民航飞行技术专业核心教材

飞行人员无线电陆空通话

Radiotelephony Communications for Pilots

孙建东　郭小平　编著

- ICAO标准
- 术语准确
- 通话规范

中国民航出版社

附赠光盘

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前　言

本书是一本为飞行人员全面提高英语陆空通话能力，掌握陆空通话中的标准术语，确保在与管制人员通话时做到简洁明了、规范准确，保障飞行安全而编写的实用性教材。

本教材由两大部分组成：课文和附录。课文又分为四个部分，共二十个单元。课文的第一部分是“国际民航组织的要求与标准”，有四个单元；课文的第二部分是“起飞前到着陆后”，有十个单元；课文的第三部分是“偶发事件和紧急情况”，有两个单元；课文的第四部分是“无线电通话综合练习”，有四个单元。附录包括听力原文与练习答案、对话译文和词汇表。另外，本教材配有相应的音频。

课文的第二部分和第三部分是本教材的重点，每个单元由六个章节组成。第一章节：四个对话（第二部分的第一单元除外）；第二章节：对话中出现的单词与词组；第三章节：与每个单元内容相关的背景知识；第四章节：背景知识中出现的单词与词组；第五章节：常用标准术语表达汇集；第六章节：相关练习。

本教材的编写主要基于国际民航组织2007年颁布的《无线电通话手册》（*Manual of Radiotelephony*，ICAO Doc 9432），同时参照了国际民航组织的有关文件和资料以及国际民航组织对飞行人员的英语水平的要求；教材力求标准规范，术语准确，通话简洁，情景真实，体现其专业性、规范性和实用性。教材中出现的一些数据，如呼号、航班号、通信频率和管制单位等仅用于教学，特此说明。

本教材在编写过程中，承蒙刘凡机长、程晨机长、逯夏管制员和南航大同事胡彬老师参与了审阅工作，在此谨表示感谢。此外，在编写过程中，编者参阅了国内外诸多无线电陆空通话相关的书籍，谨在此向有关作者表示感谢。

编　者

2016年于南京

目 录

附录

Section 1 ICAO Requirements and Standards

Unit 1 ICAO Requirements

1. ICAO

ICAO is an abbreviated form for the International Civil Aviation Organization, a global aviation organization headquartered in Montreal, Canada. As an agency of the United Nations (UN), ICAO is an organization that is instrumental in setting standards for the aviation industry. ICAO sets standards for a wide range of areas, such as navigation and infrastructure, standards for air accident investigation and the rules of air commerce. ICAO's primary strategic objectives are safety, security, environmental protection and sustainable development. Individual companies are not members of ICAO. Instead, individual nations are signatory to the organization and agree to abide by ICAO standards. And Chicago Convention refers to Convention on International Civil Aviation held in Chicago, USA in 1944, leading to formation of the International Civil Aviation Organization.

2. ICAO *Manual of Radiotelephony*

The compilation of this textbook is based on the fourth edition of *Manual of Radiotelephony*. The manual was approved by the ICAO Secretary General and published under his authority in 2007 and it has since become a reference and model for radiotelephony communications for pilots and controllers concerned.

The purpose of the manual is to provide examples of the radiotelephony phraseology found in ICAO documents. ICAO phraseologies are developed to provide efficient, clear, and unambiguous communications, and constant attention should be given to the correct use of ICAO phraseologies in all instances in which they are applicable.

3. Some ICAO Radiotelephony Communication Requirements

- Communication between pilots and air traffic controllers is a process that is vital to the safe and efficient control of air traffic. Pilots must report their situation, intentions and requests

to the controller in a clear and unambiguous way; and the controller must respond by issuing instructions that are equally clear and unambiguous.

- It is of course important that radio equipment should be reliable and easy to use, and should be capable of conveying the spoken word clearly and without distortion over long distances. However, the process of communication is equally important and must be successful even in the most difficult conditions. Good radio discipline is essential to this process.
- Phraseology is required in the process of communication because it enables both pilots and air traffic controllers to communicate quickly and effectively despite differences in language and reduces the opportunity for misunderstanding.
- Attention should be paid to other factors such as the format and content of the message, language and the speed and timeliness of transmissions, which also make important contributions to the communication process.
- The readback process is required to ensure that the transmitted message has been received and correctly understood.

4. ICAO English Language Proficiency Requirements

In September 2003, ICAO announced changes to provisions strengthening language proficiency requirements. These requirements came into effect in March 2008.

All pilots operating on international routes and all air traffic controllers who communicate with foreign pilots need to have their English language proficiency formally assessed. The ICAO language proficiency requirement requires that pilots and air traffic controllers be able to communicate proficiently using both ICAO phraseology (ICAO Doc 9832) and plain English (ICAO Doc 9835).

ICAO has established six levels of language proficiency:

ICAO Level 1: Pre-elementary

ICAO Level 2: Elementary

ICAO Level 3: Pre-operational

ICAO Level 4: Operational

ICAO Level 5: Extended

ICAO Level 6: Expert

5. ICAO Level-4 Requirements

The minimum language level for licensing purposes is ICAO Level 4. To be assessed at ICAO Level 4 or above, a pilot or an air traffic controller must achieve Level 4 in all six of the ICAO skill areas:

- Pronunciation
- Structure

- Vocabulary
- Fluency
- Comprehension
- Interactions

A speaker is proficient to Level 4 if the ratings for the following criteria are met:

Skill Areas	Ratings for the Criteria
Pronunciation	Pronunciation, stress, rhythm, and intonation are influenced by the first language or regional variation but only sometimes interfere with ease of understanding.
Structure	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	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.
Fluency	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	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.
Interactions	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.

6. ICAO English Language Proficiency Test in China

The ICAO English language proficiency test in China is called *PEPEC* , referring to *Pilot English Proficiency Examination of China*. *PEPEC* has been implemented since 2008 in accordance with ICAO English language proficiency requirements. For more information concerning this test, go to http: //pilots. caac. gov. cn/pepec/index. asp? id=6.

Exercises

1. Answer the following questions.

(1) What is ICAO?

(2) What is the function of this organization?

(3) Where is the headquarters of ICAO located?

(4) What is the Chicago Convention?

(5) What is *Manual of Radiotelephony* ? How much do you know about it?

(6) How are pilots and controllers supposed to communicate?

(7) Why is phraseology required in the process of communication?

(8) Why is the read-back process necessary?

(9) How many levels are there about ICAO English language proficiency?

(10) What is the ICAO minimum language level for licensing purposes?

(11) What are the required six ICAO skill areas?

(12) How much do you know about *PEPEC*?

2. Open questions.

(1) How do you understand the course "Radiotelephony Communications for Pilots"?

(2) What do you expect to learn from this course?

(3) Do you think this course is important to a pilot? And why?

(4) What role does the English language proficiency play in radiotelephony communications?

(5) What are you going to do to do well in this course?

Unit 2 ICAO Letters and Numbers

1. ICAO Spelling Alphabet

Though often called "phonetic alphabets", ICAO spelling alphabets have no connection to phonetic transcription systems like the International Phonetic Alphabet. Instead, the ICAO alphabet assigns code words to the letters of the English alphabet acrophonically (*Alfa* for A, *Bravo* for B, etc.) so that critical combinations of letters can be pronounced and understood by those who transmit and receive voice messages by radio or telephone regardless of their native language, especially when the safety of navigation or persons is essential. The paramount reason is to ensure intelligibility of voice signals over radio links.

Table 1

Letter	Word	Pronunciation
A	Alpha	AL PHAH
B	Bravo	BRAH VOH
C	Charlie	CHAR LEE
D	Delta	DELL TAH
E	Echo	ECK OH
F	Foxtrot	FOKS TROT
G	Golf	GOLF
H	Hotel	HO TELL
I	India	IN DEE AH
J	Juliett	JEW LEE ET
K	Kilo	KEY LOH
L	Lima	LEE MAH
M	Mike	MIKE
N	November	NO VEM BER
O	Oscar	OSS CAH
P	Papa	PAH PAH
Q	Quebec	KEH BECK
R	Romeo	ROW ME OH
S	Sierra	SEE AIR RAH
T	Tango	TANG GO

续表

Letter	Word	Pronunciation
U	Uniform	YOU NEE FORM
V	Victor	VIK TAH
W	Whiskey	WISS KEY
X	X-ray	ECKS RAY
Y	Yankee	YANG KEY
Z	Zulu	ZOO LOO
Note. —Syllables to be emphasized are underlined.		

- The commonly used abbreviations such as VOR, ILS and RVR are normally spoken using the constituent letters, rather than the spelling alphabet.
- Each letter in the aircraft call-sign shall be spoken separately using the spelling alphabets except the telephony designator and the type of aircraft; for example, BAW 215 (spoken as Speedbird 215), CCA983 (spoken as Air China 983), A320 (spoken as Airbus 320) and B747 (spoken as Boeing 747).

2. ICAO Numbers

Table 2

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 are stressed; for example, the two syllables in ZE-RO are given equal emphasis, whereas the first syllable of FOW-er is given primary emphasis.	

3. Transmission and Pronunciation of Numbers

(1) Transmission of numbers involves the use of HUNDRED, TOUSAND or both.

All the numbers (in Table 3) used in the transmission of altitude, height, cloud height, visibility and runway visual range information which contain whole hundreds and whole thousands shall be transmitted by pronouncing each digit in the number of hundreds or thousands followed by the word HUNDRED or TOUSAND as appropriate. Combinations of thousands and whole hundreds shall be transmitted by pronouncing each digit in the number of thousands followed by the word TOUSAND and the number of hundreds followed by the word HUNDRED.

Table 3

altitude	*transmitted as*	*pronounced as*
600	six hundred	SIX HUNDRED
2500	two thousand five hundred	TOO TOUSAND FIFE HUNDRED
14000	one four thousand	WUN FOWER TOUSAND
cloud height	*transmitted as*	*pronounced as*
2000	two thousand	TOO TOUSAND
4600	four thousand six hundred	FOWER TOUSAND SIX HUNDRED
visibility	*transmitted as*	*pronounced as*
800	visibility eight hundred	visibility AIT HUNDRED
1000	visibility one thousand	visibility WUN TOUSAND
runway visual range	*transmitted as*	*pronounced as*
900	RVR nine hundred	RVR NINER HUNDRED
1600	RVR one thousand six hundred	RVR WUN TOUSAND SIX HUNDRED

(2) The numbers in Table 4, Table 5 and Table 6 shall be transmitted by pronouncing each digit separately.

Table 4

aircraft call-sign	*transmitted as*	*pronounced as*
CCA521	Air China five two one	Air China FIFE TOO WUN
BAW324	Speedbird three two four	Speedbird TREE TOO FOWER
flight levels	*transmitted as*	*pronounced as*
FL180	flight level one eight zero	fight level WUN AIT ZERO
FL200	flight level two zero zero	flight level TOO ZERO ZERO
headings	*transmitted as*	*pronounced as*
090 degrees	heading zero nine zero	heading ZERO NINER ZERO
170 degrees	heading one seven zero	heading WUN SEVEN ZERO
wind direction & speed	*transmitted as*	*pronounced as*
150 degrees 12 knots	wind one five zero degrees one two knots	wind WUN FIFE ZERO degrees WUN TOO knots
320 degrees 20 knots	wind three two zero degrees two zero knots	wind TREE TOO ZERO degrees TOO ZERO knots
transponder codes	*transmitted as*	*pronounced as*
2500	squawk two five zero zero	squawk TOO FIFE ZERO ZERO
4315	squawk four three one five	squawk FOWER TREE ONE FIFE
runway	*transmitted as*	*pronounced as*
17	runway one seven	runway WUN SEVEN
29R	runway two nine right	runway TOO NINER RIGHT
altimeter setting	*transmitted as*	*pronounced as*
1000	QNH one zero zero zero	QNH WUN ZERO ZERO ZERO
1013	QNH one zero one three	QNH WUN ZERO WUN TREE

Table 5

frequency	*transmitted as*	*pronounced as*
121.50	one two one decimal five	WUN TOO WUN DAYSEEMAL FIFE
119.00	one one nine decimal zero	WUN WUN NINER DAYSEEMAL ZERO
118.13	one one eight decimal one three	WUN WUN AIT DAYSEEMAL WUN TREE
118.05	one one eight decimal zero five	WUN WUN AIT DAYSEEMAL ZERO FIFE

Table 6

time	*transmitted as*	*pronounced as*
0913	one three or zero nine one three	WUN TREE or ZERO NINER WUN TREE
1400	one four zero zero	WUN FOWER ZERO ZERO or ON THE HOUR
2136	three six or two one three six	TREE SIX or TOO WUN TREE SIX

Exercises

1. You will hear four letters or four combinations of letters from each of the following tables from (1) to (6). As you listen, circle the letters you hear.

(1)

P	C	A	H
K	S	D	Z
V	M	B	R
G	J	L	W

(2)

X	I	J	G
A	W	K	P
C	F	Q	N
H	M	Y	E

(3)

VI	MD	HN	BR
AP	RW	QA	YK
CF	GJ	ZO	IV
OS	DM	KY	PA

(4)

XA	SA	NM	MN
TU	WV	FR	VW
GJ	BE	KC	UT
CK	JG	EB	QJ

(5)

OGJ	JQO	QJO	JOQ
MNL	MLN	NML	LNM
HFP	FPH	PFH	HPF
EAC	CAE	ECA	AEC

(6)

CKM	KCM	MCK	KMC
VWX	VXW	WVX	WXV
XBS	XSB	BSX	BXS
TRU	RYU	UYT	URT

2. You will hear four combinations of numbers from each of the tables from (1) to (9). As you listen, circle the numbers you hear.

(1) *runway*

21	36	05	18
12	09	17	26
32	23	19	29
27	15	07	16

(2) *flight levels*

300	160	170	310
150	260	270	130
330	180	120	140
200	100	390	160

(3) *heading & wind direction*

320	080	105	180
150	230	050	260
160	060	190	290
360	090	170	070

(4) *call-signs*

456	135	521	789
428	248	654	635
285	470	740	536
1280	1147	1387	1279

(5) *transponder codes*

3435	3543	3453	3534
5324	5234	5432	5342
3248	3428	3824	3284
4591	4951	4519	4915

(6) *altimeter setting*

1103	1013	1113	1131
1001	1021	1121	1112
1051	1105	1115	1015
1123	1213	1023	1032

(7) *time*

2325	1325	2352	1352
0923	1932	0932	1923
1714	1741	0741	0714
1650	0650	0605	1605

(8) *frequency*

118.8	118.1	118.5
119.75	119.25	119.45
121.95	121.75	121.65
125.55	125.05	125.85

(9) *altitude, cloud height, visibility and RVR*

300	900	500	1500
3000	2000	4000	6000
5300	3500	3600	6300
13000	31000	23000	31000

3. Listen and fill in the underlined parts with letters.

(1) Information _____.
(2) _____ Arrival.
(3) Passing _____.
(4) Call-sign _____.
(5) Hold at holding point _____.
(6) Estimating _____ next _____.
(7) Taxi via taxiway _____ and _____.
(8) Report distance from _____.

4. Listen and fill in the underlined parts with numbers.

(1) CSN _____.
(2) Heading _____.
(3) Visibility _____ meters.
(4) Squawk _____.
(5) Wind _____degrees _____knots.
(6) Time check _____.
(7) Flight level _____.
(8) QNH _____.
(9) Runway _____L.
(10) Altitude _____.
(11) Cloud height _____.
(12) Frequency _____.

5. Listen and fill in the underlined parts with letters, numbers or combinations.

(1) Estimating _____.
(2) _____Arrival.
(3) Cross _____at _____.
(4) _____Departure.
(5) Information _____time _____.
(6) After passing _____, descend to _____ meters.
(7) Taxi to the holding point of taxiway _____via _____and _____.

Unit 3 Standard Words & Phrases and Call-signs

1. Standard Words and Phrases

The following words and phrases are to be used in radiotelephony communications, as appropriate, and have the meaning given:

Table 1

Words/Phrases	Meaning
ACKNOWLEDGE	Let me know that you have received and understood this message.
AFFIRM	Yes.
APPROVED	Permission for proposed action granted.
BREAK	I hereby indicate the separation between portions of the message (to be used where there is no clear distinction between the text and other portions of the message).
BREAK BREAK	I hereby indicate the separation between messages transmitted to different aircraft in a very busy environment.
CANCEL	Annul the previously transmitted clearance.
CHECK	Examine a system or procedure (no answer is normally expected).
CLEARED	Authorized to proceed under the conditions specified.
CONFIRM	Have I correctly received the following. . . ? or Did you correctly receive this message . . . ?
CONTACT	Establish radio contact with . . .
CORRECT	That is correct.
CORRECTION	An error has been made in this transmission (or message indicated) the correct version is . . .
DISREGARD	Consider that transmission as not sent.
HOW DO YOU READ	What is the readability (i. e. clarity and strength) of my transmission?
I SAY AGAIN	I repeat for clarity or emphasis.
MAINTAIN	Continue in accordance with the condition (s) specified or in its literal sense, e. g. "Maintain VFR".
MAYDAY	My aircraft and its occupants are threatened by grave and imminent danger and/or I require immediate assistance.
MONITOR	Listen out on (frequency).
NEGATIVE	"No" or "Permission is not granted" or "That is not correct" or "not capable".
OUT	My transmission is ended and I expect no response from you (*not normally used in VHF communication*).