measures they will introduce until they achieve compliance in March 2011. All States need this information to carry out a risk analysis to ensure that the lack of language proficiency is minimized as a potential cause of accidents and incidents.

5.2.12 States should develop interim measures based on the identification of hazards, consequences and risks associated with non-compliance or partial compliance with the language proficiency requirements. A hazard is any situation or condition that has the potential to cause adverse consequences. A risk is the assessment expressed in terms of predicted probability and severity of the consequences of a hazard. Risk-mitigating measures can then be identified.

5.2.13 Risk-mitigating measures should be carefully evaluated to ensure that they do not introduce additional risks and that they are appropriate to organizational and national circumstances. Therefore the prescription of universally applicable risk-mitigating measures for the progressive implementation of language proficiency requirements is impractical. States are encouraged to apply the procedures outlined in the ICAO Safety Management Systems training course (http://www.icao.int/anb/safetymanagement) and the *Safety Management Manual (SMM)* (Doc 9859) to determine the risk-mitigating measures that are the most suitable to them.

5.2.14 In developing potential risk-mitigating measures, States can prioritize the steps in their implementation plans by considering the most urgent needs, in terms of safety, for commercial operations involving both international operations and general aviation operations under VFR in low density airspace. Implementation plans should examine the risks involved and could be prioritized using a phased-in compliance until March 2011.

5.3 OPERATIONAL IMPLEMENTATION

5.3.1 The role of native and non-native English speakers

5.3.1.1 The ICAO language proficiency requirements apply to native and non-native speakers alike. Because English is the most commonly used language for international aviation communications, many non-native speakers of English will require language training to improve their language proficiency. Nonetheless, the burden for improved communications should not be seen as falling solely on non-native speakers.

5.3.1.2 Miscommunication can occur between native speakers of the same language. It can occur as a result of a linguistic error or feature (ambiguity, homophony, etc.) or as a result of human carelessness (poor enunciation, sloppy microphone work, too much data in a single transmission, or impatience). Miscommunication can also occur between non-native speakers or between a native speaker and a non-native speaker as for the same reasons, in addition to other sources of error specific to non-native English use.

5.3.1.3 Native speakers of English also have a fundamentally important role to play in the international efforts to increase communication safety, and much of the information contained in this chapter is aimed at native speakers interacting with non-native speakers. Reducing the risks associated with miscommunication in radiotelephony requires concerted effort and widespread cooperation. Native and non-native English-speaking pilots and controllers will benefit from an improved understanding of how language functions, with a focus on strategies that aid comprehension and clarity. Native speakers of English, in particular, have an ethical obligation to increase their linguistic awareness and to take special care in the delivery of messages.

5.3.1.4 International cooperation in this regard is important. The burden can be shared in a number of ways:

a) Contracting States can ensure that their use of phraseology aligns as closely as possible with ICAO standardized phraseology;

b) native and other expert users of English can acquire strategies to improve cross-cultural communications;

c) native and other expert users of English can refrain from the use of idioms, colloquialisms and other jargon in radiotelephony communications and can modulate their rate of delivery; and

d) native speakers are under the same obligation as non-native speakers to ensure that their variety of English is comprehensible to the international aviation community. English-speaking organizations can invest in the development of high-quality, aviation-related, English-language learning materials.

5.3.2 Compliance with ICAO standardized phraseology

5.3.2.1 To improve their standards for communications, Contracting States should first align the phraseology used in their operations closely with ICAO standardized phraseology. There is much anecdotal evidence of the difficulties caused by the use of non-standard phraseology, particularly for users of English as a second language.

5.3.2.2 Below is an example of how the use of non-ICAO phraseology presents an unnecessary hindrance to safe international operations. It was provided to a review committee by a senior airline manager.

> Consider an aeroplane on an instrument approach in low visibility at a large international airport anywhere in the world. For whatever reason, the captain elects to initiate a go-around while still in the clouds. It is a regulatory requirement that air traffic control be notified as soon as practical that the aeroplane is executing a go-around, but this critical radio transmission to the tower may be phrased in any number of ways

depending on the airline or the State of Registry of the aeroplane, or for a myriad of other reasons: the pilot could report a “go-around”, a “missed approach”, a “balked approach”, or “abandon approach”. If non-standard phrases or jargon are used, an event which unfortunately occurs more often than it should, then the controller and other pilots in the vicinity might hear “we’re on the go”, or some other regional jargon. In this case, while the actions of the flight crew within the cockpit may be clear and the crew may perform the manoeuvre as a team, their intentions may not be clearly understood by those on the radio frequency, including other aeroplanes in the immediate vicinity as well as the controller responsible for providing separation.

5.3.3 Cross-cultural communication

5.3.3.1 There are a number of features of radiotelephony communication that make it particularly challenging to speakers of English as a foreign language. First, many people consider communicating in another language to be quite stressful. Speaking a foreign language with a highly proficient or native speaker of the language can be an intimidating experience. Second, radiotelephony communication is deprived of any visual clues, making communication even more difficult. Finally, some studies indicate that stress negatively affects language performance. Flying and controlling aeroplanes are, to some degree, inherently stressful activities. Consequently, flying or controlling an aeroplane while communicating across linguistic barriers, deprived of visual clues, brings a number of stress-inducing factors to the communication process.

5.3.3.2 In this context, native speakers aware of the challenges faced by speakers of English as a foreign language (EFL) can take greater care in their speech. Native and highly proficient speakers can, for example, focus on keeping their intonation neutral and calm, admittedly difficult at busy control areas, but a good strategy to calm the language anxiety of an EFL speaker. They can take particular care to be explicit, rather than indirect, in their communications and train themselves away from the use of jargon, slang and idiomatic expressions. They can ask for readbacks and confirmation that their messages have been understood. They can also attend more carefully to readbacks in cross-cultural communication situations, taking greater care to avoid the pitfalls of expectancy, where a pilot or controller expecting a given result unconsciously affects the outcome. Additionally, a slower rate of delivery seems to make speech more comprehensible; therefore, taking care to moderate speech rate is a common-sense approach to improving communications.

5.3.3.3 Clarity, conciseness and correctness are goals of air traffic control communications. The purpose of standardized phraseology is to reduce the possibility for ambiguity and to facilitate efficiency. When phraseology does not apply, the use of plain language should achieve the same goals as phraseology. Avoiding jargon and idioms whenever possible and being aware of the difficulty they may present will help make plain language clearer. Overall, an awareness of the nature of jargon and idioms and how they can complicate communications will help pilots and controllers communicate more safely across linguistic and cultural barriers.

5.3.3.4 A number of accidents and incidents have been attributed to either a controller or pilot using less direct forms to communicate some concern, which was in part either misunderstood or ignored. Therefore, it is important that air traffic controllers and pilots be familiar with the concepts of function, form and register.

5.3.3.5 The function of the communication should be stated explicitly, especially when attempting to clarify or alleviate a concern in the mind of the speaker. The style of speech (form and register) should also be appropriate for a given situation. Take the example of a co-pilot asking the pilot, “How about those flaps?” to express concern that the flaps are not far enough extended for take-off. It is far better to state concerns explicitly: “We should extend the flaps further” or “Are the flaps extended correctly?” In radiotelephony communications, controllers and pilots can ensure greater clarity with explicit statements. State the topic of concern explicitly. Be direct rather than indirect.

5.3.3.6 In native-speaker to native-speaker communications, speakers can use the context to assist understanding, and it has been common practice for language teachers to encourage students to use context to aid comprehension.

Research has found, however, that second-language speakers rely much more heavily on pronunciation, rather than context, to understand. For radiotelephony communications, this implies that:

a) the role of pronunciation in the ICAO Language Proficiency Rating Scale must be given high priority; and

b) all speakers must move towards pronunciation patterns acceptable to the larger international aeronautical community.

5.3.3.7 While accent can sometimes be difficult to control, speakers can control intelligibility by moderating the rate of speech, limiting the number of pieces of information per utterance, and providing clear breaks between words and phrases.

5.3.4 Dialect and accent

5.3.4.1 The ICAO language proficiency requirements call for proficient speakers to "use a dialect or accent which is intelligible to the aeronautical community". This can be understood to signal that all speakers, both native and non-native, must take care to acquire an internationally understood accent or dialect.

5.3.4.2 One example of an effective but informal policy on accent and dialect can be seen in the English broadcast news industry. Years ago, large television news networks hired individuals speaking only a limited number of so-called "prestige" English dialects. In recent years, however, it is common to hear a much wider range of English dialects and non-native accents among newscasters. Although the news agencies do not appear to have formalized language testing requirements or a formal policy on acceptable accents, some informal policy obviously operates to ensure that newscasters speak a dialect and accent easily understood by the great majority of listeners.

5.3.4.3 English-speaking controller training organizations have traditionally operated in a similar fashion; trainers may note informally through training contact with trainees when someone demonstrates a strong regional dialect, requiring extra training or elocution lessons in some cases. In such cases, good judgement has been used in determining the appropriate accent. There is no global English language authority to establish a single acceptable accent. This is impossible given the wide variety in language use and the complexity of precisely mapping which features of language use make it most intelligible. Participants in cross-cultural communication are better served by acquiring an awareness of the challenges of cross-cultural communication, an openness to accommodating different accents and dialects, and techniques for recognizing and negotiating communication breakdowns.

5.3.5 Monitoring of operational uses of language

5.3.5.1 States should make provisions for the monitoring of individual performances, in operational conditions, of Level 6, as well as minimally proficient speakers, allowing for feedback and corrective actions to be implemented in order to maintain intelligibility and behaviour discussed above.

5.3.5.2 Implementation of the ICAO language proficiency requirements will not realistically completely eliminate all sources of miscommunication in radiotelephony communications. Rather, the goal is to ensure, as far as possible, that all speakers have sufficient proficiency in the language used to negotiate for meaning. While communication errors will probably never completely go away, disciplined use of ICAO standardized phraseology, compliance with the ICAO language proficiency requirements, alert awareness of the potential pitfalls of language, and an understanding of the difficulties faced by non-native English speakers will enable pilots and controllers to more readily recognize communication errors and work around such errors.

Chapter 6

LANGUAGE TESTING CRITERIA FOR GLOBAL HARMONIZATION

6.1 INTRODUCTION

6.1.1 This chapter will be useful to civil aviation and licensing authorities that oversee language testing and will provide State authorities, airlines and air navigation service providers with a set of practical tools. Civil aviation authorities and licensing authorities may use these criteria:

a) as a guide to development, should they decide to assign national resources to develop aviation language testing; and

b) as a checklist against which to compare and assess externally developed aviation language tests.

6.1.2 This chapter provides guidance to civil aviation authorities on processes for testing candidates in accordance with the ICAO language proficiency requirements. In particular, this chapter provides recommended criteria to guide the development, or selection, of aviation language testing programmes and to provide additional guidance material in that regard. The recommended aviation language test criteria outlined in this chapter were drawn from principles of best practices by the Proficiency Requirements in Common English Study Group (PRICESG) in 2005. They are intended to support the harmonization of global aviation language testing.

6.1.3 Language testing organizations may use the criteria as a guide in providing the information and evidence to document that they comply with the criteria and in establishing the integrity of their tests.

6.1.4 The ICAO language proficiency requirements apply to all languages used for radiotelephony communications and create a significant testing requirement. This is particularly true with respect to English which is the language for which most training and testing programmes will need to be developed. While this document focuses on criteria guiding the development or selection of language tests in English, the principles apply equally to tests developed for all languages used for international radiotelephony communications.

6.1.5 The recommended criteria in this chapter are considered appropriate to the diverse contexts in which aviation language testing occurs. The principles underlying these criteria suit various operational and regulatory needs at various points of application within each particular administration.

6.1.6 The chapter is structured in two sections:

a) section 6.2 presents the background and context, with references to other appropriate ICAO documents and guidance material; and

b) section 6.3 presents the recommended criteria for aviation language testing including what they mean, why they are important to consider and, when applicable, additional information.

Appendix C provides the recommended criteria in a checklist format.

6.1.7 This chapter is intended as a guide only because it does not allow an exhaustive treatment of language testing. It is not intended to replace the more extensive language testing standards, guidelines and principles of ethics and good practice that can be found in the literature on language testing. Language testing is a specialized discipline. Expert professional input is recommended at every level of aviation language testing selection and implementation and is essential for test development.

6.2 BACKGROUND

6.2.1 Language testing standards

6.2.1.1 At present, no global industry requirement exists for formal external certification of aviation language testing programmes, and there are few organizations that provide test certification services at a national or regional level.

6.2.1.2 Information about generic international language testing standards can be found on the websites of a number of testing associations such as the following:

a) The Association of Language Testers in Europe (ALTE) — www.alte.org; and

b) International Language Testing Association (ILTA) — www.iltaonline.com.

6.2.1.3 However, it is important to recognize that existing academic or general-purpose language tests are not appropriate for the specialized domain of aviation language testing as outlined in more detail in Chapter 4, 4.5.13 to 4.5.15. The specific needs for aviation language testing are described below.

6.2.2 High stakes

6.2.2.1 A number of factors make language proficiency testing for compliance with ICAO Annex 1 licensing requirements a case of exceptionally high-stakes testing. Inadequate aviation language testing can result in either serious safety gaps or have highly negative social and economic consequences.

6.2.2.2 The results of language testing can have a serious impact on both individuals and organizations. A pilot or controller operating internationally who does not demonstrate compliance with the ICAO language proficiency requirements may be denied a licence to operate internationally, a consequence which may severely impact the career of that individual as well as the staffing requirements of the airline or air traffic service provider for whom the individual works.

6.2.2.3 In addition, the safety of airline passengers depends, among other issues, on the effectiveness of pilot and air traffic controller communication. Efficient transfer of operational information is vital. When the language used in radiotelephony communications is English, reliable, effective and valid testing systems are required to ensure that pilots and controllers have adequate levels of English language proficiency.

6.2.2.4 Finally, there are economic factors to consider. State authorities, airlines and service providers have no funds to waste on inadequate or unproven tests, nor can they afford to lose otherwise competent staff as an outcome of inadequate testing. Ultimately, they cannot afford accidents attributable to ineffective pilot/controller communication.

6.2.2.5 For all of these reasons, it is vital that language testing for licensing purposes comply with best practices and address the specific requirements of aviation operations.

6.2.3 Fundamental principles of language testing

6.2.3.1 While language testing is a specialized domain, there is no globally recognized single language testing authority, nor is there a single, universally accepted, best approach to language testing. As a result, there is some variability in the development and administration of language testing programmes.

6.2.3.2 However, there are well-established principles and practices on which there is widespread professional agreement. These principles and practices have been incorporated into this chapter and provide the recommended framework for the development and administration of aviation language tests.

6.2.3.3 The overriding concern of high-stakes test developers should be fairness. In language testing, fairness is interpreted in terms of validity and reliability. Practicality is a third fundamental test consideration. All tests should be evaluated in terms of their validity, reliability, and practicality based on documented evidence.

a) ***Validity.*** Validity indicates the degree to which a test measures what it is supposed to measure. To this end, testers should gather and provide evidence to support the conclusions that are made about an individual's English language proficiency based on the individual's performance on a test.

b) ***Reliability.*** Reliability refers to the stability of a test. Evidence should be provided that the test can be relied upon to produce consistent results. Reliability is usually reported in the form of a coefficient that can range from 0.0 to 1.0. Although no test will achieve a perfect reliability (1.0), one should look for tests with reliability coefficients as close to 1.0 as possible.

   There are a number of standard measures used in language test development to evaluate the reliability of a test. One example is to compare two versions of a test: the version used with one test-taker with the version used with a different test-taker. If the test is reliable, the two tests should be equal in difficulty and complexity.

   Another method of evaluating the reliability of a test is to compare the results of a group of test-takers on one test with the results of the same group of test-takers on another test. For more information about evaluating validity and reliability, refer to the document *Principles of Good Practice for ALTE Examinations*, which is available at http://www.alte.org/cop/index.php.

c) ***Practicality.*** Practicality refers to the balance between the resources required to develop and support a test (including the funds and the expertise) and the resources available to do so.

6.2.4 Test washback

6.2.4.1 Another important consideration related to test design concerns the negative or positive "washback" effect on training. The washback effect of testing can be described as the influence of testing on teaching and learning. It is reflected in the way trainers tend to model their curriculum around the focus areas, form and content of an examination or a test; or in the way that learners modify their learning strategies in order to succeed on a particular form of test rather than concentrating on mastering the content and skills addressed in the test.

6.2.4.2 A valid test designed to match the construct and content being taught (i.e. communicative language skills as defined in the Rating Scale) will foster a positive washback effect.

6.2.4.3 In contrast, an example of negative washback can be found in the older forms of the TOEFL test which included a large number of discrete-point grammar questions (multiple choice or error recognition). As a result, students often neglected to learn the full range of communicative skills contained in the syllabus and preferred to spend time completing TOEFL practice tests believing this would be an easier way to achieve a good test score. However, research indicates that such activities do not, on average, improve proficiency levels, a case of negative test washback.

6.2.4.4 Test designers have a particular responsibility to foster positive washback because the testing process may have a considerable impact upon:

a) the validity of the test itself (are test results purely a consequence of practising for the test, or are they a true reflection of an ability to use the language?); and

b) the way in which training is provided for the level and breadth of proficiency required to meet the Standards defined by ICAO in the Rating Scale.

6.2.4.5 In summary, well-designed aviation language proficiency tests will encourage learners to focus on proficiency-building language-learning activities.

6.2.5 Test purpose and test types

6.2.5.1 Tests may serve a number of different purposes. The particular purpose of the test influences the test development process. Some types of common language tests and their purposes include the following:

a) ***Diagnostic.*** To identify strengths and weaknesses and to assess gaps.

b) ***Placement.*** To place students into the appropriate level of a training programme.

c) ***Progress.*** To measure learning progress.

d) ***Achievement.*** To measure what students have learned.

e) ***Aptitude.*** To assess an individual's ability to acquire knowledge or learn new skills.

f) ***Proficiency.*** To evaluate overall ability against a set of criteria.

6.2.5.2 A need for language testing may occur at a number of points in time in the career of a pilot or air traffic controller:

a) as a screen for pre-training selection;

b) as a diagnostic tool in a training programme;

c) as a progress check during training;

d) as a licensing requirement in fulfilment of ICAO Annex 1 requirements; or

e) as a periodic re-evaluation of proficiency.

6.2.5.3 The ICAO language proficiency SARPs in Annex 1 require proficiency testing to fulfil the licensing requirement.

6.2.5.4 Proficiency testing is different from progress or achievement testing in that proficiency tests do not correspond directly to a training curriculum. That is, it should not be possible for test-takers to directly prepare or study (by memorizing information, for example) for a proficiency test. Proficiency tests require test-takers to demonstrate their ability to do something representative of the full spectrum of required knowledge and skills, rather than to simply demonstrate how much of a quantifiable set of curriculum learning objectives they have learned. In an aviation context, proficiency testing should establish the ability of test-takers to effectively use appropriate language in operational conditions.

6.2.5.5 Proficiency tests are the only tests that are suitable for licensing purposes in the aviation community. Because licensing plays a critical role in the safety of aviation operations, this chapter focuses on proficiency testing.

6.2.6 Delivery method

6.2.6.1 Speaking and listening proficiency tests can be delivered through direct or semi-direct testing. The primary difference between direct and semi-direct testing techniques lies in how speech samples are elicited, that is, in how the "prompts to speak" are delivered to the test-taker. Direct speaking tests involve face-to-face or telephonic interactions between the test-taker and the interlocutor, who may also serve as a rater. In semi-direct testing, test prompts and questions are pre-recorded, and test-takers' responses are recorded for evaluation at a different time and in some cases a different place.

6.2.6.2 Despite their different attributes, both live and recorded testing procedures share a common purpose: the direct assessment of an individual's speaking and interactive abilities.

6.2.7 Direct and semi-direct testing

6.2.7.1 In direct testing procedures, the test-taker interacts with a "live" interlocutor, who may also be an examiner or rater. The person-to-person interaction in a direct testing procedure may be directly observed and assessed in real time by a rater or can be recorded for subsequent rating. Test-takers are asked to perform language tasks based on a set of elicitation prompts. A prompt may be a question asked by, or a topic given by, an interlocutor. The test-taker may be asked, for example, to engage in a conversation-like interview with the interlocutor or to perform in a role-play.

6.2.7.2 One benefit of direct testing is that the test tasks can be made more natural or more communicative because the test-takers interact with an interlocutor. Another benefit of direct testing is that, because each test is a unique interaction between the tester and the test-taker, there is an infinite supply of test prompts available. For example, if a test-taker mentions during a test that his father is an air traffic controller, the interlocutor could ask the test-taker questions related to that information — questions which the interlocutor may not ask any other test-taker. In a direct test, there is also less likelihood of a test-taker responding with rehearsed speech samples in an effort to convince an examiner of a higher level of proficiency than actually attained.

6.2.7.3 Direct tests require particular attention to the standardization of design and administration procedures, notably with regard to the management of time, the nature and content of language input and overall interlocutor behaviour. This is to avoid any bias that may inadvertently arise due to the human element of the test interaction. For example, an interlocutor may, without realizing it, ask more demanding questions of one test-taker than another; or one interlocutor may speak more clearly or more slowly than another interlocutor.

6.2.7.4 Because direct testing requires person-to-person interactions, the administration or delivery of the test tends to be more time-consuming and human resource-intensive than semi-direct testing.

6.2.7.5 In semi-direct testing, speech samples are elicited through pre-recorded and thereby standardized prompts. This is a significant benefit in that every test-taker receives the same or similar prompts, facilitating fairness. Another advantage of semi-direct testing is that the test can be administered in an audio or computer laboratory so that a larger number of test-takers can be tested at the same time.

6.2.7.6 However, the inflexibility arising from the use of standardized, pre-recorded prompts may result in an important limitation in the scope of evaluation available to semi-direct tests. This limitation may be particularly critical in the ability of the test to assess the full range of abilities covered by the "interactions" descriptors of the ICAO Rating Scale. Role-plays and simulations conducted in this mode may be short, unnatural and restricted to the most routine aspects of language use.

6.2.7.7 Whether direct or semi-direct testing methods are used, it is important that test-takers are evaluated in their use of language related to routine as well as unexpected or complicated situations as evidence of their level of proficiency. Both direct and semi-direct tests, if well constructed, can elicit speech samples that may be assessed for proficiency in speaking and listening. Each test method has advantages and disadvantages.

6.2.8 Aviation-specific language testing issues

6.2.8.1 Beyond the best practices of generic language testing, there are fundamental constraints specific to the context of the ICAO language proficiency testing requirements. These concern the following:

a) test focus;

b) test content, particularly concerning the role of standardized phraseology in aviation language testing;

c) test tasks; and

d) testing for Expert Level 6 proficiency.

Test focus

6.2.8.2 The ICAO language proficiency requirements focus on speaking and understanding. Therefore, testing for compliance with ICAO Annex 1 licensing requirements should focus on speaking and listening proficiency.

Test content

6.2.8.3 The purpose of a language proficiency test is to assess test-takers' use of language based on their performance in an artificial situation in order to make generalizations about their ability to use language in future real-life situations. Because of the high stakes involved, pilots and air traffic controllers deserve to be tested in a context similar to that in which they work. Test content should, therefore, be relevant to their work roles.

6.2.8.4 Radiotelephony communications require not only the use of ICAO standardized phraseology, but also the use of plain language. Phraseology is the formulaic code made up of specific words that in the context of aviation operations have a precise and singular operational significance. Plain language is defined in ICAO documents as "the spontaneous, creative and non-coded use of a given natural language." In simple terms, plain language can be thought of as the non-phraseology language that is used by participants in radiotelephony communications when standardized phraseology is not appropriate.

6.2.8.5 The provisions of the ICAO language proficiency requirements that directly address test content are:

a) ***Annex 1, Appendix 1,*** where holistic descriptors refer to "work-related topics", "work-related context", and "routine work situation"; and

b) ***Annex 1, Attachment A,*** under "Vocabulary" and "Comprehension", which refers to "work-related topics".

6.2.8.6 The use of ICAO standardized phraseology is an operational skill that is taught by qualified aviation operational specialists and is acquired to the required level of proficiency by trainee pilots and controllers during operational training. Teaching and testing standardized phraseology are operational issues, not a language proficiency issue. It follows that a test designed to evaluate knowledge or use of standardized phraseology cannot be used to assess plain language proficiency.

6.2.8.7 Before the ICAO language provisions were adopted in 2003, assessments of standardized phraseology were based on technical accuracy and appropriateness within the operational context and, with respect to delivery technique, only on generic "good practice". Since the adoption of the language provisions in 2003 and the publication of the ICAO Language Proficiency Rating Scale, it is recommended that assessments of ICAO standardized phraseology should, in addition to the existing guidelines in the PANS-ATM, take into account the descriptors for pronunciation and fluency of Operational Level 4.

6.2.8.8 It is acceptable that a test of plain language in a work-related context could contain a scripted test task or a prompt in which standardized phraseology is included. The test task may be used as a warm-up or as a means of setting a radiotelephony context in which to elicit plain language responses from the test-taker. If phraseology is included in a test prompt, care should be taken that it is used appropriately and that it is consistent with ICAO standardized phraseology.

Test tasks

6.2.8.9 There are many kinds of test tasks or prompts that can be used to elicit speech samples. In general, tasks that resemble real-life activities are most suitable. It is important to keep in mind that the idea of a work-related context can accommodate different interpretations. A narrow interpretation would aim to closely replicate radiotelephony communications, including the extent of plain language needed in unusual, unexpected or emergency situations. A broad interpretation of the holistic descriptors and Rating Scale would aim to elicit plain language on various topics that are related to radiotelephony communications or aviation operations, without replicating radiotelephony communications specifically. Examples may include question and answer routines, problem-solving exchanges, briefings, simulations and role-plays. Both interpretations are valid.

Assessment of language proficiency at Expert Level 6

6.2.8.10 The Level 6 descriptors in the ICAO Rating Scale refer to features of language use that go beyond the work-related context indicated in descriptors at lower levels. Formal evaluation of Level 6 using a specialized language test would follow an exhaustive procedure involving tasks and contexts that go beyond the subject matter of radiotelephony communications. Furthermore, since language proficiency at both ends of a proficiency scale is relatively easy to evaluate, it is not difficult to recognize "Expert" (including native or native-like) proficiency. For these reasons, the assessment at Level 6 should be carried out by a trained and qualified rater, but not necessarily by a language testing specialist, or require the use of a fully developed specialized language test.

6.2.8.11 Monolingual native speakers of the language should be considered as "probable expert speakers." However, probable expert speakers may also include multilingual speakers who include the language as one of their native languages, and foreign-language speakers who have acquired a high level proficiency. A test-taker who is tentatively considered to be a Level 6 speaker of the language may be evaluated through informal assessments (such as interviews or oral interactions with licensing authorities, recruitment officers or flight examiners), supported by documented evidence about an individual's linguistic history. This history, to be determined by State authorities, could include:

a) place of birth and early residence;

b) the language(s) used during childhood in the family, in the community and in education;

c) long periods of residence (with proven participation) in communities where the language is used socially, professionally or in education;

d) extended periods of language study or higher education diplomas;

e) very high scores in general language tests.

6.2.8.12 On the basis of such assessment of documented information, procedures should then be described and implemented for the formal validation of Level 6 proficiency. These procedures should be implemented and identified as assessment “events” rather than tests. They should involve a trained and qualified rater or rating team and should include assessment of language used in a work-related context with reference to the ICAO Rating Scale. The rater may be an operational flight or ATC examiner, and the procedure may be carried out through operational assessments which include a language proficiency component.

6.2.8.13 Although the relative ease of assessing proficiency at the Expert level allows flexibility in the way such assessments may be made, the demonstration of language proficiency is nonetheless an important element of the formal process that leads to the issuance of a pilot or an air traffic controller licence. It is therefore essential that each State establish appropriate procedures to ensure that the results of the assessment are properly documented. Because of its potential safety impact, and since the outcome of a Level 6 assessment is that no further demonstration of language proficiency will be required throughout a career, the informal validation of Level 6 proficiency without documented evidence is not recommended.

6.2.8.14 In cases where such a procedure invalidates a suspected Level 6, the candidate may either be referred to remedial training prior to a second application of the same testing procedure and/or referred to a formal specialized language testing procedure as described below. This procedure would be appropriate, for example, for native speakers whose accent or dialect is not intelligible to the aeronautical community.

6.3 RECOMMENDED CRITERIA FOR AVIATION LANGUAGE TESTING

6.3.1 General

The criteria listed below are formulated as self-contained statements. However, for personnel unfamiliar with the concepts of language testing, they may not all be self-explanatory. Several of the criteria require documented evidence to demonstrate that they have been met. Supplementary information has been provided in order to facilitate the implementation of these criteria as described below.

— **What it means.** Where it is necessary that testing organizations provide documented evidence to demonstrate that a criterion has been met. This paragraph describes the type of information required to complete an informed assessment.

— **Why it is important.** While for language testing experts the significance of the self-contained criterion statement may be obvious, it may not be so for personnel unfamiliar with this discipline. This paragraph justifies why a particular criterion is an essential element of testing best practices.

— **Additional information.** For several criteria, readers may feel they require more information. To assist them, this paragraph provides more explanation or links to references which may be useful.

6.3.2 Test design and construct

6.3.2.1 The test should be designed to assess speaking and listening proficiency in accordance with each component of the ICAO Language Proficiency Rating Scale and the holistic descriptors in Annex 1.

— **What it means.** Language tests for flight crews and air traffic controllers should specifically address the language skills of the ICAO Rating Scale as well as the holistic descriptors specified in Annex 1. Testing service providers (TSPs) should be able to explain and justify their methods and approaches to testing with evidence that all components of the ICAO Rating Scale are addressed.

— **Why it is important.** The language proficiency requirements in Annex 1 specify that speaking and listening should be evaluated in the context of operational aviation communications. The holistic descriptors and Rating Scale were developed to address the specific requirements of radiotelephony communications. Each component of the Rating Scale is as important as any other. Tests developed for other purposes may not address the specific and unique requirements of aviation language testing.

— **Additional information.** The SARPs in Annex 1, Chapter 1, 1.2.9, require that the speaking and understanding proficiency of pilots and air traffic controllers be evaluated. Attachment A to Annex 1 provides a Rating Scale that describes the range of language proficiency levels. Testing speaking and listening proficiency requires procedures that are different from the procedures that are used to test reading, writing or grammar. Testing reading ability, knowledge about English grammar or vocabulary items in isolation from their context is not consistent with the ICAO requirements.

6.3.2.2 A definition of test purpose that describes the aims of the test and the target population should be accessible to all decision-makers.

— **What it means.** Different tests have different purposes (as described in 6.2.5) and different target populations. If an existing test is being considered, it is important that the organization offering the test clearly describes the purpose of the test and the population of test-takers for whom the test was developed.

— **Why it is important.** A clear definition of test purpose and target population is a necessary starting point for evaluating the appropriateness of a test. The purpose and target population of a planned test influence the process of test development and test administration. For example, a test designed to evaluate the proficiency of *ab initio* pilots may be very different from a test developed for experienced or professional pilots; likewise, a test designed to measure pilots' or controllers' progress during a training programme may be inappropriate as a proficiency test for licensing purposes.

6.3.2.3 A description and rationale for test construct and how it corresponds to the ICAO language proficiency requirements should be accessible to all decision-makers in plain, layperson language.

— **What it means.** There are different approaches to proficiency testing for speaking and listening. Test developers should document the reasons for their particular approach to testing, in language that is comprehensible to people who are not experts in language test design.

— **Why it is important.** A description of the test structure and an easy-to-understand explanation of reasons for the test structure is one form of evidence that it is an appropriate tool for evaluating language proficiency for the ICAO requirements for a given context.

— **Additional information.** See paragraphs 6.2.3 and 6.2.8 of this document for more explanation of the issues related to aviation language testing.

6.3.2.4 The test should comply with principles of good practice and a code of ethics as described in Chapter 6 of ICAO Doc 9835.

— **What it means.** It is important for test developers to comply with a recognized code of good practice and ethics.

— **Why it is important.** Aviation language testing is an unregulated industry and has very high stakes. A documented code of good practice and ethics, along with evidence that the organization is adhering to that code, serves as an important stop gap in an unregulated system.

— **Additional information.** The Association of Language Testers of Europe publishes Principles of Good Practice for ALTE Examinations, available at www.ALTE.org.

6.3.2.5 The test should not focus on discrete-point items, on grammar explicitly or on discrete vocabulary items.

— **What it means.** Discrete-point items are individual test questions which are presented out of context. Examples are a vocabulary test in which test-takers are asked to provide definitions for a list of words, and a grammar test in which test-takers are asked to provide the past-tense forms of a list of irregular verbs. Discrete-point tests, also referred to as indirect tests, do not test language skills directly. Instead, they test individual, specific features of the language thought to underlie language skills. That is, they test knowledge about grammar, vocabulary, pronunciation, etc. This type of test is not appropriate for assessing aviation language proficiency.

— **Why it is important.** The ICAO language provisions focus on the ability to use the language. Discrete-point tests do not evaluate a person's ability to use the language. Furthermore, test-takers who perform well on such tests often perform poorly on tests in which they actually have to use the language.

— **Additional information.** There are a number of different ways knowledge about language is tested, for example:

a) multiple-choice questions in a series of unrelated sentences;

b) identification of an error in a sentence; or

c) written translation exercises.

For many people such tests have the advantage of being objective because they give a numerical score. However, the supposed objectivity of multiple-choice tests must be questioned in consideration of the choice of the particular items and questions selected for the test. It may be asked, why were they selected from the infinite number of potential items available? In other words, why were test-takers asked to define certain words, or why were they tested on the use of a particular tense but not on their ability to ask clarifying questions?

Speaking and listening tests, on the other hand, refer to a scale of proficiency rather than a numerical score. The rating scale describes levels of proficiency which a panel of trained raters can use to assign the test-taker a level on a rating scale.

The more directly a test performance is related to target performance, the more a test can be considered a proficiency test. For example, test administrators interested in an individual's speaking skills should arrange for an assessment of that individual's performance on a speaking task. Using this approach, speaking skills may be directly assessed during an interview or conversation or role-play, or are based on a recorded sample of actual speech.

The goal of a proficiency test is to assess the appropriateness and effectiveness of communication rather than grammatical accuracy. Grammatical accuracy should be considered only so far as it has an impact on effective communication, but evaluating an individual's grammatical knowledge should not be the objective of the test.

6.3.2.6 If comprehension is assessed through a specific listening section with individual items, it should not be done to the detriment of assessing interaction.

— **What it means.** Some language tests evaluate listening during an oral interaction such as a conversation, interview or role-play. Other language tests evaluate listening separately, in some cases via a series of individual listening items. An example of an individual listening item, in the aviation language context, might require a test-taker to listen to a pre-recorded conversation between ATC and a flight crew to identify relevant pieces of information.

— **Why it is important.** A separate listening test can provide information about comprehension independent of a person's ability to interact. In such tests, the communication is one-way, and the test-taker does not have to participate in the way that is required by a conversation, role-play or other interaction.

— **Additional information.** It is important for the TSP to validate the method it uses to evaluate comprehension.

6.3.2.7 Proficiency tests that are administered directly may use face-to-face communication in some phases of the delivery but should include a component devoting time to voice-only interaction.

— **What it means.** Voice-only interaction is an important characteristic of aeronautical radiotelephony communications; when a pilot and a controller interact, they cannot see each other. Directly administered proficiency tests should simulate this condition of "voice only" in at least a portion of the test.

— **Why it is important.** When two people interact face-to-face, they use non-verbal cues (information other than words) to help them understand each other's messages. People's facial expressions, their body language and the gestures they make with their hands often communicate important information. Aeronautical radiotelephony communications do not benefit from such non-verbal cues; all radiotelephony communications are conveyed through words alone, which can be more difficult to interpret than face-to-face communication.

— **Additional information.** In a test that is administered directly, voice-only interaction can be facilitated by means of a telephone or headset via which the interlocutor and test-taker communicate while positioned in such a way that they cannot see each other.

An appropriate strategy may be to incorporate both direct and semi-direct methods in a single testing system. In any case, the method and approach taken should be clearly justified, with evidence for the rationale of that approach provided.

6.3.2.8 The test should be specific to aviation operations.

— **What it means.** Tests should provide test-takers with opportunities to use plain language in contexts that are work-related for pilots and air traffic controllers in order to demonstrate their ability with respect to each descriptor in the Rating Scale and the holistic descriptors.

— **Why it is important.** The ICAO Language Proficiency Requirements (LPRs) refer to the ability to speak and understand the language used for radiotelephony communications. It is important that flight crews and air traffic controllers be proficient in the use of plain language used within the context of radiotelephony communications in order to communicate safely on any operational issue that may arise.

— **Additional information.** ICAO language provisions require proficiency in the use of standardized phraseology and in the use of plain language. The assessment of standardized phraseology is an operational activity, not a language proficiency assessment activity. While an aviation language test may include phraseology to introduce a discussion topic or make interaction meaningful to the test-taker, it is important that tests elicit a broad range of plain language and not be limited to tasks that require standardized phraseology. The focus of a language proficiency test for compliance with ICAO requirements should be on plain language.

The idea of a work-related context can be interpreted in different ways (6.2.8.9). The narrow view would seek to replicate radiotelephony communications including both phraseology and plain language, as closely as possible. The broad view would elicit samples of interaction and comprehension on those topics occurring in radiotelephony communications without resorting to replicating radiotelephony communications. These could be of a general piloting and controlling nature and involve question and answer routines, short reports or problem-solving exchanges, or briefings and reports.

A further step toward providing test-takers with a familiar aviation-related context would be to customize the tests for controllers or pilots. Thus, controllers would have the possibility of taking tests using or referring to a tower, approach or en-route environment; similarly, pilots would be able to take tests using or referring to an approach procedure. These should be seen as adaptations in the interest of the comfort of the test-taker, not as specialized tests of distinct varieties of language proficiency.

6.3.2.9 It is acceptable that a test contains a scripted task in which phraseology is included in a prompt, but the test should not be designed to assess phraseology.

— **What it means.** An aviation language proficiency test has different aims than a phraseology test. While an aviation language test can include some phraseology as prompts or scene setters, the purpose of the test is to assess plain language proficiency in an operational aviation context.

— **Why it is important.** First, tests of phraseology alone are not suitable for demonstrating compliance with ICAO language proficiency requirements. Second, using phraseology accurately is an operational skill which is very dependent on the operational context; and incorrect usage by a test-taker of a specific phraseology may be an operational error, rather than a language error. Phraseology must be taught and tested by qualified operational personnel.

— **Additional information.** Responses containing elements of ICAO phraseology should not be rated with regard to their procedural appropriateness or technical correctness during language proficiency testing. This practice could introduce confusion between the test-taker's operational knowledge and his/her language proficiency. It could also introduce contradictions between the regulators' established system of operational training/testing and language testing. Because of these contradictions, this practice could result in diminished, rather than enhanced, safety.

If phraseology is included in a test prompt, care should be taken that it is used appropriately and that it is consistent with ICAO standardized phraseology.

6.3.2.10 The test should not be designed to evaluate the technical knowledge of operations.

— **What it means.** Language tests should not assess either operational skills or the specific technical knowledge of operations. A language test is not an operational or technical knowledge test. For example, a language test item may prompt the test-taker to describe an operational procedure that involves a number of steps. A test-taker may provide a very clear description of that procedure but omit one of the steps. In such a case the rater may not recognize that the omission of that one step was an operational error and penalize the test-taker for that error. In responding to that same test

item, another test-taker may correctly identify all the steps of the process (achieving technical accuracy), but do so with problems in pronunciation and fluency based on the ICAO Rating Scale. In this case, because of the test-taker's technical knowledge the rater may, perhaps unconsciously, assign a higher level of language proficiency than the test-taker should receive.

— **Why it is important.** If the distinction between language proficiency and technical knowledge is not very clear to the interlocutor and rater of an aviation language test, it may be easy to confuse one with the other. Such confusion may lead to test-takers getting penalized unfairly for technical errors; or to other test-takers getting rewarded, also unfairly, for their technical expertise. Another potential problem if very specific technical items are included in a language proficiency test is that they may require technical knowledge beyond that of a test-taker; for example, answers to questions concerning ground control procedures may not be known to en-route controllers. As a result, the test-taker may be unable to respond effectively, due to a lack of technical expertise rather than a lack of language proficiency.

— **Additional information.** Based on the above information, a prompt such as "What are the separation minima for aircraft being vectored for an ILS approach?" or "Describe the different flight modes of the A320 flight control system" are therefore not appropriate.

6.3.2.11 The final score for each test-taker should not be the average or aggregate of the ratings in each of the six ICAO language proficiency skills but the lowest of these six ratings.

— **What it means.** For each test-taker, scores should be reported for pronunciation, vocabulary, structure, fluency, comprehension, and interactions in accordance with the Rating Scale. In cases in which a test-taker is given different ratings for different skill areas — for example, 3 for pronunciation, 4 for vocabulary and structure, and 5 for fluency, comprehension and interactions — the overall score for that test-taker should be the lowest of these scores; in the above example, the test-taker's overall score would be 3.

— **Why it is important.** This practice is critical because the Operational Level 4 descriptors are developed as the safest minimum proficiency skill level determined necessary for aeronautical radiotelephony communications. A lower score than 4 for any one skill area indicates inadequate proficiency. For example, a pilot with Operational Level 4 ratings in all areas except pronunciation may not be understood by the air traffic controllers with whom that pilot should communicate. In summary, an individual should demonstrate proficiency to at least Level 4 in all skill areas of the ICAO Rating Scale in order to receive an overall Level 4 rating.

6.3.3 Test validity and reliability

6.3.3.1 A statement of evidence for test validity and reliability should be accessible to all decision-makers, in plain, layperson language.

— **What it means.** In language testing, fairness is interpreted in terms of validity and reliability. Validity refers to the degree a test measures what it is supposed to measure. Reliability refers to the degree that the test produces consistent and fair results. TSPs should supply documented evidence of the validity and reliability of their testing methods.

— **Why it is important.** Aviation language tests have high stakes. It is important for safety and for the integrity of the industry, particularly the operators and for test-takers themselves, that language tests be fair and accurate. Testing systems that are not supported by documented validity and reliability may not provide, or may not seem to provide, fair and accurate results.

— **Additional information.** It is important that evidence for test validity and reliability be written in plain, layperson language. The primary target audience of documents outlining test validity and reliability should be civil aviation authority or licensing personnel rather than language testing experts. Because aviation communication safety is very much in the public interest, it is also appropriate for aviation language testing organizations to make information about the validity and reliability of their tests publicly available.

6.3.3.2 A description of the development process that includes the following information should be accessible to all decision-makers:

a) a summary of the development calendar; and

b) a report on each development phase.

— **What it means.** The TSP should document the entire development process.

— **Why it is important.** Before a decision is made to use a test, its quality should be examined carefully, and documentation of the development process is essential to that examination. A development calendar and report will provide information about the nature and depth of analysis that went into the test development. If it is obvious that a test was developed hastily and without the required expertise, that test may not provide, or seem to provide, valid and reliable results. The same is true of tests with incomplete documentation.

6.3.3.3 An appraisal of expected test washback effect on training should be accessible to all decision-makers.

— **What it means.** Test washback refers to the effect a test has on a training programme or on students' behaviour. TSPs should demonstrate that their test will have a positive effect on training and that their test will not encourage training that focuses on memorization and test preparation rather than on building proficiency.

— **Why it is important.** The goal of aviation operational language testing is to ensure that flight crews and air traffic controllers have adequate language proficiency for the conduct of safe operations. Robust language training programmes are an essential component of a programme to enable pilots and controllers to achieve ICAO Operational Level 4 language proficiency. High-quality testing will encourage high-quality training.

— **Additional information.** Test-takers naturally will want to prepare for a test. While aviation language test-takers can memorize phraseology, they cannot acquire language proficiency as described in the ICAO LPRs simply by memorizing words and phrases. If pilots or controllers think that certain types of narrow learning or practice activities will best and most readily prepare them for a test, they will be inclined to direct their energies to such activities, potentially at the expense of activities that can genuinely improve their language proficiency.

In the aviation environment, an example may be found in an aviation language test that focuses on the use of phraseology, to the exclusion of plain aviation language. In such a case, learners may focus their learning energies on memorizing ICAO standardized phraseology rather than on genuine language learning activities that will actually improve their English language proficiency.

Refer to paragraph 6.2.4 for more information about test washback.

6.3.4 Rating

6.3.4.1 Whether rating is conducted "live" during the assessment, or after the test using recordings of the test performance, the rating process should be documented.

— **What it means.** Some speaking and listening tests rate performance during the test. Others record the test performance and rate performance later. Both rating methods are acceptable, but whichever method is used, the rating process should be explained in test documentation.

— **Why it is important.** Rating is one of the most important steps in language proficiency testing. It is critical to explain how rating is conducted in the testing process to ensure that it is transparent to all stakeholders.

— **Additional information.** One advantage of rating test-takers after the test is that the test-taker's statements can be repeated as necessary for closer analysis by the raters. Another advantage of this method is that the raters do not have to be physically present for the test; in fact, raters can reside in an entirely different location, provided they can receive an audio or video recording of the test and submit their rating reports effectively, for example, electronically. A potential advantage of rating live during the assessment may be greater efficiency.

6.3.4.2 To fulfil licensing requirements, rating should be carried out by a minimum of two raters. A third expert rater should be consulted in the case of divergent scores.

— **What it means.** Best practice in language proficiency assessment calls for at least two trained and calibrated raters, at least one of whom is a language expert.

— **Why it is important.** Using at least two raters reduces the possibility of rater error and helps to ensure a comprehensive evaluation of each test-taker.

— **Additional information.** Ideally, an aviation language test will have two primary raters — one language expert and one operational expert — and a third rater who can resolve differences between the two primary raters' opinions. For example, there could be a situation where the primary raters agree that in five of the six skill areas a test-taker demonstrates Level 4 proficiency; however, the first rater assigns the test-taker a score of 3 on pronunciation (thereby making the test-taker's overall language proficiency level "3") and the second rater assigns the test-taker a "4" for pronunciation. A third rater would make a final determination for that skill area and, in doing so, would determine the overall score for that test-taker.

  A third rater would likely be involved in the process only in cases in which a test-taker may obtain an overall rating of 3 or 4, since the difference between these two levels is the most critical distinction for ICAO language proficiency licensing testing.

6.3.4.3 Initial and recurrent rater training should be documented; the rater training records should be maintained, and audits of raters should be conducted and documented periodically.

— **What it means.** Language proficiency test raters need to be trained, and the raters need to be trained together to ensure they apply the rating scale consistently. Audits should be conducted periodically to check rater performance to ensure it is consistent over time.

— **Why it is important.** When evaluating language proficiency tests, consistency in the rating process is critical. Unlike other forms of testing, in which one response to a question is correct and another

response is incorrect, evaluating language proficiency relies upon subjective judgements by raters. In this context, consistency is achievable through training and experience but easy to lose without regular audits of raters and rating teams.

The reliability of test results, and of the test process as a whole, depends on the consistency achieved in the rating process. Audits provide a mechanism for checking consistency and, where consistency has been lost, making adjustments as necessary.

— **Additional information.** Consistency is measured in terms of reliability. Reliability has two components:

a) ***Intra-rater reliability*.** The extent to which a particular rater is consistent in using a proficiency scale. In other words, does the rater apply the proficiency scale in a consistent way to all test-takers whom that rater is evaluating?

b) ***Inter-rater reliability*.** The level of agreement between two or more independent raters in their judgement of test-takers' performance. In other words, are different raters in agreement in the scores that they assign to individual test-takers?

Raters' assessments should be monitored, both individually and comparatively, on an ongoing basis. Senior raters should formally evaluate the test-rater staff periodically. Periodic cross-rating by members of different rating teams is also highly recommended as a means to prevent gradual divergence in the interpretation of the rating scale by different teams.

6.3.4.4 If rating is conducted using new technology, including speech recognition technology, then the correspondence of such rating to human rating, on all aspects of the Rating Scale, should be clearly demonstrated, in layperson language, and be accessible to all decision-makers.

— **What it means.** If a testing organization uses a new technology, such as speech recognition technology, to evaluate the speaking and listening proficiency of a test-taker, then that organization has a responsibility to clearly and plainly demonstrate that the ratings are valid and correspond to the ICAO Rating Scale.

— **Why it is important.** Until now, best practice in testing speaking and listening proficiency has involved the use of experienced and trained raters, who evaluate a person's proficiency based on criteria established in a rating scale. In the context of language testing, the use of speech recognition technology to evaluate human speech is a very new method. The validity and reliability of such testing should be clearly and plainly demonstrated.

— **Additional information.** The ICAO language proficiency requirements will require large-scale testing programmes. If technology can assist by making the test process easier and more cost-effective than person-by-person human rating, then it will be useful. Such testing may be particularly appropriate as a pre-test screen to determine generally those who may be ready for a licensing test and those who require more training.

6.3.5 Test administration and security

Administration

6.3.5.1 A complete sample of the test should be published, including the following:

a) test-taker documents (paper instructions, screen display, etc.);

b) interlocutor instructions or prompts;

c) rater documentation (answer key, rating scale, instructions);

d) one complete sample of audio recordings (for listening sections or semi-direct prompts); and

e) a demonstration of test-taker/interlocutor interaction.

— **What it means.** Decision-makers have a right to examine a complete sample of a test before they adopt, use, take or buy the test. Because of the high-stakes nature of aviation language testing, it is appropriate for testing organizations to make a complete sample of their test publicly available.

— **Why it is important.** Seeing a complete sample of a test is essential for evaluating it. Information about a test, such as a description of the test or a marketing brochure, is not sufficient for determining the test's validity, reliability, practicality and washback effect.

— **Additional information.** It is important to note that for instructors in a training programme, being familiar with the structure and format of a test is not the same thing as "teaching to the test." Paragraph 6.3.3.3 cautions against test designs that might provoke test-takers to try to prepare specifically for the test by memorizing phraseology or by memorizing test answers. Becoming familiar with the format of a test is good practice for both instructors and test-takers; it helps to ensure that test-takers are not unduly surprised or intimidated by the format of the test or the types of interaction it involves. For example, if the test interaction includes a voice-only segment that is conducted by telephone, it is beneficial for test-takers to be aware of this. Such knowledge does not provide them with anything they can memorize in preparation for the test; it will simply make them comfortable with the test format and the types of interaction they can expect to have during the test.

6.3.5.2 The test rating process should be documented, and the documentation should include instructions on the extent and nature of evidence that raters should collect.

— **What it means.** Raters should be given clear instructions on the kind of evidence they need to collect to justify and support their evaluations.

— **Why it is important.** Language is complex, and one simple statement by a person can be analysed in many different ways. Raters need to understand the depth of analysis that is expected of them in order to make and justify a rating. Documenting and supporting evaluations of test-takers are also essential in order to later review a test, either to address an appeal or complaint by a test-taker or to audit a rater or rating team (as described in 6.3.4.3). For such reasons, a documented set of scores alone is not sufficient; evidence and support for that score are required.

  Evidence in this context would typically include examples of language use by the test-taker that indicate strengths or weaknesses: several instances of incorrect use of verb tenses, for example, might support a particular structure rating; or a problem pronouncing certain sounds might be documented as evidence for a pronunciation score.

6.3.5.3 The instructions to the test-taker, the test administration team and test raters should be clearly documented.

— **What it means.** Clear instructions for each part of the test process and for each stakeholder should be available and unambiguous.

— **Why it is important.** Clear instructions demonstrate that the testing organization has thoroughly considered all aspects of the testing process. Test users, test administrators and test raters all need clear, easy-to-understand instructions for their involvement to be effective. In addition, clear instructions are an important feature to ensure tests are administered in a consistent and therefore reliable manner.

6.3.5.4 The equipment, human resources and facilities necessary for the test should be included in the instructions.

— **What it means.** The administration of tests may require a variety of equipment (computer, videotape, tape recorder), the support of different personnel (information technology personnel or sound technicians) and facilities that can accommodate the required equipment and personnel. Clear instructions for each part of the test process should be available.

— **Why it is important.** Clear descriptions and instructions for the equipment, human resources and facilities required demonstrate that the testing organization has thoroughly considered all aspects of the testing process. Test users, test administrators and test raters all need clear, easy-to-understand instructions for their involvement to be effective and to ensure that the test is administered in a consistent and therefore reliable manner.

— **Additional information.** These requirements include the room where the test will be conducted, furniture, equipment for playing audio prompts used during the test, headsets (if used) and/or any other resources required by the test.

6.3.5.5 The testing location should offer moderate comfort, privacy and quiet.

— **What it means.** The testing location should not be uncomfortable or noisy.

— **Why it is important.** Aviation language testing is important. TSPs have an obligation to ensure a fair outcome to the test. This obligation includes eliminating undue distractions during the test.

— **Additional information.** Examples of inappropriate locations would be a staff kitchen, cafeteria, coffee lounge or hallway where people are gathering and talking. Such settings could violate the test-taker's privacy and potentially introduce distractions during the test. Similarly, a testing room that is extremely cold or hot could introduce an artificial and distracting condition to the test that could impact the test-taker's performance.

6.3.5.6 A full description of test administration policies and procedures should be available to all decision-makers, including information about the following:

a) policies and procedures for retaking the test;

b) score reporting procedures (who receives the results of tests?);

c) record-keeping procedures; and

d) plans for quality control, test maintenance, ongoing test development and purchasing conditions.

— **What it means.** Policies and procedures concerning scores, records, quality control, future development, and purchasing conditions need to be clearly and readily available to decision-makers and test users.

— **Why it is important.** One of the considerations in test development and/or test selection is whether or not there is adequate infrastructure to support and maintain the test goals.

6.3.5.7 A documented appeals process should be established, and information about it should be available to test-takers and decision-makers at the beginning of the testing process.

— **What it means.** All testing programmes should have an appeals process. In some cases, a re-examination may be needed. Test-takers who feel their scores are not accurate may request that their tests be re-rated or that they have the opportunity to take the test again.

— **Why it is important.** Even if the testing process follows best practices, errors may occur. While every appeal should not be expected to result in a complete re-scoring or re-examination, the procedures for an appeal should be clearly documented so that they can be fairly applied when appropriate.

— **Additional information.** An appeals process should address issues such as, but not limited to:

a) extenuating circumstances that affect the test-taker's performance. Test-takers who claim that they were having a bad day or were nervous should not be allowed an appeal since they will need to communicate in operational situations when they are having a bad day or feeling nervous. But a test-taker who suffers a family tragedy in the days prior to the test, or who is ill on the day of the test, should be at least considered for an appeal;

b) steps test-takers should take to initiate an appeals process and the communication that they can expect to receive during that process;

c) the period of time (for example 30 days or 60 days) within which the employer or licensing authority commits to resolving an appeal — either in the form of a re-review of the test, a re-examination or a rejection of the appeal.

Test security

6.3.5.8 A full description of security measures required to ensure the integrity of the testing process should be documented and available to all decision-makers.

— **What it means.** Test security refers to the ability of the testing organization to protect the integrity of the testing process. Testing organizations should ensure that people do not have access to specific test content or questions before the test event. In addition, TSPs should ensure that test scores are kept confidential.

— **Why it is important.** The ongoing reliability, validity and confidentiality of a language proficiency testing system will depend heavily on the test security measures that are in place.

— **Additional information.** Testing organizations should protect test-item databases and provide secure storage of scores and test materials. They should require, establish and maintain formal commitments to confidentiality and integrity from test developers, administrators, raters, information technology personnel and any other staff who are involved in any aspect of the testing process.

Other necessary security measures during test administration should prevent:

a) communication between test-takers;

b) communication between test-takers and people elsewhere during the test (for example, by use of a mobile telephone);

c) impersonation of others; and

d) the use of false identities.

Finally, security measures should ensure the authenticity of test result data, including databases and certificates.

6.3.5.9 In the case of semi-direct test prompts (which are pre-scripted and pre-recorded), there should be adequate versions to meet the needs of the population to be tested with respect to its size and diversity.

— **What it means.** Tests with specific pre-recorded or pre-scripted questions or prompts require multiple versions. Decision-makers need to know that there are adequate versions of the test to ensure security for their particular testing needs.

— **Why it is important.** Once test items have been used, there is the possibility that people may repeat or share the prompts with other test-takers; this would violate the security and validity of the test.

— **Additional information.** It is not practical to prescribe the number of versions or test prompts required for any specific test situation. The determination of what is adequate in any situation is dependent on specific circumstances. Examples of variables that impact adequacy are:

a) the number of test-takers;

b) the geographic and organizational proximity of the test-takers. The closer the individuals within the test-taking population, the more likely it is that they will share their testing experience with each other. If people share test information and that same information is used in another test, test-takers have the opportunity to prepare a response for a known test prompt. This is an example of negative test washback described in 6.2.4.3; and

c) the variability inherent in the test design. A test that contains very little variability in prompts (in other words, all test-takers are asked the same questions or very similar questions) will require more frequent version changes than a test in which the interlocutor can, for a particular item, ask the test-taker a variety of questions.

It is common in large testing initiatives for a testing service to use a version of a test only once before retiring it. In other cases, a testing service develops a number of versions, then recycles them randomly. Test-takers may then generally know the sorts of questions and prompts they will encounter during a test, but will be unable to predict the specific questions and prompts they will encounter during a particular testing interaction.

One security measure that testing organizations may take is to always include at least one completely new prompt or question in every version. A pattern of test-takers achieving high scores on most or all test prompts or questions, but failing the new prompt, may indicate a breach in test security.

6.3.5.10 Test questions and prompts should be held in confidence, and not be published or provided to test-takers prior to the test event.

— **What it means.** Test-takers should not have access to test questions or prompts before they take the test.

— **Why it is important.** Authorities and organizations that make test items publicly available negatively impact the integrity of the testing process. Test takers' prior knowledge of specific test content does not allow them to "recognize and resolve misunderstandings" and to "handle successfully and with

relative ease the linguistic challenges presented by a complication or unexpected turn of events" in accordance with the ICAO language proficiency requirements. This approach will lead test-takers to memorize items and responses.

— **Additional information.** As mentioned in 6.3.5.1, one sample version of the test should be provided to decision-makers so that they are familiar with the format of the test and the general test procedures. Specific test questions or prompts from actual tests should not be available in any way.

6.3.5.11 A documented policy for all aspects of test security should be accessible to all decision-makers.

— **What it means.** TSPs should clearly describe in publicly available documents how they establish and maintain all required aspects of test security.

— **Why it is important.** A testing process with inadequate or unknown safeguards for test security will not be recognized as generating valid results or ensuring a test-taker's confidentiality.

— **Additional information.** All test materials, including paper documents and electronic versions, should be stored securely at all times by all stakeholders involved in test administration processes. Periodic reviews, in the form of physical inspections, should be conducted by testing management personnel to verify that security procedures, including storage of all test materials, are being followed.

6.3.6 Record-keeping

6.3.6.1 All proficiency tests of speaking ability involving interaction between the test-taker and interlocutor during the test should be recorded on audio or video media.

— **What it means.** Because of the high-stakes nature of aviation language testing, it is critical that test organizations maintain either video or audio recordings of all speaking tests.

— **Why it is important.** Test recordings provide a safeguard against charges of subjective judgements and unfairness. Recordings allow:

a) review or re-rating by different raters in case of uncertainty or an appeal; and

b) confirmation of assessments in case of appeals by test-takers or their employers.

6.3.6.2 Evaluation sheets and supporting documentation should be filed for a predetermined and documented period of time of sufficient duration to ensure that rating decisions can no longer be appealed.

— **What it means.** In addition to preserving the actual recording of each speaking test, for each test-taker, all score sheets and supporting documentation, including electronic data, should be filed and retained for an appropriate duration of time.

— **Why it is important.** Records are important in the case of appeals, for internal analysis related to auditing, for establishing an individual training plan and for establishing recurrent testing schedules.

— **Additional information.** At a minimum, the records should be maintained through the validity period of the licence's language proficiency endorsement requirement. Annex 1, Chapter 1, 1.2.9.7, recommends that the maximum validity period should not surpass three years for those evaluated at Level 4, and six years for those evaluated at Level 5.

6.3.6.3 The record-keeping process should be adequate for the scope of the testing and should be documented.

— **What it means.** A testing service should document how a test-taker's performance can be captured and securely stored.

— **Why it is important.** Decision-makers need to know if the record-keeping processes are adequate.

— **Additional information.** The outcome of the operational language assessment should comprise written comments on language performance in each skill area of the ICAO Rating Scale as well as the test result in terms of the demonstrated level of proficiency. In case of uncertainty, documentation should include a recommendation for assessment by a specialized language test or by another rating team.

6.3.6.4 The score-reporting process should be documented and scores maintained for the duration of the licence.

— **What it means.** The method of scoring and the persons to whom scores are reported should be clearly documented. When a test has been rated and the results documented, the process for reporting should be clear to all decision-makers.

— **Why it is important.** This practice is important to ensure that those individuals in the organization who need to know receive test result information and to ensure that the privacy of the test-taker and the security of the information are maintained.

6.3.6.5 Results of testing should be held in strict confidence and released only to test-takers, their sponsors or employers, and the civil aviation authority, unless test-takers provide written permission to release their results to another person or organization.

— **What it means.** The licensing authority should ensure that a policy concerning the release of test results is established. The TSP should have documented procedures on how it manages record-keeping and the confidentiality of test results.

— **Why it is important.** The high-stakes nature of aviation language testing are outlined in 6.2.2. A confidentiality policy on test results is a key measure the licensing authority should use to manage the impact of aviation language testing on the career of a flight crew or controller and the safety of passengers. A TSP should provide documented evidence on how it manages confidentiality of test results through every step of the testing process, including how it intends to transmit test results to the licensing authority.

6.3.7 Organizational information and infrastructure

6.3.7.1 An aviation language TSP should provide clear information about its organization and its relationships with other organizations.

6.3.7.2 All associations or links with other organizations should be transparent and documented.

— **What it means.** In developing and administrating their aviation language tests, TSPs may partner with other organizations in order to enhance their credibility with the aviation community. TSPs should provide documentation of any and all organizational links to other organizations.

— **Why it is important.** In any high-stakes testing environment, relationships between a TSP and other organizations can compromise the integrity of the testing process. For example, a CAA might reject a

TSP because it does not follow good testing practices; subsequently, that provider could change its name or form another organization, re-package its test and sell the same testing system (which still does not conform to good testing practices) to the CAA via deceptive marketing practices.

In order to prevent this type of deception, the provider should be required to document any other names under which it is conducting business or has conducted business in the past. The CAA should, in any case, conduct inquiries into all TSPs whose services are being considered in order to establish their legitimacy.

A related issue concerns claims made by TSPs about their relationships with leading industry entities. TSPs might, for example, make claims such as “Our test is endorsed by FAA” or “Advised by NASA.” In such cases, the provider should be required to supply documentation that explains and supports the claim, and the decision-makers should contact the related organization to validate the claim.

— **Additional information.** The assessment of language proficiency for the endorsement of licences is the responsibility of Contracting States. ICAO does not accredit, certify or endorse language TSPS.

6.3.7.3 If a TSP is also a training provider, there should be a clear and documented separation between the two activities.

— **What it means.** A clear separation between testing and training activities should be documented by an organization that provides both services.

— **Why it is important.** Typically in high-stakes testing situations, testing and training should be clearly separated in order to avoid conflicts of interest. Two examples of conflicts of interest follow. An organization that provides both training and testing services could award higher scores to students in its training programme since low scores for those students could reflect badly on the training they have received. Conversely, the organization could assign lower scores to test-takers, if additional training for those test-takers would result in increased revenues for the organization’s training programme.

Another concern regarding organizations that provide both training and testing services is the potential for training staff to also serve as interlocutors and raters in the testing process. It is never acceptable for instructors to also be testers of their own students. There is a natural inclination for instructors to develop sympathies toward some students while perhaps regarding others less favourably. Such perceptions could interfere with the objectivity that is required of interlocutors and raters in the testing process.

6.3.7.4 The TSP should employ sufficient numbers of qualified interlocutors and raters to administer the required tests.

— **What it means.** In addition to developing tests and new test versions, it is important that testing services have enough staff members to administer and rate the tests.

— **Why it is important.** Raters and interlocutors administering or evaluating speaking proficiency tests are usually effective only five to six hours per day. After that, tester fatigue is likely to have an impact on their effectiveness, and their interactions and ratings may become less reliable. Testing organizations should provide evidence that they have enough trained and qualified staff to manage the volume of required tests.

6.3.7.5 Documentation on how the test is maintained, including a description of how ongoing test development is conducted, should be provided.

— **What it means.** A testing organization should plan not only for the development of an initial test, but it should plan and budget for ongoing test development.

— **Why it is important.** An effective test that is not supported by adequate ongoing test development will not remain effective for very long. In a short period of time, test-takers will be able to predict the test items they will be presented with and memorize responses to those items.

— **Additional information.** New test versions will constantly need to be developed. Ongoing test development should also include the creation and maintenance of a database containing all questions that have appeared on each version of a test. This practice will help to ensure that test items, or whole test versions, are not accidentally recycled as subsequent versions are developed. This practice will also enable the testing team to analyse which test items were most successful in eliciting appropriate language responses from the test-taker and those that were less successful and thus develop improved tests subsequently.

6.3.8 Testing-team qualifications

6.3.8.1 Guidance on the required qualifications for test development, design and administration teams as well as for organizations that aim to contract TSPS is provided below. Within a testing team, the same person may possess several areas of expertise or play several roles. The testing team should include test designers, developers, administrators, interlocutors and raters.

Familiarity with ICAO documentation

6.3.8.2 All members of the testing team should be familiar with the following ICAO publications:

a) the relevant Standards and Recommended Practices of Annex 1;

b) holistic descriptors (Appendix 1 to Annex 1) and the ICAO Rating Scale (Attachment A to Annex 1);

c) Doc 9835; and

d) ICAO Rated Speech Samples CD.

Test design and development team

6.3.8.3 The test design and development team should include individuals with the operational, language test development, and linguistic expertise described below:

a) Operational expertise:

1) radiotelephony experience as a flight crew member, air traffic controller or aeronautical station operator;

2) experience in aeronautical operations and procedures and working knowledge of current practices.

b) Language test development expertise:

1) specialization in language test development through training, education or work experience;

2) working knowledge of the principles of best practice in language test development.

c) Linguistic expertise:

1) working knowledge of the principles of theoretical and applied linguistics;

2) working knowledge of the principles of language learning;

3) experience in language teaching.

— **Why it is important.** A test design and development team that includes all the above types of expertise offers the best foundation for a successful test development project.

Test administration team (Administrators and interlocutors)

6.3.8.4 Test administrators (the people who supervise and manage the administration of tests) and interlocutors should have a working knowledge of the test administration guidelines published by the test organization.

6.3.8.5 Interlocutors should demonstrate language proficiency of at least ICAO Extended Level 5 in the language to be tested and proficiency at Expert Level 6 if the test is designed to assess ICAO Level 6 proficiency.

6.3.8.6 Interlocutors should have successfully completed initial interlocutor training.

6.3.8.7 Interlocutors should successfully complete recurrent interlocutor training at least once each year.

6.3.8.8 Interlocutors should have appropriate aviation operational or language testing expertise, or both.

Rater team

6.3.8.9 In 6.3.4.2 it is recommended that at least two raters should evaluate language tests: one with operational expertise and the other with language specialist expertise.

a) **Operational expertise**. The involvement of operational experts such as pilots, controllers and flight instructors or examiners in the rating process will add operational integrity to the process. Operationally experienced raters can also assist by making informed judgements from an operational perspective on such aspects of language use as conciseness (exactness and brevity) in speech and intelligibility of accents and dialects that are acceptable to the aeronautical community.

b) **Language specialist expertise**. Because language testing for licensing requirements will have an impact on the professional careers of the test-takers as well as the reputations of operators and service providers and, ultimately, the safety of passengers and flight crews, test raters should be able not only to correctly interpret the descriptors of the Rating Scale but also to accurately identify strengths and weaknesses in a test-taker's performance. Only qualified language specialists serving as raters can identify and describe these strengths and weaknesses.

It may be true that laypersons or inexpert raters (people with no academic training or qualifications in language teaching or testing) can make informal judgements about language proficiency, particularly in a pass/fail sense. However, test-takers who do not pass a high-stakes test will demand, and will deserve, accurate information about how their performance did not meet the target performance (in this case, Level 4 language proficiency) and the areas in which they should focus their efforts to improve performance. Likewise, detailed justifications for giving a test-taker a passing score (in this case, an overall language proficiency score of 4, 5 or 6) will need to be documented and archived.

6.3.8.10 Raters should demonstrate language proficiency of at least ICAO Extended Level 5 in the language to be tested. If the test is designed to assess ICAO Level 6 proficiency, raters should demonstrate language proficiency at ICAO Expert Level 6.

— **What it means.** In order to credibly and effectively evaluate test-takers' language proficiency, raters should at least demonstrate the highest level of proficiency that test takers can achieve during assessment.

— **Why it is important.** To ensure safety, pilots and air traffic controllers expect the examiners and inspectors that assess them during operational training, and periodically thereafter, to meet stringent requirements. The assessment of language proficiency should follow the same practice given the high stakes involved. In addition, test-takers may question the validity and reliability of the test and testing process if they have doubts concerning the credibility and qualifications of the rater.

6.3.8.11 Raters should be familiar with aviation English and with any vocabulary and structures that are likely to be elicited by test prompts and interactions.

— **What it means.** In order to credibly and effectively evaluate test-takers' language proficiency, raters should be familiar with the vocabulary and structures that test-takers are likely to use during the test.

— **Why it is important.** Communication between pilots and controllers is highly specialized; it includes terms that are specific to aviation (approach fix, hold position, etc.) as well as everyday words and structures that have singular and distinctive meanings for pilots and controllers (e.g. approach, cleared). A rater who is unfamiliar with these terms may be confused or distracted by them during a test interaction; similarly, a rater who does not understand how pilots and controllers interact with each other may have difficulty comprehending statements made by test-takers. In cases such as these, the rater may be unable to effectively evaluate the language proficiency of test-takers in this environment.

— **Additional information.** The rater training process should include an aviation familiarity component, so that raters can comprehend, as much as their role requires, technical aspects of the language they will hear during tests.

6.3.8.12 Raters should have successfully completed initial rater training.

6.3.8.13 Raters should successfully complete recurrent rater training at least once each year.

— **Why it is important.** Initial and recurrent training aiming to standardize rater behaviour is vital to objectivity. As a language testing standard, raters should undergo approximately 40 hours of initial rater training and 24 to 40 hours of recurrent training per year.

Chapter 7

LANGUAGE PROFICIENCY TRAINING

7.1 INTRODUCTION

This chapter provides general guidance on training pilots and controllers with a view to demonstrating compliance with ICAO language proficiency requirements. For detailed guidance, readers are invited to consult Circular 323 published in collaboration with the International Civil Aviation English Association (ICAEA). Both this chapter and Circular 323 will support organizations in ensuring that the language training services procured are appropriate, effective and cost-efficient. This guidance material will be of interest to administrators of civil aviation authorities, airlines and air traffic service providers in taking appropriate steps to provide or procure language training services. It will also be of practical interest to language training providers in order to familiarize themselves with the expectations of the aviation industry.

7.2 OVERVIEW

7.2.1 Prior to the adoption of strengthened language proficiency standards and Recommended Practices by the ICAO Council in 2003, language training for pilots and air traffic controllers had, to a large extent, been seen as an important item to include in a budget — when possible. The length and quality of aviation language training (essentially English), when conducted, was driven largely by time and budgetary constraints. However, there was no target proficiency level towards which to aim. By introducing language proficiency requirements, ICAO has changed the context of how language training will occur in the aviation industry.

7.2.2 The most significant change in how aviation language must now be taught stems from the establishment of clear training targets, described in the ICAO Language Proficiency Rating Scale, for speaking and listening proficiency. Having to demonstrate ICAO Operational Level 4 language proficiency in order to earn a licence or rating to operate internationally will require that many pilots and air traffic controllers remain in language training until the target level is obtained, and thereafter in order to maintain that level. Attaining proficiency at Operational Level 4, rather than time and economic constraints, will drive aviation language training.

7.2.3 Language training is not a mandatory requirement in the ICAO language proficiency SARPs. However, training may be necessary for radiotelephony users who must demonstrate initial or recurrent compliance with ICAO language proficiency requirements. Those most in need of this training will comprise:

a) speakers at levels below Operational Level 4 for whom the language is a foreign language (these users will be trained intensively with a view to improving or raising their starting level of proficiency);

b) speakers at Operational Level 4 or above for whom the language is a foreign language (these users will be trained extensively with a view to maintaining their acquired level of proficiency); and

c) speakers for whom the language is a second language or native language (these users will be trained with a view to correcting or attenuating unintelligible features of their speech).

7.2.4 Language training initiatives by aircraft operators or air navigation service providers may include any or several of the following actions:

a) hiring a language instructor to provide in-house training;

b) developing training materials for use in in-house training;

c) purchasing training materials for use in in-house training;

d) purchasing a training package that includes instructors and their training materials for in-house training;

e) sending trainees to schools in-country or overseas.

7.2.5 Language proficiency training must be clearly distinguished from test preparation. All users needing to demonstrate compliance with language proficiency requirements using the testing methods described in Chapter 6 may expect to undergo a brief period of familiarization with a given test format prior to taking a proficiency test. The purpose of such familiarization is to cancel the negative effects on language performance of engaging in unfamiliar tasks in the context of a test.

7.2.6 However, test familiarization is not a substitute for true language proficiency training. Proficiency training must be conducted independently of a test format and should, ideally, adequately prepare the trainee to take and pass any proficiency test that complies with specifications derived from ICAO language proficiency requirements (see Chapter 6, 6.2.4 on the washback effect.). Training will seek to address, in a systematic way, the six skills in the ICAO Rating Scale. Training will also aim to go beyond the test and provide the extensive practice that is necessary to consolidate language skills, build confidence and ensure adequate safety margins when operating in stressful conditions.

7.3 COMMON MISCONCEPTIONS ABOUT LANGUAGE LEARNING AND LANGUAGE TRAINING

7.3.1 People tend to have strong opinions about language learning, perhaps because every human being, barring severe disability, speaks at least one language. Yet, language is a great deal more complex than its everyday use might lead us to believe. Academic research reveals that a good deal of common wisdom about language learning is inaccurate. An example is the commonly held belief that children learn new languages more easily than do adult learners. Findings by language acquisition researchers do not entirely substantiate this. Studies indicate that given the same set of circumstances (e.g. programme duration and amount of time spent in language learning activities), adolescents show some advantage over both adults and children. Adults, however, have learning strategies that afford them better progress than do young children, except in pronunciation for which early acquisition appears to have beneficial effects. This does not mean that age does not affect language learning at all, but factors other than age such as personality, access to the language, or motivation may have a strong influence as well.

7.3.2 Another illustration can be seen in the perception that anyone who speaks a language can teach a language. Similarly, wishful thinking sometimes results in learners searching for quick and easy solutions, leaving themselves open as possible prey of promoters of so-called “new methods for quick and easy language learning”. Contrary to such notions, language training is a professional activity that requires specialized training. Language training is further distinguished from other teaching activities because of the unique nature of language learning: a complex blend of skill, knowledge and cultural awareness, combining physical components with mental and communicative processes. There are no substitutes for effort and time to learn new languages. In fact, the tendency to apply conventional wisdom to language learning issues sometimes results in the assignment of inadequately prepared individuals to the task of developing, implementing or selecting language training programmes. Thus, the resulting inappropriate classroom activities will be inefficient, leaving language learners frustrated and unprepared. Language trainers are facilitators who are trained to effectively communicate how language works, to organize and deliver interesting and engaging lessons, and to accurately assess proficiency. Based on their professional awareness of how humans learn foreign languages, they design classroom activities that encourage and allow the learners to interact with the language.

7.3.3 Recent linguistic and language acquisition research has led to an interest in more student-centred, interactive classroom approaches designed to increase learners' communicative competence in the language. While not ignoring the role of grammatical knowledge, classroom activities focus on providing learners with opportunities to interact with the language in order to engage all of the elements that constitute language use. Activities can include open-ended role plays, missing-gap games or any meaningful, context-centred activity drawing learners into an active engagement with the language. Grammar teaching in communicative classrooms is done in a meaningful context.

7.3.4 Administrators and training managers are facing a daunting responsibility: investing considerable funds to implement or develop aviation language training programmes. As aviation administrators and operational specialists they may not be familiar with best practice in language training. In addition, the language training industry is unregulated with a wide variety of programme quality and effectiveness. Since the purpose of this manual is to provide as much useful background information as possible, it is considered useful to place modern language training methods into a historical context (see Appendix E).

7.4 TRAINING COURSE CONTENT: GENERAL AND AVIATION-SPECIFIC LANGUAGE TRAINING

7.4.1 After careful selection of language training and programme management personnel, the next decision will concern what should be taught and how. Organizations wishing to provide language training programmes for personnel will have the option of developing and offering their own programmes or contracting with an outside agency to provide courses, or a combination of both. Regardless of the option chosen, the content of the courses in the programme, the curriculum and the methodological approach are important.

7.4.2 Language for specific purposes (LSP) is an approach to language training that focuses programme content on subjects, topics and issues of direct interest to learners. LSP training is driven by what learners need to do in the language and focuses principally on those features of the language which are required to undertake a particular task. A more narrowly focused, learner-centred approach to training, LSP aims to help learners establish partial competence in a given, usually work-specific, domain such as science, technology or medicine, or (more narrowly) banking, mechanical engineering or aviation. Language for aviation learning and training activities focus on the language needed to function in various aviation contexts.

7.4.3 A more thorough discussion on aviation language can be found in Chapter 2. It should be emphasized here that flight crews and air traffic controllers need to acquire phraseologies, certainly, but aviation language training should not be limited to phraseologies. Language proficiency is an intricate interplay of knowledge, skills and competence, requiring much more than memorization of vocabulary items. Memorization of ICAO phraseologies alone does not constitute language proficiency and is an unsafe practice. Aviation language training for flight crews and air traffic controllers, then, necessarily includes a broader focus on aviation-related language.

7.4.4 Individuals entering the aviation environment with a high level of proficiency in general language (native speakers and/or expert users of the language) readily acquire the specialized language vocabulary and phraseologies needed for efficient and safe radiotelephony communications. It is therefore reasonable to expect that general language programmes and courses may be an appropriate preface to learning aviation language at the lower levels. General language programmes and learning activities can play a valuable role and are a legitimate language learning activity for flight crews and controllers. This is useful because much support for general language learning exists: many programmes, trainers, texts and multimedia products are readily and economically available to support general language learning.

7.4.5 While there is a role for general language training and learning, aviation-focused language training and learning at all skill levels are essential because of safety and learner motivation. Because increased safety is the motivating factor beneath any initiative, including the establishment of provisions for language proficiency in civil aviation,

it is important that language training programmes address appropriate needs within the domain of aviation operational communications. Aviation language specialists with the requisite applied linguistic background as described above, as well as familiarity with or experience in the requirements of aviation communications, can most efficiently achieve an organization's safety-related language proficiency objectives.

7.4.6 The goal of many kinds of training programmes is for the student to learn or master a specific subject matter content. In a language training programme, however, the goal is to acquire skill or competency in using a language. The subject matter is the language itself. In some respects, language learning is similar to an athletic training programme in that success depends not so much on memorizing or learning a particular body of knowledge, but rather, on the incremental development of a skill set, based on progressive familiarity with a language. In language training, as in the development of athletic skills, there is no substitute for time and effort. By using a language, one learns the language. Instruction in a language class merely points the way, focusing the learner's attention on some particular aspect of the language, clarifying use and offering opportunities to use the language.

7.4.7 Many traditional language training programmes have attracted a variety of students with individual motivations for learning a language: some intend to enter academic programmes which require the use of a language, others want to learn or improve their language for business purposes, and still others want to learn a language simply for the pleasure of it. In such programmes, the content of the course is simply the vehicle through which learners gain access to opportunities to use and practise the language. Faced with a wide variety of learner backgrounds, interests and motivations, trainers and material developers have often developed language lessons around a variety of high-interest, general-content material, hoping to appeal to a wide variety of interests.

7.4.8 In specific-purpose language training, on the other hand, learners share a common interest and motivation for learning the language. The fact that people typically learn better when the content is related to their personal or work life can be exploited by trainers and material developers in specific-purpose language programmes. Content which is relevant to the interests and work requirements of the students can be selected, Language learning happens when learners are presented with a breadth of comprehensible input. A wider variety of related materials offers learners the best opportunity for acquisition of the target language features. It is important that learners are provided with a rich variety of input because of the nature of human interactions; it is not possible to forecast every possible utterance that a speaker may encounter. These principles are equally applicable to aviation language training, even in the comparatively restricted environment of radiotelephony communications.

7.4.9 In language training programmes developed for pilots and air traffic controllers, programme material developers can capitalize on the common interest and motivation of the learners. Even at very low levels, learners will be motivated by aviation-related materials, both because such materials will be of high interest to the learners and because such material will be seen as relevant to their work. For busy professionals, especially those who have already acquired basic proficiency in a language, lessons and learning activities focusing on the language they need on the job will be seen as more efficient. As a cautionary note, however, it should be understood that aviation language is not a magic bullet; aviation language learning will not necessarily be a faster method of learning the appropriate language. However, it will likely more readily engage the learner, keeping motivation high.

7.4.10 The communicative approach to language training involves learning a language by being involved in tasks that require its use. One way of organizing a communicative language training curriculum is through a focus on the communicative functions of language. Specific professional subject areas have specialized genres, specialized vocabulary, and a possible focus on specific parts of the grammar. To aid training organizations in the development of an appropriate language training curriculum for pilots and air traffic controllers, a subset of those communicative language functions which are of particular relevance to radiotelephony communications has been identified (see Chapter 2 and Appendix B), along with inventories of events, domains and tasks suggesting routine and non-routine topics upon which pilots and controllers will be called to communicate. Taken together, this information provides more insight into the communicative needs of pilots and controllers.

7.4.11 Whereas the aeronautical communicative language functions, events, domains and tasks specify the communicative tasks in which pilots and controllers frequently engage, the language proficiency requirements, including the holistic descriptors and Rating Scale, define the proficiency level at which the functions should be performed.

7.5 CONTENT-BASED LANGUAGE TRAINING

7.5.1 A recent development in communicative language training has been a move towards content-based language learning (CBLT), an approach that is based on an understanding of the value of matching content-interests to language lessons, and which calls back to humans' earliest language learning experiences. The Canadian Civil Service developed this approach to bring civil servants to a high level of bilingual proficiency in French and English, and it has subsequently been used across many programmes. CBLT is not really a new method; rather it is a sensible and logical approach to developing language learning programmes.

7.5.2 Too often, the content of language lessons is divorced from student interests or meaningful communication. Rather than learning a language for the sake of learning a language, CBLT focuses on learning a language in parallel to learning about some other important content information. In CBLT, language learning occurs while a student is focusing on learning some content information.

7.5.3 CBLT can be particularly effective for pilots and air traffic controllers for the following reasons:

a) Many aviation safety organizations publish and distribute videos and tool kits designed to improve the safety awareness of pilots and air traffic controllers. Much of these materials are freely distributed and publicly available. Most are published in English, and target English speakers at what ICAO calls the "Expert Level 6".

b) Many pilots and controllers with limited English are not able to easily access the safety information contained in such publications. Adapting such publications for an aviation English programme makes the information contained there accessible to all pilots and controllers.

c) Improving safety awareness is an ongoing process. Pilots and controllers universally exhibit a high interest in increasing their safety awareness. In fact, organizations commit significant resources to the continual improvement and management of safety systems.

d) Materials are intrinsically interesting. Pilots and controllers who need to comply with ICAO Operational Level 4 may require between 200 to 400 hours of aviation language training. Providing content-based, safety-focused language training has a number of benefits for the pilots, controllers, their organizations and the aviation industry:

1) It doubles the value of required language learning time by pairing language lessons with important safety content.

2) It increases safety awareness.

3) It provides high-interest topics in the language lessons, increasing learner motivation.

4) Motivation is a key factor in language-learning success. People naturally pay more attention to topics in which they have an inherent interest.

5) Time spent on language learning has a positive impact on progress.

7.5.4 The implementation of content-based language programmes for flight crews and air traffic controllers can be accomplished through a collaboration between qualified language specialists and aviation specialists. For more information on aviation language qualifications, see Appendix D). Such classes may be co-developed, and even co-taught, with the language specialists providing linguistic support to the aviation content. Appropriate classroom activities of an aviation content-based language programme will be familiar to crew resource management trainers: a focus on task-based activities, problem-solving, team-building exercises, role play and simulations.

7.6 TRAINING COURSE DELIVERY

7.6.1 Language training programmes can be delivered in a variety of ways. The crucial issue in the choice of training delivery methods is to make the appropriate match between the method and the type of skill to be developed. Blended solutions frequently provide the optimum solution.

7.6.2 Traditional classroom training, where trainer and learners are brought together in the same location at fixed times, remains a significant option. In this case attention should be paid to maintaining group size within the range of 4 to 12 learners if spoken interaction is the primary skill to be developed. One-to-one training formats may be chosen for specific needs such as remedial training in specific skill areas or to overcome individual learning difficulties. Immersion training for short periods in a host country where the language is spoken needs to be carefully prepared and linked to the achievement of defined objectives.

7.6.3 Trainer-led programmes can be extended beyond the classroom by means of telephone and Internet links between trainer and learner(s). Even greater flexibility, efficiency and productivity are provided by computer-based and self-help training solutions. These approaches are examined in greater detail below.

7.6.4 Computer-assisted language learning (CALL) has created new possibilities for both training and testing. The role of computers in language learning, like the role of computers in other kinds of learning and training situations, is relatively new and likely to increase. The introduction of computers into language learning presents significant advantages including the following:

a) access via Internet search engines and dedicated websites to large quantities of varied and specialized language input in text, audio and video form;

b) integration via a single interface of multiple modes of language use and language practice, which is useful for autonomous learning or in blended learning programmes;

c) access via the Internet to specialized or general language learning courses or pedagogical material;

d) opportunities via the Internet for various types of interaction in the targeted language including chat sites, games, and virtual living situations typified in the three-dimensional virtual world known as “Second Life”;

e) Internet access can be combined with other computer learning software to allow the learner to carry out further research either on linguistic elements encountered (using online dictionaries, audio pronunciation models, software, etc.) or on topics and themes being treated;

f) access to distance-learning allowing part of the course-work to be completed outside the classroom and/or outside fixed programme schedules while still allowing trainer supervision and feedback;

g) management of learning records through statistical data storage and feedback on learner performance and progress;

h) although limited at this point in time, the possibility for computers to provide feedback on certain aspects of language proficiency such as pronunciation and fluency. This role will expand with the development in natural language processing and will no doubt lead to increased use of CALL technologies.

7.6.5 The important point to remember, however, is that the computer is another tool to support training, not a new way of training. To the extent that computers can mimic the human ability to interact and communicate, as well as provide learners with the opportunity to practise the language on their own (self-access activities), computers have an obvious value. Computers can facilitate live, trainer-to-student interaction but are not yet able to replicate interaction that requires speaking as well as listening ability, particularly in the context of plain-language radiotelephony communications.

7.6.6 Training programmes should encourage and support learners to be self-directed, active and autonomous by involving themselves in learning activities beyond a trainer-led programme. Self-help is important in the language learning process because of:

a) ***Career-long cost-effectiveness.*** Given their busy schedule, autonomous pilots and controllers depend less on available courses. This is especially beneficial in light of the difficulty in committing to a training programme on fixed days and times each week.

b) ***Successful outcome.*** Self-motivated learners are more successful in completing language learning tasks.

7.6.7 Self-help can be encouraged by:

a) presenting different study methods to learners and evaluating those methods as part of the language training curriculum;

b) providing training materials that can be adapted by learners to other contexts or situations; showing learners how to make these adaptations;

c) providing and actively familiarizing learners with access to self-study facilities and available resources (computers, Internet, audio and video recordings, conversation partners, grammar books, dictionaries, etc.);

d) ensuring ongoing links between classroom-based training and self-study.

7.7 TRAINING TRAINERS

Because aviation language training is so highly technical and specialized, a language trainer needs a somewhat lengthy apprenticeship in order to gain familiarity with the technical requirements of radiotelephony communications. There are relatively few language trainers who are adequately prepared to manage the technical requirements of training pilots and air traffic controllers. When an organization has access to such trainers, their value to the organization should not be underestimated, as they may be difficult to replace. For more information on Aviation English Trainer Training, please consult Chapter 4 of Circular 323.

7.8 EXPECTED LEARNER PROGRESS

7.8.1 Language training providers often encounter unrealistic expectations on the part of clients and sponsors who want short-term language training solutions, a “magic bullet”. Language learning requires a serious and mature

commitment of time and effort. Weeks spent memorizing a large number of words or phrases does not prepare learners to understand all that they may hear. Learning a language involves not only learning how to say something but also understanding what is heard.

7.8.2 It is very important for programme sponsors and managers to have a realistic sense of what is considered as usual progress in language learning and to understand that any guide to expected progress can only be very general, because learner progress is affected by any number of factors and will be highly individual. Language learning is a complex interaction of a number of factors, involving academic linguistic knowledge, cultural information and communicative skills. Some of the factors influencing the rate of language learning include the following:

a) ***Environment.*** One of the major factors influencing language learning progress appears to be environment. More specifically, research suggests language learning in an "immersion" or target-language (TL) environment is more effective and efficient than language learning in an isolated environment.

b) ***Time.*** Time spent on language learning tasks has an obvious impact. The more time individuals are immersed in language learning activities, the more quickly they acquire language skills.

c) ***Personality.*** While it is not possible to generalize the effect of personality on language learning, evidence suggests that certain personality traits which facilitate language learning might increase an individual's success, e.g. being unafraid of appearing foolish and being willing to take risks.

d) ***Learner style.*** Researchers have concluded that learners differ in their preferred learning styles and make better progress when the methodology used matches their preferred learning style. Programmes can accomplish this by offering an array of learning options, e.g. computer-aided self-access programmes, classroom activities, role plays and simulations.

e) ***First-language literacy and educational background.*** The degree of literacy of learners in their first language will impact learner style and the degree to which classroom materials are a help or a hindrance to learning.

f) ***Motivation.*** Learners with intrinsic motivation (that is to say having an interest in developing language proficiency for its own sake or in the interests of safety) may learn more efficiently than learners with purely extrinsic motivation (that is to say learning for some kind of reward).

Other factors include a learner's current level of language proficiency, attitude to the target language culture, study habits and the degree of cultural isolation.

7.8.3 Students and administrators often want to know how long it will take for a student to progress from point A to point B. It is impossible to predict with great accuracy how long any one individual will require given the large number of factors which impact language learning. However, some general guidelines can be drawn from research and from practical experience. One informal rule of thumb in the field of language training for academic purposes holds that between 100 and 200 hours of language learning activities are required for any measurable improvement in ability. Additional research from the United States Defence Language Institute, an organization with many years' experience training pilots and air traffic controllers, indicates that approximately 16 weeks of intensive study focusing solely on listening and speaking proficiency, or approximately 500 hours of study, are required for a language learner to move from a Level 1 to a Level 2 on the Defence Language Institute's Inter-agency Language Roundtable (ILR) scale.

7.8.4 Progress in language learning is also uneven. The foreign-language learning curve is characterized by rapid progress in the early beginner stages followed by a series of plateaux where progress seems to slow down. This can be discouraging and needs to be recognized and dealt with in the training approach.

7.8.5 What can be drawn from this evidence is that tightly focused, aviation-specific speaking and listening curricula will likely produce more efficient results than more generalized approaches. Students of “general purpose” language teaching are typically in the early part of their career path and may be able to afford a wider range of programme quality because they face fewer time constraints. However, professionals within the aviation community affected by the ICAO language proficiency requirements are in the middle of their careers and face rigid time pressures; they need to attain ICAO Operational Level 4 language proficiency as quickly as possible. As such, the aviation industry merits the most efficient language training available.

7.9 TRAINING PROGRAMME BEST PRACTICES

7.9.1 Whether organizations elect to develop their own internal language programme or to subcontract with a third-party language training provider, initial and ongoing programme evaluation will be an important aspect of quality control. In selecting a language training provider, it is important to note that language training is very much an unregulated industry, with only very recent efforts being made to accredit language training programmes in Europe, the United States and Canada. There is no universal licensing examiner authority regulating language teacher training or certification, and programme and trainer quality vary greatly.

7.9.2 A demonstrable and well-articulated adherence to best practices ensures the best possible learning environment. As long as language training remains largely unregulated, organizations and individuals should carefully investigate programme qualities before committing resources. See Circular 323 for assistance in setting up language training and selecting language training providers.

Appendix A

ICAO STANDARDS AND RECOMMENDED PRACTICES (SARPS)

PART I: EXTRACTS FROM ANNEXES 1, 6, 10 AND 11

ANNEX 1 — *PERSONNEL LICENSING*

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1.2.9 Language proficiency

1.2.9.1 Aeroplane, airship, helicopter and powered-lift pilots and those flight navigators who are required to use the radio telephone aboard an aircraft shall demonstrate the ability to speak and understand the language used for radiotelephony communications.

Note.— Pursuant to Article 42 of the Convention on International Civil Aviation*, paragraph 1.2.9.1 does not apply to personnel whose licences are originally issued prior to 5 March 2004 but, in any case, does apply to personnel whose licences remain valid after 5 March 2008.*

1.2.9.2 Air traffic controllers and aeronautical station operators shall demonstrate the ability to speak and understand the language used for radiotelephony communications.

1.2.9.3 **Recommendation.—** *Flight engineers, and glider and free balloon pilots should have the ability to speak and understand the language used for radiotelephony communications.*

1.2.9.4 As of 5 March 2008, aeroplane, airship, helicopter and powered-lift pilots, air traffic controllers and aeronautical station operators shall demonstrate the ability to speak and understand the language used for radiotelephony communications to the level specified in the language proficiency requirements in Appendix 1.

1.2.9.5 **Recommendation.—** *Aeroplane, airship, helicopter and powered-lift pilots, flight navigators required to use the radio telephone aboard an aircraft, air traffic controllers and aeronautical station operators should demonstrate the ability to speak and understand the language used for radiotelephony communications to the level specified in the language proficiency requirements in Appendix 1.*

1.2.9.6 As of 5 March 2008, the language proficiency of aeroplane, airship, helicopter and powered-lift pilots, air traffic controllers and aeronautical station operators who demonstrate proficiency below the Expert Level (Level 6) shall be formally evaluated at intervals in accordance with an individual's demonstrated proficiency level.

1.2.9.7 **Recommendation.—** *The language proficiency of aeroplane, airship, helicopter and powered-lift pilots, flight navigators required to use the radiotelephone aboard an aircraft, air traffic controllers and aeronautical station operators who demonstrate proficiency below the Expert Level (Level 6) should be formally evaluated at intervals in accordance with an individual's demonstrated proficiency level, as follows:*

a) those demonstrating language proficiency at the Operational Level (Level 4) should be evaluated at least once every three years; and

b) those demonstrating language proficiency at the Extended Level (Level 5) should be evaluated at least once every six years.

Note 1.— Formal evaluation is not required for applicants who demonstrate expert language proficiency, e.g. native and very proficient non-native speakers with a dialect or accent intelligible to the international aeronautical community.

Note 2.— The provisions of 1.2.9 refer to Annex 10, Volume II, Chapter 5, whereby the language used for radiotelephony communications may be the language normally used by the station on the ground or English. In practice, therefore, there will be situations whereby flight crew members will only need to speak the language normally used by the station on the ground.

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APPENDIX 1. REQUIREMENTS FOR PROFICIENCY IN LANGUAGES USED FOR RADIOTELEPHONY COMMUNICATIONS

(Chapter 1, Section 1.2.9, refers)

1. General

Note.— The ICAO language proficiency requirements include the holistic descriptors at Section 2 and the ICAO Operational Level (Level 4) of the ICAO Language Proficiency Rating Scale in Attachment A. The language proficiency requirements are applicable to the use of both phraseologies and plain language.

To meet the language proficiency requirements contained in Chapter 1, Section 1.2.9, an applicant for a licence or a licence holder shall demonstrate, in a manner acceptable to the licensing authority, compliance with the holistic descriptors at Section 2 and with the ICAO Operational Level (Level 4) of the ICAO Language Proficiency Rating Scale in the Attachment.

2. Holistic descriptors

Proficient speakers shall:

a) communicate effectively in voice-only (telephone/radiotelephone) and in face-to-face situations;

b) communicate on common, concrete and work-related topics with accuracy and clarity;

c) use appropriate communicative strategies to exchange messages and to recognize and resolve misunderstandings (e.g. to check, confirm, or clarify information) in a general or work-related context;

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

e) use a dialect or accent which is intelligible to the aeronautical community.

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ANNEX 6 — *OPERATION OF AIRCRAFT*
PART I — *INTERNATIONAL COMMERCIAL AIR TRANSPORT — AEROPLANES*

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CHAPTER 3. GENERAL

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3.1.8 Operators shall ensure that flight crew members demonstrate the ability to speak and understand the language used for radiotelephony communications as specified in Annex 1.

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ANNEX 6 — *OPERATION OF AIRCRAFT*
PART III — *INTERNATIONAL OPERATIONS — HELICOPTERS*

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Section II

CHAPTER 1. GENERAL

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1.1.3 Operators shall ensure that flight crew members demonstrate the ability to speak and understand the language used for radiotelephony communications as specified in Annex 1.

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ANNEX 10 — *AERONAUTICAL TELECOMMUNICATIONS*
VOLUME II — *COMMUNICATION PROCEDURES INCLUDING THOSE WITH PANS STATUS*

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CHAPTER 5. AERONAUTICAL MOBILE SERVICE — VOICE COMMUNICATIONS

5.1 General

Note.— For the purposes of these provisions, the communication procedures applicable to the aeronautical mobile service, as appropriate, also apply to the aeronautical mobile satellite service.

5.1.1 In all communications the highest standard of discipline shall be observed at all times.

5.1.1.1 ICAO standardized phraseology shall be used in all situations for which it has been specified. Only when standardized phraseology cannot serve an intended transmission, plain language shall be used.

Note.— Detailed language proficiency requirements appear in the Appendix to Annex 1.

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5.2 Radiotelephony procedures

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5.2.1.2 *Language to be used*

5.2.1.2.1 The air-ground radiotelephony communications shall be conducted in the language normally used by the station on the ground or in the English language.

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

Note 2.— The level of language proficiency required for aeronautical radiotelephony communications is specified in the Appendix to Annex 1.

5.2.1.2.2 The English language shall be available, on request from any aircraft station, at all stations on the ground serving designated airports and routes used by international air services.

5.2.1.2.3 The languages available at a given station on the ground shall form part of the Aeronautical Information Publications and other published aeronautical information concerning such facilities.

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5.2.1.4.3 *Pronunciation of numbers*

5.2.1.4.3.1 When the language used for communication is English, numbers shall be transmitted using the following pronunciation:

Numeral or numeral element	*Pronunciation*
0	ZE-RO
1	WUN
2	TOO
3	TREE
4	FOW-er
5	FIFE
6	SIX
7	SEV-en
8	AIT
9	NIN-er
Decimal	DAY-SEE-MAL
Hundred	HUN-dred
Thousand	TOU-SAND

Note.— The syllables printed in capital letters in the above list are to be stressed; for example, the two syllables in ZE-RO are given equal emphasis, whereas the first syllable of FOW-er is given primary emphasis.

5.2.1.5 *Transmitting technique*

5.2.1.5.1 **PANS.—** *Each written message should be read prior to commencement of transmission in order to eliminate unnecessary delays in communications.*

5.2.1.5.2 Transmissions shall be conducted concisely in a normal conversational tone.

Note.— See the language proficiency requirements in the Appendix to Annex 1.

5.2.1.5.3 **PANS.—** *Speech transmitting technique should be such that the highest possible intelligibility is incorporated in each transmission. Fulfilment of this aim requires that air crew and ground personnel should:*

a) enunciate each word clearly and distinctly;

b) maintain an even rate of speech not exceeding 100 words per minute. When a message is transmitted to an aircraft and its contents need to be recorded the speaking rate should be at a slower rate to allow for the writing process. A slight pause preceding and following numerals makes them easier to understand;

c) maintain the speaking volume at a constant level;

d) be familiar with the microphone operating techniques particularly in relation to the maintenance of a constant distance from the microphone if a modulator with a constant level is not used;

e) suspend speech temporarily if it becomes necessary to turn the head away from the microphone.

5.2.1.5.4 **Recommendation.—** *Speech transmitting technique should be adapted to the prevailing communications conditions.*

5.2.1.5.5 **PANS.—** *Messages accepted for transmission should be transmitted in plain language or ICAO phraseologies without altering the sense of the message in any way. Approved ICAO abbreviations contained in the text of the message to be transmitted to aircraft should normally be converted into the unabbreviated words or phrases which these abbreviations represent in the language used, except for those which, owing to frequent and common practice, are generally understood by aeronautical personnel.*

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5.2.1.6.2.1.1 The text shall be as short as practicable to convey the necessary information; full use shall be made of ICAO phraseologies.

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ANNEX 11 — *AIR TRAFFIC SERVICES*

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CHAPTER 2. GENERAL

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2.29 Language proficiency

2.29.1 An air traffic services provider shall ensure that air traffic controllers speak and understand the language(s) used for radiotelephony communications as specified in Annex 1.

2.29.2 Except when communications between air traffic control units are conducted in a mutually agreed language, the English language shall be used for such communications.

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PROCEDURES FOR AIR NAVIGATION SERVICES — AIR TRAFFIC MANAGEMENT
(PANS-ATM, DOC 4444)

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CHAPTER 12. PHRASEOLOGIES

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12.2 GENERAL

12.2.1 Most phraseologies contained in Section 12.3 of this Chapter show the text of a complete message without call signs. They are not intended to be exhaustive, and when circumstances differ, pilots, ATS personnel and other ground personnel will be expected to use plain language, which should be as clear and concise as possible, to the level specified in the ICAO language proficiency requirements contained in Annex 1 — *Personnel Licensing*, in order to avoid possible confusion by those persons using a language other than one of their national languages.

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PART II: ICAO LANGUAGE PROFICIENCY RATING SCALE (Attachment A to Annex 1)

1.1 Expert, extended and operational levels

LEVEL	*PRONUNCIATION Assumes a dialect and/or accent intelligible to the aeronautical community.*	*STRUCTURE Relevant grammatical structures and sentence patterns are determined by language functions appropriate to the task.*	*VOCABULARY*	*FLUENCY*	*COMPREHENSION*	*INTERACTIONS*
Expert 6	Pronunciation, stress, rhythm, and intonation, though possibly influenced by the first language or regional variation, almost never interfere with ease of understanding.	Both basic and complex grammatical structures and sentence patterns are consistently well controlled.	Vocabulary range and accuracy are sufficient to communicate effectively on a wide variety of familiar and unfamiliar topics. Vocabulary is idiomatic, nuanced, and sensitive to register.	Able to speak at length with a natural, effortless flow. Varies speech flow for stylistic effect, e.g. to emphasize a point. Uses appropriate discourse markers and connectors spontaneously.	Comprehension is consistently accurate in nearly all contexts and includes comprehension of linguistic and cultural subtleties.	Interacts with ease in nearly all situations. Is sensitive to verbal and non-verbal cues and responds to them appropriately.
Extended 5	Pronunciation, stress, rhythm, and intonation, though influenced by the first language or regional variation, rarely interfere with ease of understanding.	Basic grammatical structures and sentence patterns are consistently well controlled. Complex structures are attempted but with errors which sometimes interfere with meaning.	Vocabulary range and accuracy are sufficient to communicate effectively on common, concrete, and work-related topics. Paraphrases consistently and successfully. Vocabulary is sometimes idiomatic.	Able to speak at length with relative ease on familiar topics but may not vary speech flow as a stylistic device. Can make use of appropriate discourse markers or connectors.	Comprehension is accurate on common, concrete, and work-related topics and mostly accurate when the speaker is confronted with a linguistic or situational complication or an unexpected turn of events. Is able to comprehend a range of speech varieties (dialect and/or accent) or registers.	Responses are immediate, appropriate, and informative. Manages the speaker/ listener relationship effectively.
Operational 4	Pronunciation, stress, rhythm, and intonation are influenced by the first language or regional variation but only sometimes interfere with ease of understanding.	Basic grammatical structures and sentence patterns are used creatively and are usually well controlled. Errors may occur, particularly in unusual or unexpected circumstances, but rarely interfere with meaning.	Vocabulary range and accuracy are usually sufficient to communicate effectively on common, concrete, and work-related topics. Can often paraphrase successfully when lacking vocabulary in unusual or unexpected circumstances.	Produces stretches of language at an appropriate tempo. There may be occasional loss of fluency on transition from rehearsed or formulaic speech to spontaneous interaction, but this does not prevent effective communication. Can make limited use of discourse markers or connectors. Fillers are not distracting.	Comprehension is mostly accurate on common, concrete, and work- related topics when the accent or variety used is sufficiently intelligible for an international community of users. When the speaker is confronted with a linguistic or situational complication or an unexpected turn of events, comprehension may be slower or require clarification strategies.	Responses are usually immediate, appropriate, and informative. Initiates and maintains exchanges even when dealing with an unexpected turn of events. Deals adequately with apparent misunderstandings by checking, confirming, or clarifying.
Levels 1, 2 and 3 are on subsequent page.						

1.2 Pre-operational, elementary and pre-elementary levels

LEVEL	*PRONUNCIATION Assumes a dialect and/or accent intelligible to the aeronautical community.*	*STRUCTURE Relevant grammatical structures and sentence patterns are determined by language functions appropriate to the task.*	*VOCABULARY*	*FLUENCY*	*COMPREHENSION*	*INTERACTIONS*
Levels 4, 5 and 6 are on preceding page.						
Pre-operational 3	Pronunciation, stress, rhythm, and intonation are influenced by the first language or regional variation and frequently interfere with ease of understanding.	Basic grammatical structures and sentence patterns associated with predictable situations are not always well controlled. Errors frequently interfere with meaning.	Vocabulary range and accuracy are often sufficient to communicate on common, concrete, or work-related topics, but range is limited and the word choice often inappropriate. Is often unable to paraphrase successfully when lacking vocabulary.	Produces stretches of language, but phrasing and pausing are often inappropriate. Hesitations or slowness in language processing may prevent effective communication. Fillers are sometimes distracting.	Comprehension is often accurate on common, concrete, and work- related topics when the accent or variety used is sufficiently intelligible for an international community of users. May fail to understand a linguistic or situational complication or an unexpected turn of events.	Responses are sometimes immediate, appropriate, and informative. Can initiate and maintain exchanges with reasonable ease on familiar topics and in predictable situations. Generally inadequate when dealing with an unexpected turn of events.
Elementary 2	Pronunciation, stress, rhythm, and intonation are heavily influenced by the first language or regional variation and usually interfere with ease of understanding.	Shows only limited control of a few simple memorized grammatical structures and sentence patterns.	Limited vocabulary range consisting only of isolated words and memorized phrases.	Can produce very short, isolated, memorized utterances with frequent pausing and a distracting use of fillers to search for expressions and to articulate less familiar words.	Comprehension is limited to isolated, memorized phrases when they are carefully and slowly articulated.	Response time is slow and often inappropriate. Interaction is limited to simple routine exchanges.
Pre-elementary 1	Performs at a level below the Elementary level.	Performs at a level below the Elementary level.	Performs at a level below the Elementary level.	Performs at a level below the Elementary level.	Performs at a level below the Elementary level.	Performs at a level below the Elementary level.

Note.— The Operational Level (Level 4) is the minimum required proficiency level for radiotelephony communication. Levels 1 through 3 describe Pre-elementary, Elementary, and Preoperational levels of language proficiency, respectively, all of which describe a level of proficiency below the ICAO language proficiency requirement. Levels 5 and 6 describe Extended and Expert levels, at levels of proficiency more advanced than the minimum required Standard. As a whole, the scale will serve as benchmarks for training and testing, and in assisting candidates to attain the ICAO Operational Level (Level 4).

Appendix B

LANGUAGE OF AERONAUTICAL RADIOTELEPHONY COMMUNICATIONS

PART I: COMMUNICATIVE LANGUAGE FUNCTIONS, EVENTS, DOMAINS AND TASKS ASSOCIATED WITH AVIATION

The communicative language functions compiled here are based on research at the Direction Générale de l'Aviation Civile, France.

C = Controller P = Pilot C/P = Controller or pilot

1. COMMUNICATIVE FUNCTIONS DIRECTED TOWARDS TRIGGERING ACTIONS

1.1 Orders

— Give an order (C)
— Give an amended order (C)
— Give a negative order (C)
— Give alternative orders (C)
— Cancel an order (C)
— Announce compliance with an order (P)
— Announce non-compliance with an order (P)

1.2 Requests and offers to act

— Request action by another C/P
— Agree to act (C/P)
— State reluctance/unwillingness to act (C/P)
— Refuse to act (C/P)
— Offer to act (C/P)
— Accept an offer to act (C/P)
— Refuse an offer to act (C/P)

1.3 Advice (markers for politeness)

— Request advice (P)
— Give advice (C)
— Suggest a course of action (C/P)
— Suggest a solution to a problem (C/P)
— Suggest alternative courses of action (C/P)

1.4 Permission/approval (markers for politeness, directness)

- Request permission/approval (P)
- Give permission/approval (C)
- Deny permission/approval (C)
- Forbid (C)

1.5 Undertakings

- Undertake to give a service (C/P)
- Undertake to assist (C/P)
- Undertake to contact/relay/report (C/P)
- Announce a spontaneous decision to act (C/P)
- Agree to undertaking/decision (C/P)

2. SHARING INFORMATION

2.1 Information concerning present facts

- Request information (C/P)
- Give information (C/P)

- Request a detailed description (C/P)
- Describe a state (C/P)
- Describe a changed state (C/P)
- Describe an unchanged state (C/P)
- Describe an action in progress (C/P)
- Describe a process (C)
- Describe a procedure (C)
- Describe aims/precautions (C/P)
- Describe the source of a problem (C/P)
- Describe a visual impression (C/P)
- Quote rules (C)

- Ask about needs/wishes (C/P)
- State needs/wishes (C/P)

- Ask about preferences (C)
- State preferences (P)

- Ask about readiness/availability (C/P)
- Announce readiness/availability (C/P)

- Request reasons (C/P)
- Give reasons (C/P)

- Request instructions on how to do (P)
- Give instructions on how to do (C)
- Identify (C/P)
- Announce a problem (C/P)

2.2 Information concerning the future

- Announce an expected action/event (C/P)

- Ask about the expected moment/duration of an event (C/P)
- State the expected moment/duration of an action/event (C/P)

— Ask about possible consequences of an action/event (C/P)

— State possible consequences of an action/event (C/P)

— Ask about intentions (C/P)

— State intentions (C/P)

— Request prediction (C/P)

— Predict a future action/event (C/P)
— Warn (C/P)

2.3 Information concerning immediate/recent past events

— Announce a completed action/event having and effect on the present (C/P)
— Announce a change (C/P)
— Announce a nearly completed action (C/P)

2.4 Information concerning the past

— Ask about past events (C/P)

— Announce a past action/event (C/P)
— Announce an avoided problem/incident (P)
— Give a report (C/P)
— Describe a previous communication (C/P)
— Describe a sequence of past actions/events (C/P)

— Request an explanation of a past action/event (C/P)

— Give an explanation of a past action (C/P)
— Indicate deductive reasoning (C/P)

2.5 Necessity

— Ask about necessity (C/P)

— State necessity (C/P)
— Announce a compulsory action (C)
— Announce an inevitable action/event (C/P)

2.6 Feasibility/capacity

— Ask about the feasibility/capacity (C/P)

— Announce feasibility/capacity (C/P)
— Announce unfeasibility/incapacity (C/P)

3. MANAGEMENT OF THE PILOT-CONTROLLER RELATION

— Greet/take leave (C/P)
— Thank (C/P)

— Respond to greeting/leave-taking (C/P)
— Respond to thanks (C/P)

— Complain (P)
— Express dissatisfaction (C/P)
— Reprimand (C)

— Apologize (C/P)
— Reject complaint/reprimand (C/P)

— Express satisfaction (C/P)

— Express concern/apprehension (P)
— Reassure (C)
— Encourage (C)

4. MANAGEMENT OF THE DIALOGUE

— Name addressee(s) (C/P)
— Self-correct (C/P)
— Paraphrase (C/P)
— Close an exchange

— Request response (C/P)
— Check understanding (C/P)
— Check certainty (C/P)
— Correct a misunderstanding (C/P)
— Read back (C/P)
— Acknowledge (C/P)
— Declare non-understanding (C/P)

— Request repetition (C/P)
— Request confirmation (C/P)
— Request clarification (C/P)
— Give clarification (C/P)
— Give repetition (C/P)
— Give confirmation (C/P)
— Give dis-confirmation (C/P)

— Relay an order (C)
— Relay a request to act (P)
— Relay a request for permission (P)

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PART II: EVENTS AND DOMAINS

The events and domains compiled here are based on research at the Direction Générale de l'Aviation Civile, France. The following inventory of events, domains and subdomains are some that characterize the day-to-day communications of air traffic controllers and pilots. These events represent control situations, routine or non-routine, that all controllers must be able to handle. Each event may require familiarity with many lexical domains, to which are associated related words.

1. EVENTS, DOMAINS AND SUBDOMAINS IN AERODROME CONTROL

Airmiss(es)	Air traffic rules; avoiding action; trajectory/flight path; speed; distance/range; aircraft characteristics; position.
Air shows	Traffic information; activity: acrobatics, formation flights; procedures.
Approach delays	Holding instructions; holding procedures; aerodrome circuit; endurance; diversion/alternate; necessary conditions; CAT 3; all-weather landing.
Belly landing	Attempted manoeuvres; status of lights; visual check (low pass); position of landing gear; endurance, fuel remaining, fuel dumping/jettisoning; speed; traffic information; state of runway; aerodrome environment; airport installations; emergency evacuation (emergency slides/escape chutes, etc.); fire hazard/risk; damage; ground services.
Bird risk/hazard	Position; quantity; names/types of birds; bird scaring in progress; damage to aircraft; delays; bird scaring methods; behaviour of birds.
Bomb threat/alert/scare	Disembarking passengers; diversion; baggage identification; dumping/ jettisoning; aircraft interior; crew actions/behaviour; ground services; airport installations.
Cargo problems/dangerous goods	Customs; type of cargo; (perishable) organs for transplant; toxic substances; handling; packaging; veterinary services; police search; sniffer dogs; load badly fixed or damaged; intercepting; impounding.
Fire on board	Ground services; aircraft interior; smoke; asphyxia; smells; oxygen masks; warning lights; fire fighting equipment; extinguishers; injuries, burns; medical assistance; fire brigade/firemen; emergency slides/escape chutes; engine shutdown; evacuation.
Ground movement incidents	Activity on the field; fire-brigade training exercises and interventions; vehicles on the field; braking action and visibility; traffic information; start-up; towing equipment; engine checks; remote holding pattern; holding point; runway infringement; delays; stuck in the mud; damage caused by vehicles on the ground; no entry disregarded; collisions; vehicle or plane breakdown; damage to beacons; foreign objects (name, description); problems boarding or disembarking passengers; baggage identification; means of disembarking; health services; handicapped/sick passengers; parking position/space.
Health problems	Symptoms; first aid; aircraft interior; type of medical assistance; medical background of passengers; diversion; airport installations; ground services; sickness, discomfort, wounds, epidemics; medical equipment; blood (group, transfusion ...); medical advice; the human body; forensic surgeon; quarantine; food poisoning; food; vaccines; medical staff; medicines and artificial limbs.

Incidents on landing	Long/short landing; missed exit; stuck in mud; weather; cargo problems; runway confusion; bird or animal hazard; damage to tires; aircraft breakdown; missed approach.
Industrial action	Ground staff; control/operational staff; effects on traffic; delays; types of strike; demonstrations; sit-ins.
MET (weather) conditions	ATIS (visibility, clouds, etc.); (thunder) storms, lightning; damage and breakdown; snow clearing; gusts; wind shear and microburst; minima; state of runway; tailwind, crosswind; braking action; runway visual range; temperature inversion; turbulence; natural disasters; runway closed; change of runway.
Missed approach	Go around; minima; traffic position; endurance; reasons; traffic; procedures; speed.
Parachute jumping/dropping activity	Position; information on other traffic and activity.
Pilot not familiar with airfield	Procedures; airfield installations; ground services; duration of drop; drop zone.
Pilot's temporary disability	Health problems; aircraft controls and instruments; pilots actions/behaviour; airfield environment; airport installations.
Problems linked to flight plan	Delays; slots; flight plan updating; computer breakdown; no flight plan; flight plan conformity; flight plan processing; search and rescue; type of flight plan.
Problems linked to passenger's behaviour + unlawful interference	Violent/threatening behaviour; reasons (drunkenness, etc.); aircraft interior; damage; weapons; actions to overpower; assistance requested of police/fire rescue; demands; ethnic origin; physical description of persons; political allegiances; ground services; airport installations; injuries/wounds; stowaways.
Re-routing/diversion	Approach plates; procedures; routing; endurance; weather; airport installations; ground services; aircraft breakdowns.
Special flights	ILS calibration; Special test flight procedures; banners, balloons, etc.; ultralights, gliders; helicopters; aerial photography; highway watch; fire fighting aircraft; supervision of power lines; military training procedures; types of military aircraft.
Take-off incidents	Abort; bird/animal hazards; traffic interference; runway incursion; overheating; towing; 180° turn back; runway excursion; cancellation and change of clearance; problems with steering gear, engine power; aircraft breakdown.
VFR flights lost/in difficulty	Aerodrome environment; direction finder; manoeuvres for identification; endurance problems; installations at alternate/diversion field; forced/crash landing; ground services.
VIP flights	Official ceremonies; protocol (greetings, etc.); ferry flight; military escort; diplomatic clearance; country names and nationalities; apron/ramp; terminal; boarding and disembarking of passengers; VIP vehicles; effects on traffic.

2. EVENTS AND DOMAINS LINKED TO EN-ROUTE AIR TRAFFIC CONTROL

Administrative problems	Diplomatic clearances; customs regulations; civil service departments; impounded aircraft.
Aids for VFR flights	Instrument panel; on-board equipment; pilot rating; flight plan; local place names; visual landmarks; positions; directions; endurance; aircraft breakdown; weather problems.
Aircraft breakdowns	Instrument panel; instrument operation; radio beacon; positions/fixes; noises/sounds; smells; smoke; airport installations; ground services; engine performance; speed; relief/high ground; actions to solve problem; weather; dumping/jettisoning; flight profile; structural damage (glass, metal); health problems; flight systems; aircraft controls; response to controls; airframe; warning lights; landing gear.
Aircraft proximity + pilot complaints	Conflict situations; traffic load; aircraft characteristics; flight profile; weather conditions; injuries; distance/range; pilot manoeuvres; rules, procedures; avoiding action.
ATC system breakdowns	ATC equipment/systems; radar display; radar performance; radio operation; previous messages; relaying messages; actions to repair; delays/duration; telephone lines.
Bomb scare	Aircraft interior; search methods; dumping/jettisoning; ground services; airport installations; ground movements.
Cargo problems Dangerous goods	Packaging; substances; toxic substances; animals; smells; cabin equipment; load distribution; loading/unloading.
Change in flight plan	Flight plan.
Collisions	Airframe; structural damage (glass, metal, etc.); response to controls; debris; airport installations; ground services; relief/high ground; weather conditions; aerodynamic behaviour.
Fire on board	Outbreak of fire; control of fire; damage; aircraft interior.
Health problems	Parts of the body; organs; symptoms; sicknesses; injuries/wounds; artificial limbs; medicine/drugs; first aid; medical equipment; medical staff; medical specialists; vaccines; quarantine.
Lack of fuel	Airport facilities/installations; ground services; high ground; positions/locations; endurance/fuel remaining.
Misunderstandings	Previous messages; types of message; radio performance.
Passenger behaviour + unlawful interference	Violent/threatening behaviour; drugs; firearms; injuries; mental instability; nationalities; political allegiances; demands; threats; ground services; medical assistance; means of calming; means of overpowering; flight deck and cabin personnel.
Request to relay	Names of people; means of relaying.

Special conditions on arrival	State of traffic on ground; priority flights; industrial action; accidents; weather conditions on the ground; ground equipment failure; airport installations; ground services; curfew; approach procedures.
Special flights	Type of aircraft; ferrying; diplomatic personnel; country names; nationalities; aeronautical military slang; military exercises; in-flight/mid-air refuelling; pilot manoeuvres; positions/fixes; weather conditions; VFR/IFR procedures; visual flight rules; airport installations; ground services.
Unauthorized manoeuvres	Airspace; rules; previous messages; flight profile; positions/locations; stall levels.
Weather/MET problems	Icing problems; clouds; struck by lightning; turbulence; external parts of aircraft; engine performance; response to controls; instrument performance; alarms; violent movements; relief/high ground; flight profile; injuries; objects in plan; blindness/loss of visibility.

3. OTHER DOMAINS

Activities on the field	Change of runway and pattern; ramp vehicles; snow clearing; sweeping; mowing; harvesting; closure, opening of runway access roads; runway inspection.
Aerodrome/airfield environment	Topography (hill, slope, coastline, forest, etc.); civil engineering (water, tower, bridge, pylon, etc.); high ground/terrain; built-up areas; roads and railway lines; power lines; cardinal points; particular local activities (firing range, etc.); agricultural activities.
Aircraft breakdowns	Aircraft spare parts; systems (oxygen, hydraulic, electrical, de-icing, etc.); flight deck/cockpit; controls; instruments; instrument operation; noises and symptoms of malfunction; transponder problems; loss of radio contact; malfunctions; overheating (brakes, engine, etc.); dumping/jettisoning; landing gear/tires.
Airfield facilities/installations	ILS, radar, VOR, etc.; lighting systems; reliability of radio aids; direction finder; poor visibility equipment; aprons/tarmac/ramps; runways, taxiways; length and width of runway; parking zone; holding area; terminal; cargo area; bearing strength.
Ground services	Opening hours; availability of services at night; assistance on ground; safety altitude; passengers/persons on-board; unserviceable equipment (stairs, luggage trolleys, etc.); auxiliary power unit; de-icing; refuelling; delay due to de-icing or refuelling; bird scaring; towing; fire fighting methods; safety services; medical assistance; baggage handling.
Procedures	Noise abatement; departure; approach; all weather take off and landing go-around; holding procedures; land behind; curfew; local residents.

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PART III: LANGUAGE TASKS OF AIR TRAFFIC CONTROLLERS

The language tasks of air traffic controllers compiled here are based on research at the Federal Aviation Authority, USA (Chatham et al., 1999).

1. MANAGE AIR TRAFFIC SEQUENCES

1.1 Discuss traffic management action with pilot.
1.2 Query pilot for reason and extent of deviation.
1.3 Issue appropriate control instructions to control deviation.
1.4 Inform others of airspace restriction imposed/released.
1.5 Sequence departures into existing traffic.
1.6 Query others regarding deviation.
1.7 Issue instructions to recover from ground traffic deviation.
1.8 Receive pilot request for take-off.
1.9 Issue appropriate departure information.
1.10 Issue instructions to pilot to taxi into position and hold.
1.11 Issue amended clearance.
1.12 Issue supplementary information concerning airport operations (e.g., runway conditions, RVR).
1.13 Issue take-off clearance/cancellation.
1.14 Receive pilot request for landing instructions.
1.15 Issue clearance for aircraft to land or clearance for option.
1.16 Receive notice of aircraft executing landing/option.
1.17 Receive initial radio communication from pilot.
1.18 Issue/verify pilot has current arrival information.
1.19 Issue arrival/departure instructions.
1.20 Issue advisory in regard to non-controlled object in airspace or movement area.
1.21 Inform others of airspace or movement area intrusion by non-controlled object.
1.22 Request response from pilot or operator of non-controlled object.
1.23 Request assistance from other sources to establish contact with non-controlled object.
1.24 Issue instructions restricting aircraft activity in affected airspace or movement area.
1.25 Receive request for temporary use of airspace or movement area.
1.26 Issue go-around.
1.27 Receive notice of missed approach/go-around/touch-and-go/stop-and-go.
1.28 Receive acknowledgment of take-off.
1.29 Receive pilot notification of aborted take-off.
1.30 Inform others of airspace status change.

2. CONTROL AIRCRAFT OR VEHICLE GROUND MOVEMENT

2.1 Issue instructions to hold at gate.
2.2 Advise pilot of ground delay.
2.3 Inform pilot of estimated departure clearance time.
2.4 Receive and disseminate cancellation of traffic management restrictions(s).
2.5 Receive pilot request for pushback/powerback instructions.
2.6 Receive pilot request for taxi instructions.
2.7 Issue airport condition information.
2.8 Receive pilot or vehicle operator request for movement in or through movement area.

2.9 Issue instructions to hold short of taxiway/runway.
2.10 Deny ground movement request.
2.11 Issue instructions to divert traffic around closed movement area.

3. ROUTE OR PLAN FLIGHTS

3.1 Issue clearance and instructions to pilot.
3.2 Query pilot regarding compliance or conformance with clearance.
3.3 Issue clearance through other for relay to pilot.
3.4 Approve or deny clearance request.
3.5 Detect a pilot or aircraft problem (e.g. hypoxia).
3.6 Conduct radio or radar search for overdue aircraft.
3.7 Receive pilot notice of declared emergency and determine assistance needed.
3.8 Receive notice of pilot or aircraft having a problem (e.g. overdue, loss of radio contact).
3.9 Forward contingency/emergency/special condition information to others.
3.10 Receive flight plan from pilot.
3.11 Receive verbally forwarded flight plan.
3.12 Query others about flight plan or flight plan amendment.
3.13 Receive requested flight plan changes.
3.14 Receive request to cancel IFR.
3.15 Terminate radio communication with aircraft.
3.16 Receive arrival message.
3.17 Issue change of frequency to pilot.
3.18 Issue altimeter setting on initial contact as appropriate.
3.19 Verify aircraft altitude with pilot.
3.20 Inform pilot that radar contact is lost or established.
3.21 Terminate radar service.
3.22 Assign beacon code.
3.23 Request necessary flight plan information from pilot.
3.24 Receive notice of special condition or emergency.
3.25 Inform pilot or vehicle operator of abnormal aircraft or vehicle condition.
3.26 Declare emergency and invoke contingency plan.
3.27 Issue taxi instructions to special condition or emergency aircraft.
3.28 Inform others of special operation.
3.29 Issue change to SSR beacon code assignment.
3.30 Suggest clearance alternatives to pilot.
3.31 Issue instructions to pilot for identification turn or transponder response.
3.32 Perceive presence of special condition or emergency by tone of voice.
3.33 Discuss flight plan/flight plan amendment.
3.34 Inform controller or requester of inability to comply with flight plan/flight plan amendment.
3.35 Inform pilot of radar position.
3.36 Receive request to file flight plan from in-flight pilot.
3.37 Receive flight plan request and information from recorded phone message.
3.38 Verify flight plan with pilot.
3.39 Receive request to activate flight plan.
3.40 Query pilot on flight plan closure.
3.41 Advise pilot of clearance status.
3.42 Receive acknowledgment or rejection of clearance from pilot.
3.43 Evaluate and inform pilot of alternate routes on the basis of weather, aeronautical information, pilot preference and pilot/aircraft limitations.

3.44 Receive pilot requests for airport advisories.
3.45 Relay requested advisories to pilot.
3.46 Relay airport status to pilot.
3.47 Relay traffic information/weather conditions to pilot.

4. PERFORM SITUATION MONITORING

4.1 Record airport environmental (e.g. ice on runway) or system equipment status message.
4.2 Request pilot report on NAVAID status.
4.3 Inform pilot of alternate instructions necessary for flight following service.
4.4 Receive/deny request for flight following.
4.5 Receive/request pilot or operator position report.
4.6 Search for and verify aircraft or vehicle location.
4.7 Verify pilot has current ATIS or inform pilot of current ATIS.
4.8 Inform/request pilot to file/refile flight plan.

5. RESOLVE AIRCRAFT CONFLICT SITUATIONS

5.1 Receive notice of potential or actual conflict.
5.2 Issue traffic advisory or safety alert in regard to aircraft conflict/aircraft proximity.
5.3 Inform pilot or operator when clear of traffic or non-controlled object.
5.4 Issue advisory in regard to restricted airspace proximity.
5.5 Issue advisory or safety alert in regard to route/low altitude situation.
5.6 Request/receive pilot notice of traffic in sight.
5.7 Issue advisory in regard to airspace/movement area violation.
5.8 Issue approval or instructions for ground movement.

6. ASSESS WEATHER IMPACT

6.1 Receive/request weather information from others.
6.2 Issue weather advisory or update to others.
6.3 Formulate weather broadcast.
6.4 Record scheduled weather report or advisory in specified format.
6.5 Broadcast scheduled and unscheduled weather report or advisory on prescribed radio frequencies.
6.6 Receive request for pilot briefing.
6.7 Brief pilot on weather data in specified format.
6.8 Inform/verify pilot has received information on hazardous weather.
6.9 Provide pilot with other requested information.
6.10 Notify pilot VFR not recommended if conditions warrant.
6.11 Advise pilot of flight watch capability.
6.12 Advise pilot of ATC delays.
6.13 Inform pilot of frequency and station for filing pilot weather report.
6.14 Prompt pilot for additional data.
6.15 Maintain clear and uniform speech pattern while broadcasting.

7. RESPOND TO EMERGENCIES AND CONDUCT EMERGENCY PROCEDURES

7.1 Communications.
7.2 Receive pilot request for emergency services.
7.3 Request information from pilot on nature of emergency situation.
7.4 Inform pilot to squawk 7700 if emergency declared.
7.5 Request aircraft contact appropriate ATC unit and inform pilot to return to frequency if unable to contact ATC unit.
7.6 Take appropriate action to resolve emergency situation.
7.7 Request aircraft information to determine altitude, heading and airspeed of lost aircraft.
7.8 Advise if altitude or heading change is needed and maintain VFR.
7.9 Advise to adjust gyro with magnetic compass.
7.10 Inform pilot of aircraft position.
7.11 Receive pilot request for guidance to airport.
7.12 Issue course instructions and advisories to pilot.
7.13 Advise pilot of airport information.
7.14 Prompt pilot for in-flight information.
7.15 Verify pilot is on a flight plan.
7.16 Advise pilot of minimum flight altitude.
7.17 Inform pilot of lost communications procedures.

8. MANAGE SECTOR OR POSITION RESOURCES

8.1 Forward deletion of previous substitute routing.
8.2 Forward NAVAID status to others.
8.3 Forward notice of communication status.
8.4 Forward new frequency assignment to pilot or another controller.
8.5 Receive notice of alternate communication path.
8.6 Issue alternate communication for air or ground transmissions.
8.7 Query whether others are receiving aircraft's transmissions.
8.8 Receive request to manipulate airport or taxiway lighting system.
8.9 Deny request to manipulate airport lighting system.

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PART IV. GLOSSARY OF BASIC AND COMPLEX STRUCTURES

The structures compiled here are based on research at the Eurocontrol Institute of Air Navigation Services, Luxembourg.

Basic structures:

- Articles

- Adverbs of frequency
  Always, Generally, Usually, Often, Sometimes, Seldom, Never, etc.

- Comparison of adjectives

- Discourse markers
  Actually, Basically, Anyway, (and) yeah (more and more frequent), Listen, I mean, Let's see/Let me see, Like, Oh, Now, Okay, So, Well, You know, You see, You know what I mean, It is true, Of course, But, Still, (and) by the way, Besides, Another thing is, On top of that, So, Then, First(ly), Second(ly), etc., First of all, In the first/second place, Finally, In the end, In short

- Modal verbs
  Can, May, Must, Have Got to, Should, Ought to, Would, Could, Might, Needn't, Don't have to, Mustn't

- Numbers (cardinal and ordinal)

- Passive voice
  Simple present
  Simple past

- Position of direct and indirect objects:
  Bob sent some flowers to his girlfriend.
  Bob sent his girlfriend some flowers.

- Question words for describing people and things and for requesting information
  What? Who? Which? Why? Where? How?

- Relative pronouns
  Who, which, whose

- Tenses
  Present simple
    I do
  Present continuous
    I am doing
  Past simple
    I did
  Past continuous
    I was doing
  Present perfect simple
    I have done

Present perfect continuous
I have been doing
Simple future tense
Will
Future
Going to

- There to be
  Present, past, future

Complex structures

- Adjectives
  Gradable and ungradable adjectives
  Fairly angry (gradable)
  Totally amazed (ungradable)
  Prepositions after adjectives
  Angry about, afraid of, etc.
  Adjectives + that clause or to + infinitive
  Enough, sufficiently, too + adjective
  The sooner the better, etc.

- Adverbs and conjunctions
  Comment adverbs
  apparently, frankly, rightly
  Viewpoint adverbs
  biologically, ideologically, morally
  Adverbial clauses of time
  before, until, after, as soon as, before, when, while, hardly, no sooner, scarcely
  Giving reasons
  seeing that, since, in as much as, due to, owing to, with so many people ill

- Clauses
  Relative clauses
  Participle clauses
  -ing, -ed and being -ed
  Participle clauses with adverbial meaning
  Opening her eyes, the baby began to cry.
  Formed 25 years ago next month, the aviation club …

- Conditionals
  Real and unreal, all tenses

- Discourse markers
  Mind you, On the whole, Broadly speaking, By and large, Certainly, May, stressed “Do”, On the one hand, On the other hand, While, Whereas, However, Even so, Nonetheless, Nevertheless, All the same, Although, Though, Even though, If, In spite of, Despite, Incidentally, Moreover, Furthermore, In addition, Additionally, (and) what is more, Therefore, As a result, Consequently, (Quite) on the contrary, To begin with, To start with, For one thing, For another thing, In conclusion, Briefly

- Infinitives and gerunds

- Modals
  - Will and would to show willingness, likelihood and certainty
  - Will and would to show habits
  - Modals + past participle to express criticism or regret

- Nouns
  - Compound nouns
  - Uncountable nouns with zero article
    - e.g. good advice

- Passive voice
  - Present perfect/past perfect/future/continuous forms in general

- Phrasal verbs:
  - They wanted to **get** the meeting **over with**.
  - The programme's lack of success could be **put down to** poor management.
  - Boeing **came in for** a lot of criticism over their new plan.

- Quantifiers
  - One of + plural
    - One of the best things
  - Each (of) and every + singular verb except when follows the noun or pronoun it refers to.

- Questions
  - Reporting questions
  - Negative questions
  - Question tags

- Reflexive pronouns
  - Herself, himself, themselves
  - One and ones
    - There's my car — the green one.
  - So
    - I think so.
    - So I hear.
  - Do so
    - She won the competition in 1997 and seems likely to do so again.
  - Such
    - Such behaviour is unacceptable in most schools.

- Reported speech
  - They promised that they would help him the next day.
  - He told me it wasn't going to be ready by Friday.

- Verb tenses
  - Past Perfect
    - I had done

Past perfect continuous
I had been doing
Present continuous
For the future

Future continuous
I will be doing
Future perfect
I will have been doing
The future seen from the past
was going to, etc.

Appendix C

CHECKLIST FOR AVIATION LANGUAGE TESTING

Testing service providers (TSPs) should document adherence to the ICAO recommended criteria for aviation language testing by completing the checklist below and submitting evidence for each item on the checklist, referencing the criterion item number. Item numbers correlate to the criteria found in Chapter 6, paragraph 3.

6.3.2 TEST DESIGN AND CONSTRUCT

Reference	*Item*	*Reply*	*Notes*
6.3.2.1	Is the test is designed to assess speaking and listening proficiency in accordance with each component of the ICAO Language Proficiency Rating Scale and the holistic descriptors in Annex 1?	☐ YES ☐ NO	
6.3.2.2	Is a definition of the test purpose that describes both the aims of the test and the target population accessible to all decision-makers?	☐ YES ☐ NO	
6.3.2.3	Is a description of and rationale for test construct and how it corresponds to the ICAO language proficiency requirements accessible to all decision-makers in plain, layperson language?	☐ YES ☐ NO	
6.3.2.4	Does the test comply with principles of good practice and a code of ethics as described in Chapter 6 of ICAO Doc 9835?	☐ YES ☐ NO	
6.3.2.5	Does the test focus on discrete-point items, on grammar explicitly or on discrete vocabulary items?	☐ YES ☐ NO	
6.3.2.6	Is a specific listening section with individual items included? *Note.— If comprehension is assessed through a specific listening section with individual items, it should not be done to the detriment of assessing interaction.*	☐ YES ☐ NO	

Reference	*Item*	*Reply*	*Notes*
6.3.2.7	Does the test include voice-only interaction?	☐ YES ☐ NO	
6.3.2.8	Is the test is specific to aviation operations?	☐ YES ☐ NO	
6.3.2.9	Does the test assess plain language proficiency in an aviation context?	☐ YES ☐ NO	
6.3.2.10	Does the test avoid items that are designed to elicit highly technical or very context-specific language?	☐ YES ☐ NO	
6.3.2.11	Is the final score for each test-taker the lowest of the scores in each of the six ICAO language proficiency skills?	☐ YES ☐ NO	

6.3.3 TEST VALIDITY AND RELIABILITY

Reference	*Item*	*Reply*	*Notes*
6.3.3.1	Is a statement of evidence for test validity and reliability accessible to all decision-makers in plain, layperson language?	☐ YES ☐ NO	
6.3.3.2	Is a description of the development process that includes the following information accessible to all decision-makers: a) a summary of the development calendar? b) a report on each development phase?	 ☐ YES ☐ NO ☐ YES ☐ NO	
6.3.3.3	Is an appraisal of the expected test washback effect on training accessible to all decision-makers?	☐ YES ☐ NO	

6.3.4 RATING

Reference	*Item*	*Reply*	*Notes*
6.3.4.1	Is the rating process documented?	☐ YES ☐ NO	

Reference	*Item*	*Reply*	*Notes*
6.3.4.2	To fulfil licensing requirements, do at least two raters participate in the rating of tests, with a third expert rater consulted in case of divergent scores?	☐ YES ☐ NO	
6.3.4.3	a) Are initial and recurrent rater training documented? b) Are rater training records maintained? c) Are raters audited periodically and reports documented?	☐ YES ☐ NO ☐ YES ☐ NO ☐ YES ☐ NO	
6.3.4.4	If rating is conducted using new technology, including speech recognition technology, is the correspondence of such rating to human rating, on all aspects of the Rating Scale, clearly demonstrated in layperson language?	☐ YES ☐ NO	

6.3.5 TEST ADMINISTRATION AND SECURITY

Reference	*Item*	*Reply*	*Notes*
Test administration			
6.3.5.1	Is a complete sample of the test published, including the following: a) test-taker documents (paper instructions, screen display, etc.)? b) interlocutor instructions or prompts? c) rater documentation (answer key, rating scale, instructions)? d) one complete sample of audio recordings (for listening sections or semi-direct prompts)? e) a demonstration of test-taker/interlocutor interaction?	 ☐ YES ☐ NO ☐ YES ☐ NO ☐ YES ☐ NO ☐ YES ☐ NO ☐ YES ☐ NO	
6.3.5.2	Is the test rating process documented, including instructions on the extent and nature of evidence that raters should collect?	☐ YES ☐ NO	

Reference	*Item*	*Reply*	*Notes*
6.3.5.3	Are the test instructions to the test-taker, the test administration team and test raters clearly documented?	☐ YES ☐ NO	
6.3.5.4	Are the requirements for equipment, human resources and facilities necessary for the test included in the instructions?	☐ YES ☐ NO	
6.3.5.5	Is the testing location moderately comfortable, private and quiet?	☐ YES ☐ NO	
6.3.5.6	Is a full description of test administration policies and procedures available to all decision-makers? Does it include the following: a) policies and procedures for retaking the test? b) score reporting procedures? c) record-keeping arrangements? d) plans for quality control, test maintenance and ongoing test development? e) purchasing conditions?	 ☐ YES ☐ NO ☐ YES ☐ NO ☐ YES ☐ NO ☐ YES ☐ NO ☐ YES ☐ NO	
6.3.5.7	Has a documented appeals process been established and made available to test-takers and decision-makers at the beginning of the testing process?	☐ YES ☐ NO	
Test security			
6.3.5.8	Is a full description of security measures required to ensure the integrity of the testing process documented and available to all decision-makers?	☐ YES ☐ NO	
6.3.5.9	In the case of semi-direct prompts, are there adequate versions of the test to meet the needs of the population to be tested with respect to its size and diversity?	☐ YES ☐ NO	

Reference	*Item*	*Reply*	*Notes*
6.3.5.10	Are test questions and prompts held in confidence and not published or in any way provided to test-takers prior to the test event?	☐ YES ☐ NO	
6.3.5.11	Is a documented policy for all aspects of test security accessible to all decision-makers?	☐ YES ☐ NO	

6.3.6 RECORD-KEEPING

Reference	*Item*	*Reply*	*Notes*
6.3.6.1	Are all proficiency tests of speaking ability involving interaction between the test-taker and interlocutor recorded on audio or video media?	☐ YES ☐ NO	
6.3.6.2	Are evaluation sheets and supporting documentation filed for a predetermined and documented period of time of sufficient duration to ensure that rating decisions can no longer be appealed?	☐ YES ☐ NO	
6.3.6.3	Is the record-keeping process adequate for the scope of the testing and documented?	☐ YES ☐ NO	
6.3.6.4	Is the score-reporting process documented, and are scores retained for the duration of the licence?	☐ YES ☐ NO	
6.3.6.5	Are results of testing held in strict confidence and released only to test-takers, their sponsors or employers, and the civil aviation authority, unless test-takers provide written permission to release their results to another person or organization?	☐ YES ☐ NO	

6.3.7 ORGANIZATIONAL INFORMATION AND INFRASTRUCTURE

Reference	*Item*	*Reply*	*Notes*
6.3.7.1	Has an aviation language TSP provided clear information about its organization and its relationships with other organizations?	☐ YES ☐ NO	
6.3.7.2	If a TSP is also a training provider, is there a clear and documented separation between the two activities?	☐ YES ☐ NO	

Reference	*Item*	*Reply*	*Notes*
6.3.7.3	Does the TSP employ sufficient numbers of qualified interlocutors and raters to administer the required tests?	☐ YES ☐ NO	
6.3.7.4	Has the TSP provided an explanation of how the test is maintained, including an explanation of how ongoing test development is conducted?	☐ YES ☐ NO	

6.3.8 TESTING-TEAM QUALIFICATIONS

Reference	*Item*	*Reply*	*Notes*
Familiarity with ICAO documentation			
6.3.8.2	Are all testing team members familiar with the following ICAO publications?		
	a) the relevant SARPS and Recommended Practices of Annex 1?	☐ YES ☐ NO	
	b) holistic descriptors (Appendix 1 to Annex 1) and the ICAO Rating Scale (Attachment A to Annex 1)?	☐ YES ☐ NO	
	c) *Manual on the Implementation of ICAO Language Proficiency Requirements* (Doc 9835)?	☐ YES ☐ NO	
	d) ICAO Rated Speech Samples CD?	☐ YES ☐ NO	
Test design and development team			
6.3.8.3	Does the test design and development team include individuals with aviation operational, language test development, and linguistic expertise?	☐ YES ☐ NO	
Test administration team (administrators and interlocutors)			
6.3.8.4	Do test administrators and interlocutors have a working knowledge of the test administration guidelines published by the test organization?	☐ YES ☐ NO	

Reference	*Item*	*Reply*	*Notes*
6.3.8.5	Do interlocutors demonstrate language proficiency of at least ICAO Extended Level 5 in the language to be tested and proficiency at Expert Level 6 if the test is designed to assess ICAO Level 6 proficiency?	☐ YES ☐ NO	
6.3.8.6	Have interlocutors successfully completed initial interlocutor training?	☐ YES ☐ NO	
6.3.8.7	Have interlocutors successfully completed recurrent interlocutor training at least once each year?	☐ YES ☐ NO	
6.3.8.8	Do interlocutors have appropriate aviation operational or language testing expertise, or both?	☐ YES ☐ NO	
Rater team			
6.3.8.9	Do raters demonstrate language proficiency of at least ICAO Extended Level 5 in the language to be tested, and Expert Level 6 if the test is designed to assess ICAO Level 6 proficiency?	☐ YES ☐ NO	
6.3.8.10	Are raters familiar with aviation English and with any vocabulary and structures that will likely be elicited by the test prompts and interactions?	☐ YES ☐ NO	
6.3.8.11	Have raters successfully completed initial rater training?	☐ YES ☐ NO	
6.3.8.12	Have raters successfully completed recurrent rater training at least once each year?	☐ YES ☐ NO	

Appendix D

AVIATION LANGUAGE QUALIFICATIONS

All of the qualifications below may be associated with and balanced by practical experience in the field concerned.

	Qualifications		
	Best	*Very Good*	*Minimum*
1. Aviation language trainer, administrator and materials developer			
Language training academic qualifications[1]	Master's in Language Teaching • Teaching English as a Second Language (TESL, TESOL) • Applied Linguistics • Foreign Language Education or related field	• Bachelor's degree in foreign language training, or • Graduate diploma in TESL, etc., or • University degree + Extensive L2 or foreign-language training experience with clear evidence of commitment to field[2]	• Certificate in TESL, or • University degree (initial training should be done under close supervision of experienced trainer)
Language training experience	Aviation language programme 3+ years	• Aviation language programme • Language for specific purpose training • Language training in an accredited university or language school	• Language training experience, or • No previous training experience acceptable when training is under close supervision of experienced trainer
Aviation communications	Pilot or controller experience	Radiotelephony familiarity (through aviation language apprenticeship or experience)[3]	Ability to work well with SME
Language learning materials development	Aviation language materials development with communicative or interactive approach	—	Language learning materials development with communicative or interactive approach
Language training administrative experience	Aviation language programme administration	Language training programme administration	Aviation or language training programme involvement

	Qualifications		
	Best	*Very Good*	*Minimum*
2. Language test development[4]			
Academic[5]	Master's in Language Testing Ph.D. in Applied Linguistics with specialization in language testing	Master's in Applied Linguistics + experience developing, and conducting research on, second/foreign language tests	Master's in Applied Linguistics or TESOL + ability to work with other experts
Aviation	—	Radiotelephony familiarity	Ability to work well with SME
3. Subject matter experts			
Aviation communications	Professional, international, radiotelephony experience (professional pilot or controller)[6]	Highly experienced commercial or private pilots with international experience	Licensed pilot with international awareness
4. Other possible aviation language team members			
Computer-aided training and instructional design[7]	Professional specialist academic qualifications	Extensive and proven specialist experience	Specialist experience

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1. The usual academic qualification required for native English-speaking teachers of English across North America, Western Europe, Australia and New Zealand is typically a master's degree in Teaching English as a Second Language (TESL) or some other closely related field, such as Applied Linguistics. In other parts of the world, Russia, Eastern Europe, much of Asia, the academic qualification to become a language trainer is usually a bachelor's degree in foreign language training. One advantage that trainers from such programmes have is that they have succeeded in attaining a rigorously high degree of language proficiency in at least one foreign language, and often two.

   Other "language-related" academic fields (such as Literature, Comparative Literature, Communications, Translation/Interpretation studies, Comparative Linguistics or "pure" Linguistics) do not focus on language training or language learning and are not relevant qualifications for language trainers. Similarly, while some language teaching degrees are housed in education departments, other fields of academic education, such as Education, Educational Technology, International Studies, Cross-cultural Studies, are not directly related to language training.

   Additional qualifications include cross-cultural expertise or sensitivity, international work experience, multilingualism, second language learning experience, and, of course, an enthusiasm for teaching.

2. The field of English as a Second Language is relatively new, with higher degree programmes developing only in the 1970s and later. A number of excellent teachers entered the field in the 1970s, before the existence of such programmes, but have pursued professional development through other means, evidenced through, for example, membership in professional associations, published research or presentations, and professional self-development in the field.

3. Radiotelephony familiarity is essential for aviation-language training. Language trainers can gain familiarity with radiotelephony communications through a variety of means: taking flight lessons or observer flights; through an apprenticeship with an aviation language master trainer; through experience in teaching aviation language; through interactions with professional aviators and

controllers, through reading widely and other self-educational schemes; and through the use of simulators and software programmes. When language trainers do not have aviation language familiarity, it is important that they work closely with a subject matter expert.

4. The qualifications for test interlocutors and raters are naturally different from those necessary for test development team members and leaders. Training in test familiarity and rater calibration is necessary for all interlocutors and raters. See text in Chapter 4 for more information on rater qualifications.

5. The higher the stakes of a test event, the more important is the input of highly qualified and experienced experts in test development.

6. International experience is important because international radiotelephony communication is often different from local communication practices. Most importantly, knowledge of ICAO phraseology is essential.

7. In the development of aviation-language materials, whether they be text-based materials or a computer-aided medium, a qualified and experienced language trainer or materials developer is an essential part of the team. Instructional design technology expertise is an important part of a materials developing team but does not substitute for the language learning knowledge that a language training specialist brings.

Appendix E

MODERN LANGUAGE TRAINING METHODS — HISTORICAL BACKGROUND

1. LANGUAGE TEACHING

1.1 Pre-modern era: Latin and grammar translation

For thousands of years, humans have been acquiring other languages by simply responding to the need to conduct some transactions in a foreign language and by having an adequate amount of contact in that language. Language learning has always centred around the need to communicate in a language and was always naturally content-focused. During the 1600s and 1700s much academic activity centred on reading and understanding ancient Greek and Latin texts, and so the teaching of Latin and Greek was formalized as an academic activity in its own right, as a means to access the ancient texts. Because Latin was a "dead" language, that is, the language was not in modern use, lessons were not taught in any meaningful communicative context. The teaching method, therefore, focused on grammar and memorization, with much time spent on grammar translation. In the late 1800s, this method was formalized as the Grammar Translation method. In the 1890s a language teacher in the United States formalized a method known as the Direct, or Berlitz, Method.

1.2 Modern era: linguistics and language acquisition studies

1.2.1 In the 1950s, the field of linguistics — the formal study of languages as an object of study in their own right — was born, with the subsequent development of related fields: Language Acquisition Studies, Second Language Acquisition; Teaching English as a Second or Foreign Language; Foreign Language Teaching; and English as a Second Language. In the subsequent fifty-plus years, these fields have become very large, vibrant academic fields publishing much research. As a result, much research has now been conducted into how humans learn second languages and much more is known about how people learn languages than ever before. As a result, where language teaching has been informed by the results of academic research, language teaching has become more effective, more interesting, and more efficient.

Age of methods

1.2.2 In the early days of the modern era, excitement over new information from linguistics led to what is sometimes referred to as the "Age of Methods". New and innovative methods appeared, often focusing on one particular aspect of research into language learning. Some of the better-known of these methods were: Audio-lingualism; Silent Way; Total Physical Response; and Suggestopoedia.

Communicative approach

1.2.3 An important shift occurred in the 1970s, with a move away from one specific method, towards the teaching of languages through an understanding of more general approaches to language learning, based on improved

theoretical understanding of language use and language learning, with one common element: the understanding that people learn and acquire languages by using it for meaningful communication. All communicative approaches are based on the following set of theoretical underpinnings or understandings of adult foreign-language acquisition, inter alia:

a) language acquisition is an ongoing process;

b) absolute grammatical correctness and so-called native-like pronunciation are neither necessary nor likely;

c) adult learners are not disadvantaged in learning a new language;

d) people learn a language by needing to interact in a language and having the opportunity to have meaningful interactions in the language;

e) learners need lots of comprehensible input or a rich learning environment;

f) motivation affects language learning and learners respond best to material that is of interest to them.

1.2.4 Since the 1970s, best practice has been represented by programmes which include the following elements:

a) a focus on successful communication as the goal, rather than pure grammatical correctness;

b) learner-centred classrooms rather than teacher-centred;

c) a lot of student talk; minimal teacher talk;

d) minimal error correction (only as required for successful communication);

e) materials which attract learners' attention.

2. LANGUAGE TESTING

2.1 Language testing has its origins in the teaching and testing of Latin grammar; common testing exercises included grammar translation exercises, vocabulary "fill-in-the-blank", and verb transformation exercises.

2.2 The modern development of language testing is closely associated with the rise of interest in psychometric measurement, with an emphasis on precise measurement. In the attempt to obtain objective measurements of language ability, the focus of the field of psychometric-testing techniques required countable test items. As a result, language tests developed from the psychometric tradition tended to focus on knowledge about language rather than actual language performance.

2.3 One result of such testing techniques, for example, was that diplomats in the United States diplomatic services who had scored well on traditional language tests were not able to effectively use the language in the field. The apparently objective language tests in use were not able to accurately predict the ability of the test-taker to actually use the language in practice. These concerns spurred a search for tests that would more accurately reflect an individual's actual ability to perform. The Oral Proficiency Interview (OPI) technique, with its accompanying rating scale, was developed by a consortium of interests. Since then, language proficiency rating scales have been much used in the direct assessment of speaking proficiency, both through oral interview techniques and through semi-direct test samples. Similarly, in Europe, a linguistic policy to support the mobility of populations led to the definition by the Council of Europe

of proficiency levels for social and professional uses of language, initially with the Waystage and Threshold Levels, and more recently with the Common European Framework of Reference for Languages: Learning, Teaching, Assessment (CEFR).

2.4 Perhaps the most significant contribution of language acquisition and language testing research of recent decades is in the development of theoretical approaches to the understanding of language proficiency upon which testing regimes may be developed. While there is more than one theory addressing the nature of language and of language acquisition, and there is no certainty that any single theory is correct, there are some general principles upon which language tests may be constructed. Language research more recently, for example, has centred on the communicative aspects of language use rather than on knowledge of specific grammatical or lexical features. The interest in communicative approaches to language teaching has led to dramatic revision in language testing practices, with the introduction of testing methods designed to assess language skills directly through the use of rating scales.

2.5 The use of a rating scale requires that certain conditions be met. Firstly, a community of users must agree upon a set of criteria upon which admission to the community will be based. The rating scale should reflect those criteria, and the community must agree to the use of the rating scale. Secondly, a body of well-informed and experienced raters should be formed. The experience and the background of the raters must be such that they inspire trust and can gain the confidence of both the community and the candidates who wish to join the community. The raters must reflect the values of the community and understand the criteria and the context in which the criteria occur. They must also agree upon standardized procedures for the implementation of the criteria. These experienced and trained raters commit to best practice, as outlined in codes of ethics and good practice. Both the standardized procedures and compliance with codes of ethics and practice require evidence that every practical and reasonable measure has been taken to ensure test effectiveness and fairness (reliability and validity). After these conditions are met, then the rating scale is used to make informed judgements about candidates.

Appendix F

ADDITIONAL RESOURCES

1. BOOKS AND ARTICLES

1.1 Aviation language

This list of books and articles which examine the use of language in aeronautical radiotelephony communications is not intended to be exhaustive.

Barshi, I. “Misunderstandings in Voice Communication: Effects of Fluency in a Second Language”. In Healy, A.F. and L.E. Bourne Jr. (Eds.). *Foreign Language Learning: Psycholinguistic Studies on Training and Retention*. Mahwah, NJ.: Erlbaum (1998): 161–192.

Barshi, I., and R. Chute. “Cross Wires: What do Pilots and Controllers Know about Each Other’s Job?”. *Flight Safety Australia* (2001): 5, 3 and 58.

Bourgeois-Bougrine et al. *Linguistic Factors in the Overall Aviation Safety Framework*. Presentation at the 14th International Symposium on Aviation Psychology (ISAP). Dayton, Ohio, 2007. http://www.wright.edu/isap/program.html.

Burian, B.K., I. Barshi and R.K. Dismukes. *Center We Have a Problem: Emergency and Abnormal Situations in Aviation.* Presentation given at the 13th International Symposium on Aviation Psychology. Oklahoma City, Oklahoma, 2005.

Burian, B.K., I. Barshi and R.K. Dismukes. *The Challenge of Emergency and Abnormal Situations.* NASA Technical Memorandum 2005-213462. Moffett Field, CA: NASA Ames Research Center, 2005.

Burnfield, J., and R. Robert. *Air Traffic Control English Language Project*, *Vol. 1: Identifying Basic English Language Proficiency for International Air Traffic Controllers*. Report prepared for the U.S. Federal Aviation Administration by the Human Resources Research Organization. Alexandria, Virginia, U.S.A., 1999.

Burnfield, J., and R. Robert. *Air Traffic Control English Language Project*, *Vol. 2: An Analysis and Validation of Language Proficiency Measurement Models*. Report prepared for the U.S. Federal Aviation Administration by the Human Resources Research Organization. Alexandria, Virginia, U.S.A., 1999.

Burnfield, J., and R. Robert. *English Language Proficiency of International Air Traffic Controllers: A Review and Guidelines for Appropriate Measures*. Report prepared for FAA, 2000.

Cardosi, K.M. *An Analysis of En Route Controller-Pilot Voice Communications*. Report No. DOT/FAA/RD-93/11, Washington D.C.: FAA Office of Research and Development, 1993.

Chatham, R. et al. *Language Tasks in Air Traffic Control English Language Project (ATCELP) 1: Identifying Basic English Language Proficiency for International Air Traffic Controllers* (FR-EADD-99-62). HumRRO/FAA, 1999.

Cushing, S. *Fatal Words: Communications Clashes and Airplane Crashes*. University of Chicago Press, 1994.

Cushing, S. “Pilot-Air Traffic Control Communications: It’s Not (Only) What You Say, It’s How You Say It.” *Flight Safety Digest*. Flight Safety Foundation, July 1995.

Cushing, S. “Plane Speaking.” *VERBATIM: The Language Quarterly*. Vol. XXI, No. 2. Autumn, 1994.

Day, B. “Safe Radiotelephony Demands Good Discipline from all Pilots and Controllers.” *ICAO Journal*. Volume 57, No. 3, 2002.

EUROCONTROL. “Technical Analysis of ATC Controller to Pilot Voice Communication with Regard to Automatic Speech Recognition Systems.” EEC Note No. 01/2001. EUROCONTROL Experimental Centre, January 2001.

Falzon, P. *The Analysis and Understanding of an Operative Language.* London: INTERACT 84, First IFIP Conference on Human-Computer Interaction, 1984.

Foushee, H.C., and R.L. Helmreich. “Group Interaction and Flight Crew Performance.” In E.L. Wiener & D.C. Nagel (Eds.), *Human Factors in Modern Aviation*, 1989.

Goguen, J., and C. Linde. “Linguistic methodology for the analysis of aviation accidents.” Technical report. NASA Contractor Report 88254, Moffett Field, CA: NASA Ames Research Center, 1983.

Grayson, R.L., and C.E. Billings. “Information transfer between air traffic control and aircraft: Communication problems in flight operations.” In *Information Transfer Problems in the Aviation System.* NASA Technical Paper 1875, National Aeronautics and Space Administration, 1981.

Helmreich, R.J., and L.B. Sexton. *Analyzing cockpit communication: The Links between Language, Performance, Error, and Workload*. University of Texas Team Research Project, Department of Psychology, The University of Texas at Austin, Austin, Texas, U.S.A.

International Civil Aviation English Association. “Proceedings of the 8th International Seminar.” Warsaw, Poland. Proceedings published by the Centre de linguistique appliquée of the University of Franche-Comte, 2002.

International Civil Aviation Organization. *Human Factors Guidelines for Air Traffic Management (ATM) Systems*. ICAO Doc 9758-AN/966, 2000.

International Civil Aviation Organization. *Human Factors Training Manual*. ICAO Doc 9683-AN/950, 1998.

International Civil Aviation Organization. *ICAO Journal*, Volume 59, Number 1, 2004.

Jones, R.K. *Miscommunication between Pilots and Air Traffic Control. Language Problems & Language Planning*, Vol. 27, No. 3 (2003): 233–248.

Kanki B.G., and T.P. Mark. “Communication and Crew Resource Management.” In Helmreich, R.L., Kanki, B.G. & Wiener, E.L. (Eds). *Cockpit Resource Management*. United Kingdom: Academic Press, Inc.

Kanki B.G. “A Training Perspective: Enhancing Team Performance Through Effective Communication.” In B.G. Kanki and O.V. Prinzo (Eds.), *Proceedings of the Methods & Metrics of Voice Communications Workshop*, 1995.

Linde, C. “The Quantitative Study of Communicative Success: Politeness and Accidents in Aviation Discourse.” *Language in Society,* Volume 17, Number 3 (1988): 375–399.

Mathews, E. “Language Proficiency: Effective language training for pilots and air traffic controllers.” *ICAO Journal*, Volume 58, Number 4, (2003): 7–9.

Mathews, E. “New provisions for English language proficiency are expected to improve aviation safety.” *ICAO Journal*, Volume 59, Number 1 (2004): 4–6.

Mathews, E. “Provisions for proficiency in common aviation language to be strengthened.” *ICAO Journal*, Volume 56, Number 3 (2001): 24–26.

McGrath, M. “Aviation English Training Materials and Resources.” Presented at the 8th International Aviation English Association Seminar. Warsaw, Poland, September 2002.

Mell, J. “Étude des Communications Verbales entre Pilote et Controleur en Situation Standard et Non-Standard.” Doctoral dissertation in linguistics. Université du Mirail, Toulouse, France (and École Nationale de l’Aviation Civile, Centre d’Études de la Navigation Aérienne),1992.

Mell, J. “Language Training and Testing in Aviation Need to Focus on Job-Specific Competencies.” ICAO Journal, Volume 59, Number 1, 2004.

Mell, J. “What is Not Standard in Real Radiotelephony?” Presented at the 4th International Civil Aviation English Association Forum. Paris, France, November 1991.

Mell, J., and C. Godmet. *Aeronautical Radiotelephony Communicative Functions*. Direction de la Navigation Aerienne, DNA8 (F), 1997 and reprinted in Appendix B to this manual, with permission.

Morrow, D., A. Lee, and M. Rodvold. “Analysis of Problems in Routine Controller-Pilot Communications.” *The International Journal of Aviation Psychology.* Volume 3, Issue 4. (1993): 285–302.

Morrow, D., and M. Rodvold. “Communications Issues in Air Traffic Control.” In M. Smolensky and E. Stein (Eds). *Human Factors in Air Traffic Control.* Academic Press, 1998.

Morrow, D., M. Rodvold, and A. Lee. “Non-routine transactions in controller-pilot communication.” *Discourse Processes.* Volume 17, Issue 2 (1994): 235–258.

Philps, D. “Linguistic Security in the Syntactic Structures of Air Traffic Control English.” *English World-Wide.* 12(1). Amsterdam, John Benjamins B.V (1991):103–124.

Prinzo, O.V. “An analysis of voice communication in a simulated approach control environment.” Oklahoma City, O.K.: FAA Civil Aeromedical Institute (NITS No. DOT/FAA/AM-97/17), 1998.

Prinzo, O.V. “Data-linked pilot reply time on controller workload and communication in a simulated terminal option.” Oklahoma City, O.K.: FAA Civil Aeromedical Institute (NITS No. DOT/FAA/AM-01/8), 2001.

Prinzo, O.V., A.M. Hendrix, and R. Hendrix. “The Outcome of ATC Message Complexity on Pilot Readback Performance.” Federal Aviation Administration Report DOT/FAA/AM-06/25, November 2006.

Prinzo, O.V., and T.W. Britton. *ATC/Pilot Voice Communications: A Survey of the Literature*. (NITS No. DOT/FAA/AM-93/20), 1993.

Prinzo, O.V., T.W. Britton, and A.M. Hendrix. *Development of a Coding Form for Approach Control/Pilot Voice Communications*. Report No. DOT/FAA/AM-95/15. Washington D.C.: FAA.

Ramos, R.A. et. al. “Air Traffic Control English Language Project (ATCELP) I: Identifying basic English language proficiency for international air traffic controllers”. (HumRRO Final Report FR-EADD-99-62). Alexandria, VA: Human Resources Research Organization, 1999.

Robertson F., and E. Johnson. *Airspeak: Radiotelephony for Pilots*. London: Prentice Hall, 1987.

Sassen, C. “Linguistic Dimensions of Crisis Talk”, John Benjamins Publishing Company, 2005.

Sumby, W.A. “The control-tower language: A case study of a specialized language in action.” *Language and Speech*, 3: (1960): 61–70.

Van Es, G.W.H. “Eurocontrol. Air-ground Communication Safety Study: An Analysis of Pilot-controller Occurrences”. Eurocontrol, June 16, 2004.

Van Es, G.W.H., R. Wever, and M. Verbeek. “Eurocontrol. Air-ground Communication Safety Study: Causes and Recommendations.” DAP/SAF 2006-09. Eurocontrol, January 16, 2006.

Vatnsdal, A.O. “A Register analysis: The language of air traffic control. Occasional Papers in *Systematic Linguistics*, Vol. 1, 1987.

Verhaegen, B. “Safety issues related to language use have come under scrutiny”. *ICAO Journal*, Volume 56, Number 2 (2001): 15–17, 30.

1.2 Linguistics, language learning and language testing

The literature on linguistics and on language learning, teaching, and testing is vast. Only a small sampling of a few useful works is listed here, including those texts referred to in this manual. A Bibliography on Language Testing has been compiled and published by The Journal Language Testing Update, with the International Language Testing Association (ILTA).

Alderson J.C., C.M. Clapham, D. Wall. “Language Test Construction and Evaluation.” Cambridge: Cambridge University Press, 1995.

Bachman, L.F. “Fundamental Considerations in Language Testing.” Oxford: Oxford University Press, 1990.

Davies, A. “Principles of Language Testing.” Basic Blackwell*,* 1990.

Douglas, D. “Assessing languages for specific purposes”. Cambridge University Press, 2000.

Douglas, D., and C. Chapelle. “Assessing Language through Computer Technology.” Cambridge University Press, 2006.

Ellis, R. “Second Language Acquisition and Language Pedagogy. *Multilingual Matters.* Philadelphia, 1992.

Fulcher, G. “Some Priority Areas for Oral Language Testing.” *Language Testing Update* 15 (1994): 39–47.

Graddol, D. “English Next.” The British Council, 2006.

Graddol, D. “The Future of English?” The British Council, 1997.

Grishman, R., and R. Kittredge (ed). *Analyzing Language in Restricted Domains.* Hillsdale N.J.: Lawrence Erlbaum Associates, 1986.

Halliday M.A.K., and R. Hasan. *Language, Context, and Text: Aspects of Language in a Social-semiotic Perspective.* Oxford: Oxford University Press, 1989.

Hutchinson, T., and W. Alan. *English for Specific Purposes: A Learning-centered Approach*. Cambridge University Press, 1987.

Jenkins, J. *The Phonology of English as an International Language*. Oxford: Oxford University Press, 2000.

Johnson, M. *The Art of Non-Conversation: A Re-examination of the Validity of the Oral Proficiency Interview.* Yale University Press, 2001.

Krashen, S.D. *Principles and Practice in Second Language Acquisition*. New York: Pergamon Press, 1982.

Krashen S.D. *Second Language Acquisition and Second Language Learning*. New York: Pergamon Press, 1981.

Marinova-Todd, Stafka H. "Three Misconceptions about Age and L2 Learning." (Bradford Marshall, Catherine E. Snow-Harvard). *TESOL Quarterly,* Volume 34, Spring (2000): 9–34.

Nelson, C. "Intelligibility and Non-native varieties of English." In Kachru, Braj, B. (ed.). *The Other Tongue: English across Cultures*. Chicago: University of Illinois Press, 1982.

Reilly, R.G., ed. *Communication Failure in Dialogue and Discourse.* Amsterdam, North-Holland, 1987.

Spolsky, B. *Measured Words*. Oxford University Press, 1995.

Weeks, F. et al. *Seaspeak Reference Manual.* Oxford: Pergamon Press, 1983.

Weir, C.J. *Language Testing and Validation — An Evidence-Based Approach.* Palgrave MacMillan, 2005.

2. INTERNET SITES

2.1 Implementation of ICAO language proficiency requirements

International Civil Aviation Organization (ICAO)

http://www.icao.int/icao/en/trivia/peltrgFAQ.htm#lang

This website provides clarifications on regulatory aspects of the implementation of the ICAO language provisions.

http://www.icao.int/fsix/lp.cfm

Following the adoption of Resolution A36-11, Proficiency in the English language used for radiotelephony communications, this website lists the implementation plans developed by States that are not yet compliant with the language proficiency requirements as well as statements of compliance from States that meet the requirements.

2.2 Language proficiency

The Interagency Language Roundtable (ILR)
http://www.govtilr.org/

An unfunded United States Federal interagency organization established for the coordination and sharing of information about language-related activities at the federal level. It serves departments and agencies of the federal government to keep abreast of the progress and implementation of techniques and technology for language learning, language use, language testing and other language-related activities. ILR provides organizations and individuals with:

a) a channel of communication and cooperation among agencies that have common interests in foreign language training and testing;

b) a centralized forum for the dissemination of language-related information across the government; and

c) a working network for the mutual sharing of ideas, information and language resources among organizations in government, the academic community, and the private sector. Attendance at ILR meetings is open to any interested individual, government or civilian.

The Council of Europe
http://www.coe.int/t/dg4/linguistic/

The Council of Europe's activities to promote linguistic diversity and language learning in the field of education are carried out within the framework of the European Cultural Convention (1954) ratified by 48 States. The Language Policy Division (Strasbourg) implements intergovernmental medium-term programmes with a special emphasis on policy development. The Division's programmes are complemented by those of the European Centre for Modern Languages (Graz, Austria).

2.3 Aviation English training and testing

International Civil Aviation Organization (ICAO)
http://www.icao.int/td/

The ICAO training directory features over 3 000 course offerings of more than 300 training institutions from over eighty ICAO Contracting States. The directory is a good starting point for locating civil aviation-related training courses for various aviation professions. The directory is an interactive database which can be searched by country, course category, keyword or name of a training institution. Any search result will list the contact information of relevant training institutions first, including active e-mail and hyperlinks if available, followed by the titles of courses. Please see in particular ICAO course numbers 291 (English language) and 295 (Language proficiency testing). Whenever training institutions have provided more details on their courses, they become available by clicking on the course title. The listing of an institution in this directory does not denote that the institution is approved or recognized by ICAO. The information contained in this directory is published as provided by the institutions and is not by ICAO checked for accuracy.

International Civil Aviation English Association (ICAEA)
http://www.icaea.pata.pl/

ICAEA provides a worldwide structure for aviation English practitioners to establish and pursue contacts and keep abreast of events in the fast-evolving worlds of aviation and English. Its aims are to:

a) bring together people and organizations concerned by, or interested in, the use of English in the aviation and aeronautical world;

b) promote the exchange of information as regards English, English training, standards, qualifications, translation, documents, etc., between people working within aviation in different countries;

c) centralize information useful to airlines, authorities, air traffic services, manufacturers, pilots, engineers, universities, research institutes, training centres and teachers;

d) enhance the circulation of this information through a website, a list serve, seminars and the publication of their proceedings;

e) generate concern about the quality of English in the aviation world.

International Airline Language and Communication Organization (IALCO)
http://www.ialco.org/

IALCO is an informal association of airlines offering language services. IALCO organizes yearly "International Airlines' Language Conferences" that feature workshops on new developments in the research of language and provide an environment for inter-airline cooperation, the exchange of experience and ideas, as well as an opportunity for informal professional discussion. IALCO's objective is to improve both service and safety by increasing the functionally oriented communication skills which airline personnel require.

English Language Proficiency for Aeronautical Communication (ELPAC)
http://www.elpac.info/

The ELPAC test was developed by the European Organisation for the Safety of Air Navigation (EUROCONTROL) to meet ICAO and European Commission language proficiency requirements in English for operational air traffic controllers. This website provides information about ELPAC test development to air traffic controllers, air navigation service providers, national supervisory authorities, ATC licensing authorities and teachers of aviation English. The ELPAC test comprises two test papers: an Internet-based test of Listening Comprehension (Paper 1) and an interactive test utilizing visual and non-visual communication (Paper 2 — Oral Interaction). A sample version of each paper is presented on the website.

2.4 Aviation incident reporting systems

Accident/Incident Data Reporting (ADREP) System
hhtp://www.icao.int/fsix/adrep/index.html

The ICAO ADREP database is based on accident/incident data reports supplied to ICAO since 1970. The database contains worldwide accident/incident data on aircraft (fixed-wing and helicopter) heavier than 5 700 kg.

Mandatory Occurrence Reporting Scheme (MORS)
http://www.caa.co.uk/default.aspx?catid=978&pagetype=90&pageid=6278

The United Kingdom CAA collects, records and analyses all reports received under the Mandatory Occurrence Reporting Scheme (MORS), as detailed in CAP382. The objectives of MOR are as follows:

a) to ensure that the CAA is advised of hazardous or potentially hazardous incidents and defects (occurrences);

b) to ensure that knowledge of these occurrences is disseminated so that other persons and organizations may learn from them;

c) to enable an assessment to be made by those concerned (whether inside or outside the CAA) of the safety implications of each occurrence, both in itself and in relation to previous similar occurrences, so that they may take or initiate any necessary action.

The overall objective of the CAA in operating occurrence reporting is to use the reported information to improve the level of flight safety and not to attribute blame. The CAA receives approximately 10 000 new reports every year, all of which are entered into the database. The scheme has been running since 1976 and now contains over 150 000 records.

Aviation Safety Reporting System (ASRS)
http://asrs.arc.nasa.gov/

The United States Aviation Safety Reporting System (ASRS) was established in 1975 under a Memorandum of Agreement between the Federal Aviation Administration (FAA) and the National Aeronautics and Space Administration (NASA). The ASRS collects, analyses, and responds to voluntarily submitted aviation safety incident reports in order to lessen the likelihood of aviation accidents. ASRS data are used to:

a) identify deficiencies and discrepancies in the National Aviation System (NAS) so that these can be remedied by appropriate authorities;

b) support policy formulation and planning for, and improvements to, the NAS;

c) strengthen the foundation of aviation human factors safety research. This is particularly important since it is generally conceded that over two-thirds of all aviation accidents and incidents have their roots in human performance errors.

The European Coordination Centre for Aviation Incident Reporting Systems (ECCAIRS)
http://eccairs-www.jrc.it/Start.asp

The European Coordination Centre for Aviation Incident Reporting Systems (ECCAIRS) is the heart of a network whose objective is to integrate information from aviation occurrence reporting systems running in the authorities of the various European Union member States. The role of the central office of the ECCAIRS network is to collect, integrate and disseminate occurrence information originating from satellite offices. The central office implements a database which contains the integrated data.

Confidential Human Factors Incident Reporting Programme (CHIRP)
http://www.chirp.co.uk/

The aim of the United Kingdom Confidential Human Factors Incident Reporting Programme (CHIRP) is to contribute to the enhancement of flight safety in the UK commercial and general aviation industries, by providing a totally independent confidential (not anonymous) reporting system for all individuals employed in or associated with these industries. CHIRP has been in operation since 1982 and is currently available to flight crew members, air traffic control officers, licensed aircraft maintenance engineers, cabin crew and the general aviation (GA) community. Reporters' identities are kept confidential. Personal details are not retained and are returned to the reporter on closure of their report. The information provided is made available, with the approval of the reporter, and in a disidentified form to those who can take action to remedy the problem. Important information gained through reports, after being disidentified, is also made available as widely as possible, principally through the publications FEEDBACK, GA FEEDBACK and Cabin Crew FEEDBACK with the aim of improving safety standards. CHIRP complements the CAA Mandatory Occurrence Reporting system and other formal reporting systems operated by many UK organizations, by providing a means by which individuals are able to raise issues of concern without being identified to their peer group, management, or the Regulatory Authority.

Flight Safety Foundation (FSF)
http://www.flightsafety.org/home.html

Flight Safety Foundation is an independent, non-profit international organization engaged in research, auditing, education, advocacy and publishing to improve aviation safety. The Foundation's objectives are to:

a) pursue the active involvement and participation of the diverse elements of global professional aviation;

b) anticipate, identify and analyse global aviation safety issues and set priorities;

c) communicate effectively about aviation safety; and

d) be a catalyst for action and the adoption of best aviation safety practices.

The website allows access to numerous reports and articles dealing with aviation safety issues including language-related events.

2.5 Language training standards

American Council on the Teaching of Foreign Languages (ACTFL)
http://www.actfl.org/

The American Council on the Teaching of Foreign Languages (ACTFL) is dedicated to the improvement and expansion of the teaching and learning of all languages at all levels of instruction. ACTFL is an individual membership organization of more than 9 000 foreign language educators and administrators from elementary through graduate education, as well as government and industry. From the development of Proficiency Guidelines to the creation of national standards, ACTFL focuses on issues that are critical to the growth of both the profession and the individual teacher. ACTFL was founded in 1967 by the Modern Language Association of America. It represents teachers of all languages at all education levels.

British Council Language in Britain Accreditation Scheme
http://www.britishcouncil.org/accreditation.htm

Accreditation UK, formerly the English in Britain Accreditation Scheme (EiBAS), is the quality assurance scheme for UK based ELT providers. The Scheme is managed by the Accreditation Unit of the British Council in partnership with English UK, the UK's national, professional ELT Association. Accreditation UK supports the teaching and learning of English, helping to strengthen UK English language teaching. The Scheme does this by:

a) developing, establishing and maintaining quality standards for English language provision for international students delivered by UK providers;

b) accrediting all English language providers in the UK which meet the Scheme criteria and standards;

c) providing an assurance of the quality of English language provision accredited under the Scheme to international students and their advisors.

It is registered in England as a charity.

Canada Language Council
http://www.c-l-c.ca/

The Canada Language Council represents the two official languages: English and French as well as the public and private sectors. For the past 25 years, the Council has aimed to advance standards and promote excellence in English and French language training in Canada. The CLC provides official recognition that member programmes meet the standards of the Council and are committed to upholding them. Its quality assurance scheme covers the areas of: curriculum, teacher qualifications, student services, student admissions, marketing, promotion, facilities and administration. The Council's standards are internationally recognized.

International Association of Teachers of English as a Foreign Language (IATEFL)
http://www.iatefl.org/

The mission of the International Association of Teachers of English as a Foreign Language is to link, develop and support English Language Teaching professionals throughout the world. This is done through:

a) a range of regular publications;

b) holding an Annual International Conference with an extensive programme of talks and workshops;

c) offering members the chance to join any number of 14 Special Interest Groups (SIGs);

d) providing members with reduced rates on a number of selected professional journals;

e) offering scholarships to specific groups of teachers to enable them to attend the Annual Conference;

f) linking with associated professional organizations in other countries;

g) providing help to others in forming or developing a local teachers' organization.

Teachers of English to Speakers of Other Languages, Inc. (TESOL)
http://www.tesol.org/s_tesol/index.asp

Teachers of English to Speakers of Other Languages, Inc. (TESOL) is a global education association. Headquartered in Alexandria, Virginia, in the United States, TESOL has approximately 13 000 members in over 120 countries, and is recognized as a non-governmental organization (NGO) of the United Nations Department of Public Information. Its mission is to ensure excellence in English language teaching to speakers of other languages. TESOL values professionalism in language education; individual language rights; accessible, high quality education; collaboration in a global community; interaction of research and reflective practice for educational improvement; and respect for diversity and multiculturalism.

2.6 Language testing standards

International Language Testing Association (ILTA)
http://www.iltaonline.com/

ILTA's purpose is to promote the improvement of language testing throughout the world. The declared goals of ILTA include the following:

a) stimulate professional growth through workshops and conferences;

b) promote the publication and dissemination of information related to the field of language testing;

c) develop and provide for leadership in the field of language testing;

d) provide professional services to its members;

e) increase public understanding and support of language testing as a profession;

f) build professional pride among its membership;

g) recognize outstanding achievement among its membership;

h) cooperate with other groups interested in language testing;

i) cooperate with other groups interested in applied linguistics or measurement.

See particularly the ILTA Code of Ethics at:

http://www.iltaonline.com/index.php?option=com_content&view=article&id=57&Itemid=47

Association of Language Testers in Europe (ALTE)
http://www.alte.org/

The Association of Language Testers in Europe (ALTE) is an association of institutions within Europe, each of which produces examinations and certification for language learners. Members provide examinations of the language which is spoken as a mother tongue in their own country or region. The principal objectives of ALTE are:

a) to establish common levels of proficiency in order to promote the trans-national recognition of certification in Europe;

b) to establish common standards for all stages of the language-testing process: that is, for test development, task and item writing, test administration, marking and grading, reporting of test results, test analysis and reporting of findings;

c) to collaborate on joint projects and in the exchange of ideas and know-how.

The information on the language examinations and examination systems on this site exists both to provide information which is of use in itself, and to serve as the descriptive foundation for a definition of the framework of levels of proficiency on which the examinations provided by members of ALTE can be placed. See particularly: http://www.alte.org/resources/index.php.

European Association for Language Testing and Assessment (EALTA)
http://www.ealta.eu.org/

EALTA is a professional association for language testers in Europe. EALTA's interests are independent of those of any other organization. EALTA was set up with financial support from the European Community. The purpose of EALTA is to promote the understanding of theoretical principles of language testing and assessment, and the improvement and sharing of testing and assessment practices throughout Europe.

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