卓越工程师教育培养计划配套教材

飞行技术系列

RADIOTELEPHONY COMMUNICATIONS FOR PILOTS

# 飞行人员陆空通话

（英文版）

范海翔 李佩绮 杜丽娟 魏鹏程 编

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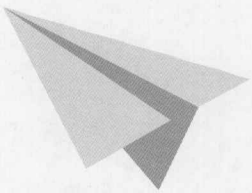

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北京

## 内 容 简 介

全书以实际飞行程序贯穿全教程，以国际上最新使用的各种常规通话程序、非正常程序及紧急情况下的通话为主要内容。学生通过学习句型和对话以及大量口头和笔头训练，达到熟练运用无线电陆空通话的目的。书中采用交互式教学法，注重地面和机上各种场景的交流，并针对所有飞行阶段涉及的常规和非常规场景进行训练。



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# 卓越工程师教育培养计划配套教材

## 总编委会名单

# 卓越工程师教育培养计划配套教材

## ——飞行技术系列编委会名单

PREFACE

# 序言

我国“十二五”发展规划的重点建设目标之一，就是根据国民经济发展对民航业的要求，不断扩充与优化配置航线和飞机等资源。在民航业持续快速发展的同时，必然会使飞行专业技术人才高度匮乏。在《中国民用航空发展第十一个五年规划》中，中国民用航空局对未来 20 年全行业人才需求进行了预计分析，其中，“十二五”期间需增加飞行员 16 500 人。因此，飞行技术人才的培养是推动或阻碍民航发展的关键。

与其他本科专业相比，飞行技术专业的学生除了学习掌握飞行原理、飞机系统、航空动力装置、航空气象、空中领航、机载设备、仪表飞行程序设计、空中交通管制等飞行技术的专业知识外，还需具备一定的管理能力和较高的英语水平。并且，飞行技术专业人才的培养多采用学历教育与职业教育同步实施的模式，要求同时取得学历、学位证书和职业技能证书（飞行驾驶执照）后，才有资格担任民航运输机副驾驶员。

飞行技术人才培养具有专业性强、培养难度大和成本高的特点。伴随着大型民用运输机的生产与发展，必然要求提高飞行员的学历层次。国内设置飞行技术本科专业的高等院校仅有中国民航飞行学院、中国民航大学、北京航空航天大学、南京航空航天大学、上海工程技术大学等几所。而且，培养学士学位飞行技术人才的历史仅 20 多年，尽管积累了一定的培养经验，但适用的专业教材相对较少。

在飞行技术专业的学科建设中，上海工程技术大学飞行学院和航空运输学院秉承服务国家和地区经济建设的宗旨，坚持教学与科研相结合、理论与实践相结合。2010 年，上海工程技术大学飞行技术专业被列为教育部卓越工程师教育培养计划的试点专业，上海工程技术大学被列为教育部卓越工程师教育培养计划的示范单位。为满足飞行技术专业卓越工程师教育培养的需要，上海工程技术大学从事飞行技术专业教学和研究的骨干教师以及航空公司的业务骨干合作编写了“卓越计划”飞行技术专业系列教材。

“卓越计划”飞行技术专业系列教材共 20 本，分别为《运输机飞行仿真技术及应用》、《飞机系统》、《飞机运营管理》、《飞机空气动力学》、《飞机飞行力学》、《航空动力装置》、《空中领航》、《航空气象》、《仪表飞行程序设计原理》、《航空机载电子设备》、《空中交通管理基础》、《飞行运营管理》、《飞行人因工程》、《机组资源管理》、《民航运输机飞行性能与计划》、《飞行人员陆空通话（英文版）》、《飞行专业英语（阅读）》、《飞行专业英语（听力）》、

《飞行基础英语（一）》、《飞行基础英语（二）》等。

系列教材以理论与实践相结合作为编写的理念和原则，具有基础性、系统性、应用性等特点。在借鉴国内外相关文献资料的基础上，坚持加强基础理论，对基本概念、基础知识和基本技能进行详细阐述，能满足飞行技术专业卓越工程师教育培养的教学目标和要求。同时，强调理论联系实际，体现“面向工业界、面向世界、面向未来”的工程教育理念，实践上海工程技术大学建设现代化特色大学的办学思想，凸显飞行技术的专业特色。

系列教材在编写过程中，参阅了大量的中外文参考书籍和文献资料，吸收和借鉴了现有部分教材的优势，参考了航空运输企业的相关材料，在此，对国内外有关作者和企业一并表示衷心的感谢。

受编者水平和时间所限，书中难免有错误和疏漏之处，敬请读者提出宝贵意见，不足之处还请同行不吝赐教。

上海工程技术大学　汪泓

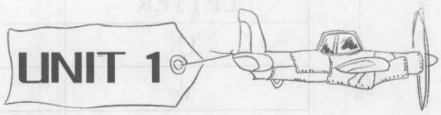
2012 年 1 月

# FOREWORD

Communication error is the biggest causal factor in both level busts and runway incursions in the air traffic world. This document aims to provide Commercial Air Transport (CAT) pilots and other pilots flying Instrument Flight Rules (IFR) within controlled airspace with a quick reference guide to commonly used radiotelephony (RTF) phrases that may be encountered during a routine CAT flight. It also explains some of the rationales behind the use of certain words and phrases to aid understanding and reinforce the need for compliance with standard phraseology.

**The goal is to improve safety by raising RTF standards.** The need for clear and unambiguous communication between pilots and Air Traffic Control (ATC) is vital in assisting the safe and expeditious operation of aircraft. It is important, therefore, that due regard is given to the use of standard words and phrases and that all involved ensure that they maintain the highest professional standards when using RTF. This is especially important when operating within busy sectors with congested frequencies where any time wasted with verbose, nonstandard or ambiguous phrases could lead to flight safety incidents. Phraseology has evolved over time and has been carefully developed to provide maximum clarity and brevity in communications while ensuring that phrases are unambiguous. However, while standard phraseology is available to cover most routine situations, not every conceivable scenario will be catered for and RTF users should be prepared to use plain language when necessary following the principle of keeping phrases clear and concise.

# CONTENTS




# General Operating Procedures

## 1.1 Transmission of letters

The words in the table below shall be used when individual letters are required to be transmitted. The syllables to be emphasized are underlined.

| LETTER | WORD | PRONUNCIATION |
|---|---|---|
| A | Alpha | AL FAH |
| 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 | HOH TELL |
| I | India | IN DEE AH |
| J | Juliett | JEW LEE ETT |
| 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 |

| 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**

In a clearance:

- Each group of 3 letters means a navaid (VOR)
  e.g. DRT, YKD, VYK
- Each group of 4 letters means an airport
  e.g. ZBSJ, ZBAA

### *Practice*

1. Read the following letters, words and phrases

1) A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

| | | | |
|---|---|---|---|
| 2) PILOT | AIRPLANE | SCHOOL | BROWN |
| QUICKLY | JUMPS | OVER | LAZY |
| DOGS | CIJDS | EIMFG | IPLMN |
| DSWSC | ZWQTD | CXEQZ | OJNBV |
| OIUYE | FOX | AZBMV | CUGTO |
| BYESX | DGILP | QSFIW | KLURM |

2. Spell your English name using the phonetic alphabet as quickly as possible.

3. Write down the letters you hear.

## 1.2 Transmission of numbers

In the radiotelephony communications, numbers ought to be transmitted in accordance with ICAO standard pronunciation.

| Numeral or numeral element | Alphabet representation |
|---|---|
| 0 | ZE-RO |
| 1 | WUN |
| 2 | TOO |
| 3 | TREE |
| 4 | FOW-ER |



Continued

| Numeral or numeral element | Alphabet representation |
|---|---|
| 5 | FIFE |
| 6 | SIX |
| 7 | SEV-EN |
| 8 | AIT |
| 9 | NIN-ER |
| . | DAY-SEE-MAL or POINT |
| 100 | HUN-DRED |
| 1000 | TOU-SAND |

**Notes**

1. Combinations of thousands and whole hundreds are 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.

e.g. 76----------SEVEN SIX
2500--------TOO TOUSAND FIFE HUNDRED
35000-------TREE FIFE TOUSAND
45863-------FOWER FIFE AIT SIX TREE

2. Numbers containing a decimal point should be transmitted as "DECIMAL", or "POINT" in American usage.

e.g. 118.30-----WUN WUN AIT DECIMAL TREE
120.76-----WUN TOO ZERO DECIMAL SEVEN SIX

**Altitudes**

Below TA, state each digit of thousands and then the hundreds.

e.g. 15,000 = ONE FIVE THOUSAND
15,400 = ONE FIVE THOUSAND FOUR HUNDRED

Above TL, state Flight Level (FL)

18,000 = FL180

**Time**

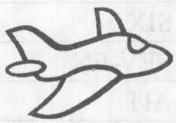
When transmitting time, only the ***minutes*** of the hour are normally required. However, the hour should be included if there is any possibility of confusion.

e.g. 0803------ZERO TREE or ZERO AIT ZERO TREE
1300------WUN TREE ZERO ZERO
2057------FIFE SEVEN or TOO ZERO FIFE SEVEN

Pilot may check the time with the appropriate ATIS unit. Time checks shall be given to the nearest half minute.

e.g. 1155' 18" -------WUN WUN FIFE FIFE AND A HALF
1155' 38"--------WUN WUN FIFE SIX





Fastair 345, request time check.

Fastair 345, time 0611.

**Direction**

In direction transmission, the three digits of direction should be pronounced individually
e.g. 035-----ZERO TREE FIFE
100-----WUN ZERO ZERO
Unit "degree" can be omitted in transmission
Note: we say: "Turn 30 degree left"
"Wind 350 degree 12 knots"

**Speed**

State each digit.
e.g. 250knots = TOO FIFE ZERO KNOTS
M0.82 = Mach NUMBER POINT AIT TOO
450km/h = FOWER FIFE ZERO KILOMETERS PER HOUR
7m/s = SEVEN METERS PER SECOND

**Frequency**

State each individual number, including the decimal point. (Note: last "0" is omitted.)
e.g. 121.45 = WUN TOO WUN DAY-SEE-MAL FOW-ER FIFE
118.30 = WUN WUN AIT DECIMAL TREE

**Altimeter Settings**

State each individual number.
e.g. 29.92 = TWO NINER NINER TWO
1013 = ONE ZERO ONE TREE

**Transponder Codes**

State each digit.
e.g. 3526 = TREE FIFE TOO SIX
6565 = SIX FIFE SIX FIFE KILO HERTZ

## *Practice*

**1. Read the following numbers**

| | | | | |
|---|---|---|---|---|
| 1) | 10 | 45 | 100 | 138 |
| 2) | 2100 | 6000 | 8020 | 12000 |
| 3) | 905 | 30700 | 3000m | 9600m |
| 4) | 10200m | 2500f | 1850f | 35000 |
| 5) | RTOWE | ET96D | EJ083 | NKI986DL3SBG.CSLW7640C |
| 6) | DHLKJ | DMR84 | BFJF4 | 39501J84KB5NDI398BB47VN |
| 7) | VCJDS | DK02E | 30K9E | 98602849SM8DNE93MS9S3ND |
| 8) | ZCSET | 472AG | 30LH4 | 3S93R6F09GE63VKW839EW |
| 9) | SFH7R | 503KF | F973MK | 393JR0R74ND9PE04DO84YRE |

**2. Practice in pairs**

A: PIL: Hong Kong departure, TUR, reaching 7000 feet.
CTL: TUR, climb 13000 feet and contact 124.3.
PIL: Climbing 13000 feet, 124.3, TUR.

| | | | |
|---|---|---|---|
| ----SYB | 6000 | 10000 | 231.9 |
| ----WNV | 8000 | FL180 | 123.25 |

B: PIL: ***London*** Control, ***GUIOT*** , ***FL350*** , next report ***BHJ 10.***
CTL: ***GUIOT,*** maintain FL350, report BHJ 10, contact D Control ***123.1.***
PIL: Maintain FL350, report BHJ10, D Control 123.1, GUIOT.

| | | | | | | |
|---|---|---|---|---|---|---|
| - | Frankfurt | COACT | FL170 | TIR | 45 | 132.21 |
| - | Seattle | LATIC | 13000FT | ERW | 24 | 124.25 |
| - | Montreal | TNODP | FL320 | FOP | 46 | 119.1 |
| - | Vancouver | DIKTU | 10000M | NMK | 34 | 134.2 |
| - | Ottawa | WITYO | FL180 | XFT | 53 | 121.32 |
| - | Toronto | JAITU | FL210 | GHT | 12 | 128.9 |
| - | Bangkok | GLKIR | 9600M | HVX | 05 | 118.4 |
| - | Manila | SHIRC | 10800M | MKI | 45 | 127.5 |
| - | Nagoya | IEHOB | 10200M | DAE | 25 | 133.4 |
| - | Osaka | DRAWI | FL280 | BHD | 55 | 112.5 |
| - | Los Angeles | KSCBY | FL330 | SGH | 42 | 132.8 |

# 1.3 Standard words and phrases

**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, and no answer is normally expected.

**CHANGING TO**

I intend to call … (unit) on ... (frequency).

**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; ignore.

**GO AHEAD**

Proceed with your message. The phrase "GO AHEAD" is not normally used in surface movement communications.

**HOLD SHORT**

Stop before reaching the specified location. Note: Only used in limited circumstances where no defined point exists (e.g. where there is no suitably located holding point), or to reinforce a clearance limit.

**HOW DO YOU READ?**

What is the readability of my transmission?

**I SAY AGAIN**

I repeat for clarity or emphasis.



**MONITOR**

Listen or on (frequency).

**NEGATIVE**

No *or* Permission not granted *or* That is not correct.

**OUT**

This exchange of transmissions is ended and no response is expected. Note: The word "OUT" is not normally used in VHF communications.

**OVER**

My transmission is ended and I expect a response from you. Note: The word "OVER" is not normally used in VHF communications.

**READ BACK**

Report all, or the specified part, of this message back to me exactly as received.

**RECLEARED**

A change has been made to your last clearance and this new clearance supersedes your previous clearance or part thereof.

**REPORT**

Pass me the following information.

**REQUEST**

I should like to know… *or* I wish to obtain…

**ROGER**

I have received all of your last transmission. Note: Under no circumstances to be used in reply to a question requiring "READ BACK" or a direct answer in the affirmative (AFFIRM) or negative (NEGATIVE).

**SAY AGAIN**

Repeat all, or the following part, of your last transmission.

**SPEAK SLOWER**

Reduce your rate of speech.

**STANDBY**

Wait and I will call you.

**UNABLE**

I cannot comply with your request, instruction or clearance. Unable is normally followed by a reason.

**VERIFY**

Check and confirm with originator.

**WILCO**

Abbreviation for "will comply." I understand your message and will comply with it.

**WORDS TWICE**

As a request: Communication is difficult. Please send every word or group of words twice.

As information: Since communication is difficult, every word or group of words in this