



民航英语特色课程系列教材

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管制英语阅读

(第2版)

Aviation English for Air Traffic Control

Reading Course

(2nd Edition)

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第 2 版前言

《管制英语阅读》出版至今已有五个年头，经历了五届师生的检验，该书教学理念的体现、内容涉及面、资料权威性以及语言的输入与输出等方面获得了师生的一致好评。但本书还是存在一些不尽如人意的地方，如内容过多、语言相对较难、内容安排不够精练等。鉴于此，教材编写组广泛征求师生意见，几经修订，耗时一年，最终形成《管制英语阅读》（第 2 版），新版在以下方面做了相应的调整：

一、内容篇幅与结构调整

《管制英语阅读》（第 2 版）将原来 8 个单元 20 课调整为 7 个单元 15 课。调整后内容结构更合理、篇幅更精简，既满足学期行课时数要求（16 周行课），也便于教师安排教学内容。原 Unit One 与 Unit Eight 合并，放在第 2 版的第一单元 Aircraft and History，Lesson 1 为 History of Aviation，基本保留原有内容；Lesson 2 Aircraft General 将原第 8 章内容合为一课，介绍飞机的主要结构与系统，使学生对飞机有个整体了解，并掌握这部分的重点词汇和表达。原 Unit Seven Airport 调整到第 2 版的 Unit Two，目的在于介绍与管制工作息息相关的环境及设备。Lesson 3 Components of Airport 介绍机场的各个组成部分；Lesson 4 Airport Operation 介绍机场运行。原 Unit Two 到 Unit Four 在第 2 版中基本保持原有结构，只是内容上有增减，修订后的内容与本单元的话题结合得更紧密。原 Unit Five Navigation 3 课的内容调整为 2 课，重点介绍 Conventional Navigation 与 Modern Navigation，将 GPS 与 PBN 融合在 Modern Navigation 里。原 Unit Six Surveillance 也从 3 课调整为 2 课，保留 ADS-B，将 ATC Surveillance System 与 Radar 整合为 ATC Surveillance System，重点介绍 PAR 与 SSR。

二、语言及句子结构调整

《管制英语阅读》（第 2 版）对原来一些摘自规章、文件的语句结构与词汇使用都做了修改。新版简化句子结构，少用复合句或者将长且难的句子简化为几个简单句；除介绍必要的专业词汇外，其他地方尽量避开生僻词汇。《管制英语阅读》（第 2 版）比第一版可读性更强，将减少学习者由于语言问题引起的焦虑和畏难情绪。

三、练习形式与内容调整

《管制英语阅读》（第 2 版）课后练习也做了相应改变。练习 II 增加了将各术语或短语翻译成中文的要求。练习 III 由自己看图描述变成分组练习，因此增加了 3 个与图片相关的问题。练习 IV 的朗读练习主要选自课文里比较重要的段落。练习 V 与练习 VI 合并，

选出本课重点词汇，给出 7~10 个句子，学习者根据上下文选词填空。练习 VII Story Retelling 中的素材全部改编自航空史上的各类空难事故，字数限制在 120~160 之间，用词简单、故事有逻辑性，便于复述。练习 VIII 则调整为 Supplementary Reading，后附 3~5 个问题及生词表。

修改后的练习更注重语言的输入与输出，着重点落在学习者对语言的掌握上。

四、编写组成员调整

《管制英语阅读》（第 2 版）编写组成员有所调整，修订工作主要由长期担任该门课程教学工作的教师完成，另外增加了有管制一线经验的管制教师参与。教材由中国民航管制员英语等级测试题库专家梁均荣最后审定。修订工作具体分工如下：本书框架、结构篇章、统稿及审校由主编郑丽和罗军完成；唐其敏负责收集整理该书中使用的问题及修改建议；徐舒、黄登娴负责编写第一、二章；汪洋负责编写第三、四、五章；吴晓亮、刘武负责编写第六、七章；郑潇雨负责文字编辑及部分审校工作。

由于时间仓促，编者水平有限，书中疏漏之处在所难免，敬请各位专家学者以及读者斧正！好的教材必须经过反复修订打磨，编写组将会根据您的意见和建议，继续努力，与时俱进，编写出经典教材。

本书编写组

2018年6月

前 言

对于飞行员和管制员来讲,无线电陆空通话语言不仅是交流和空地对话的工具,而且是保证航空安全的重要因素之一。

早在1998年,针对飞行人员和管制人员语言能力不足而造成的飞行事故,国际民航组织第32届大会在A32-16决议中就敦促ICAO理事会对ICAO附件1和附件10进行修订,要求参与国际运行的飞行人员和管制员应该具有足够的保证航空安全的英语通讯能力。2003年3月,ICAO理事会推出了针对通讯语言能力的标准和建议措施(SARPs),并对与语言熟练程度相关的附件1、6、10、11和PANS-ATM(空中航行服务程序—空管)进行了修订。2004年,国际民航组织出版了《ICAO语言熟练程度要求执行手册》(ICAO DOC 9835),对与语言熟练程度要求相关的培训和测试做出了具体要求。随后,包括中国在内的很多成员国开始开发研制本国的测试系统或同时为其他国家展开测试服务。

2007年,国际民航组织大会通过了A36-11决议《用于无线电通讯的英语语言熟练程度》,要求各成员国采用全球统一的语言测试标准。在此决议的基础上,国际民航组织先后发布了《促进全球统一化的语言测验标准》(318号通告,2009年6月)和《航空英语培训方案指导原则》(323号通告,2010年)。《促进全球统一化的语言测验标准》要求各成员国根据国际民航组织的语言能力要求处理对候选人的测验事宜,并就航空语言测验方案的制作或选择提供建议的标准;《航空英语培训方案指导原则》是应各主管当局、运营人和服务提供者对制定英语语言培训更详细的指导的请求而与国际民用航空英语协会(ICAEA)联手制作的,以便能有效地实施附件1《人员执照的颁发》中所载的语言能力要求。2010年9月,国际民航组织出版了《ICAO语言熟练程度要求执行手册》(ICAO DOC 9835,第二版),对原有的有关民航语言测试和培训等内容做了较大的修改,对标准和原则做了更加细致的说明,并结合了318号和323号通告对测试和培训的操作标准。

针对国际民航组织的标准,中国民用航空局于2006年启动了针对飞行人员的英语等级执照签注考试,2007年开始PEPEC考试系统的立项和研制,并于2008年开始使用具有中国民航自主知识产权的PEPEC考试系统。中国民航局空中交通管理局于2005年委托中国民航飞行学院开始进行中国民航空管人员英语等级考试系统(AETS)的开发工作,并于2007年12月开始AETS的考试。

作为世界上最大的航空训练机构,中国民航飞行学院是中国民航培养飞行员和空中交通管制员的主力院校。中国民航飞行学院的毕业生不仅要满足法规所规定的执照签注要求,还要满足国际民航组织所要求的国际运行所需要的语言熟练程度执行标准。中国民航飞行员和管制员语言能力的提高不仅是保证安全的需要,同时也是中国民航从民航大国迈向民航强国所必须完成的任务。

中国民航飞行学院外国语学院就是在这样的背景下提出了“民航英语特色课程系列教

材”的编写。学院和民航局给予了大力支持，该系列教材的建设成为我校“以英语教学改革为龙头，推动全面教学改革”的教改项目和民航局资助的“国际民航组织英语语言课程建设”项目。

本系列教材共六本：《飞行英语阅读》（李明良主编）《飞行英语听说》（陈方主编）《飞行英语口语》（陈方主编）《飞行英语无线电陆空通话高级教程》（申卫华主编）《管制英语阅读》（郑丽主编）《管制英语无线电通话》（何均洪主编）。该系列教材可用于飞行技术专业 and 空管专业讲授民航英语的高段课程，也可作为航空公司或空中交通管理局培训部的培训教材。

民航英语特色课程系列教材旨在提高飞行技术专业学生和空管专业学生应用英语语言的综合能力、使用英语进行通讯的能力，以及针对一些特殊情况的处理能力。本系列教材从六个方面对学员进行语言能力的培养（语言、结构、词汇、理解、流利程度、应对能力），全面提高学员的交际能力和应用能力。教材的编写全面贯彻国际民航组织（ICAO）新语言标准。

民航英语特色课程系列教材中所编制的情景的主要依据是国际民航组织《语言熟练程度要求执行手册》（ICAO DOC 9835, 2010）、中国民航飞行人员英语等级考试（PEPEC）大纲和民航管制员英语考试（AETS）大纲中所列出的事件和范围，以及近年来世界范围内一些典型的航空事故和事件。

民航英语特色课程系列教材项目总负责人为中国民航飞行学院陈布科副校长，参与编写人员有外国语学院教师、空管学院教师、继续教育学院教师、空乘学院教师、分院民航英语教师、飞行教员、航空公司飞行员，同时教材由资深教师、资深飞行员和我院外籍教师审定。

民航英语特色课程系列教材编写组

2013年4月

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Unit One

Aircraft and History

Lesson 1

History of Aviation

Pre-reading questions

1. How much do you know about the history of aviation?
2. Do you know how balloons, kites and gliders fly in the sky?
3. How much do you know about the Wright Brothers?

History of Aviation

The history of aviation has extended over more than two thousand years from the earliest attempts in kites and gliders to powered heavier-than-air, *supersonic* and *hypersonic* flight.

The first form of man-made flying objects were kites, which were used by the Chinese manned for *aerial* observation and to test winds for sailing, and unmanned as a signaling device and as a toy. It was not introduced to the West until the 13th century and played an important role in testing *aerodynamics* and flight stability in the 19th century.

During the 1500s, Leonardo da Vinci filled pages of his notebooks with sketches of proposed flying machines, but most of his ideas were *flawed* because he clung to the idea of birdlike wings.

With the efforts to analyze the *atmosphere* in the 17th and 18th century, gases such as *hydrogen* were discovered which in turn led to the invention of hydrogen balloons. Various theories in *mechanics* raised by physicists during the same period of time, notably fluid dynamics and Newton's laws of motion, led to the foundation of modern aerodynamics. In 1783, the first manned hot air balloon, crafted by Joseph and Etienne Montgolfier^①, flew for 23 minutes.

The "Father of Aerial Navigation", Sir George Cayley^② discovered the basic principles on which the modern science of *aeronautics* is founded, built what is recognized as the first successful flying model, and tested the first full-size man-carrying airplane.

The Wright brothers^③ designed and tested numerous kite and glider models from 1900 to 1902. Later, the Wrights constructed a *wind tunnel* and created a number of sophisticated devices to measure *lift* and *drag* on the 200 wing designs they tested. The Wrights finally found satisfaction with their third glider as it outperformed its *predecessors* and *rigorous* testing contributed to the field of *aeronautical* engineering. The Wrights were the first to seriously study the existing power and control problems. They discovered the solution to the control problem by developing *wing warping* for roll control, yaw control, and a *steerable* rudder. The Wrights made the first sustained, controlled, powered heavier-than-air manned flight on December 17, 1903. The age of flight had arrived.

But after their successful flying test, the airplanes were not used in civil purposes but in military. During World War I, heavier-than-air powered aircraft had become practical for *reconnaissance*, *artillery* spotting and even attacks against ground positions. This period saw major use of planes in offensive, defensive and reconnaissance capabilities. Radiotelephones were also being explored on airplanes, as communication between pilots and ground commander grew more and more important.

The years between World War I and World War II saw great advancements in aircraft technology, starting the modern era of passenger airline service. After the World War I, the research of the airplanes continued and aircraft began to transport people and cargo as designs grew larger and more reliable. Aeroplanes evolved from low-powered *biplanes* made from wood and fabric to sleek, high-powered *monoplanes* made of *aluminum*. The age of the great *rigid airships* came and went.

World War II saw a drastic increase in the pace of aircraft development and production. All countries involved in the war stepped up the development and production of aircraft and flight based weapon delivery systems, such as the first long range bomber. New technologies like radar also allowed more coordinated and controlled deployment of air defense. Not only airplanes, but also helicopters saw rapid development in the Second World War.

After World War II, commercial aviation grew rapidly, using mostly ex-military aircraft to transport people and cargo. This growth was *accelerated* by the glut of heavy and super-heavy bomber airframes like the B-29 and Lancaster that could be *converted* into commercial aircraft. The first commercial jet airliner to fly was the British de Havilland DH106 Comet^④. Despite a technical achievement, the plane suffered a series of highly public failures, as the shape of the windows led to *cracks* due to *metal fatigue*. The fatigue was caused by cycles of *pressurization* and *depressurization* of the cabin, and eventually led to *catastrophic* failure of the plane's *fuselage*. By the time the problems were overcome, other jet airliner designs had already taken to the skies.

The last quarter of the 20th century saw a slowing of the pace of advancement. No longer was revolutionary progress made in flight speed, distance and technology. This part of the century saw the steady improvement of flight *avionics*, and a few minor milestones in flight progress.

In commercial aviation, the early 21st century saw the end of an era with the retirement of Concorde. Only commercially viable in niche markets, the planes were required to fly over the oceans if they wanted to break the sound barrier. Concorde was fuel hungry and could carry a limited amount of passengers due to its highly streamlined design.

In the beginning of the 21st century, subsonic military aviation focused on eliminating the pilot in favor of remotely operated or completely autonomous vehicles. In April 2001, the unmanned aircraft Global Hawk flew from Edwards AFB in the US to Australia non-stop and unrefuelled. This is the longest point-to-point flight ever undertaken by an unmanned aircraft, and took 23 hours and 23 minutes. In October 2003, the first totally autonomous flight across the Atlantic by a computer-controlled model aircraft occurred. (883 words)

NEW WORDS

accelerate	/ək'seləreɪt/	vt.	使加速，加快
aerial	/'eəriəl/	adj.	空中的
aerodynamics	/,eərə(ʊ)daɪ'næmɪks/	n.	空气动力学
aeronautical	/,eərə'nɔ:tɪkl/	adj.	航空(学)的
aeronautics	/eərə'nɔ:tɪks/	n.	航空学
aluminum	/ə'lʊ:mɪnəm/	n.	铝
artillery	/ɑ:'tɪləri/	n.	火炮；大炮
atmosphere	/'ætməsfiə/	n.	大气；空气
autonomous	/ɔ:'tɒnəməs/	adj.	自主的
avionics	/eɪvɪ'ɒnɪks/	n.	航空电子设备
barrier	/'bæriə/	n.	障碍
biplane	/'baɪpleɪn/	n.	双翼飞机
catastrophic	/kætə'strɒfɪk/	adj.	大灾难的
convert	/kən'vɜ:t/	vt.	使转变
crack	/kræk/	n.	裂纹；裂缝
depressurization	/di'preʃəɪrɪ'zeɪʃən/	n.	释压
drag	/dræg/	n.	阻力
flawed	/flɒd/	adj.	有缺陷的
fuselage	/'fju:zələ:ʒ/	n.	机身

hydrogen	/ˈhaɪdrədʒən/	<i>n.</i>	(化学元素) 氢
hypersonic	/ˈhaɪpəˈsɒnɪk/	<i>adj.</i>	特超音速的
lift	/lɪft/	<i>n.</i>	升力
mechanics	/mɪˈkæniks/	<i>n.</i>	力学
monoplane	/ˈmɒnəpleɪn/	<i>n.</i>	单翼机
predecessor	/ˈpriːdɪsəsə/	<i>n.</i>	前辈
pressurization	/ˌpreʃərəɪˈzeɪʃən/	<i>n.</i>	压力
reconnaissance	/rɪˈkɒnɪs(ə)ns/	<i>n.</i>	侦察
rigorous	/ˈrɪɡərəs/	<i>adj.</i>	精确的
steerable	/ˈstiərəbl/	<i>adj.</i>	可操纵的
supersonic	/ˌsuːpəˈsɒnɪk/	<i>adj.</i>	超音速的

USEFUL EXPRESSIONS

metal fatigue	金属疲劳
niche market	瞄准机会的市场
rigid airship	硬式飞船
streamlined design	流线型设计
wind tunnel	风洞
wind warping	翼扭曲

ABBREVIATIONS

AFB	Air Force Base	(美) 空军基地
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NOTES

① Joseph-Michel Montgolfier (26 August 1740–26 June 1810) and Jacques-Étienne Montgolfier (6 January 1745–2 August 1799) were paper manufacturers from Annonay, in Ardèche, France best known as inventors of the Montgolfière-style hot air balloon, globe aérostatique. They launched the first piloted ascent, carrying Étienne. Joseph-Michel also invented the self-acting hydraulic ram (1796), Jacques-Étienne founded the first paper-making vocational school and the brothers invented a process to manufacture transparent paper.

② Sir George Cayley, 6th Baronet (27 December 1773–15 December 1857) was an English engineer, inventor, and aviator. He is one of the most important people in the history of aeronautics. Many consider him to be the first true scientific aerial investigator and the first person to understand the underlying principles and forces of flight.

③ The Wright brothers, Orville (August 19, 1871–January 30, 1948) and Wilbur (April 16, 1867–May 30, 1912), were two American brothers, inventors, and aviation pioneers who were credited with inventing and building the world's first successful airplane and making the first controlled, powered and sustained heavier-than-air human flight, on December 17, 1903.

④ The de Havilland DH 106 Comet was the world's first commercial jetliner. Developed and manufactured by de Havilland at its Hatfield Aerodrome in Hertfordshire, United Kingdom, the Comet 1 prototype first flew in 1949. It featured an aerodynamically clean design with four de Havilland Ghost turbojet engines embedded in the wings, a pressurised cabin, and large square windows. For the era, it offered a relatively quiet, comfortable passenger cabin and was commercially promising at its debut in 1952.

EXERCISES

Comprehension of Text

I. Answer the following questions.

1. How long has the history of aviation lasted?
2. What contributions did Chinese kites make to the Western world in aviation?
3. Did Leonardo da Vinci realize his dream of flight? Why?
4. When was hydrogen balloon invented?
5. What did the Wright Brothers contribute to the first sustained, controlled, powered heavier-than-air manned aircraft?
6. Why were there great advancements in aircraft technology between World War I and World War II?
7. What were the advancements achieved during the two World Wars?
8. What problems did the ex-military aircraft encounter after World War II?
9. Why did commercial aviation grow rapidly after World War II?
10. What happened in the aviation field in the beginning of the 21st century?

II. State the following items in your own words, and translate them into Chinese.

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|------------------|------------------|
| 1. lift and drag | 6. wind tunnel |
| 2. aerodynamics | 7. metal fatigue |

- 3. supersonic
- 4. aeronautics
- 5. fuselage

- 8. biplane
- 9. monoplane
- 10. avionics

III. Describe the following pictures in your own words.

Work in pairs and discuss the questions:

- 1. What will the commercial passenger aircraft be like in the future?
- 2. What kinds of equipment will be used by ATC to control flight in the air?
- 3. What do you think aviation development will like in the future?



Figure 1.1



Figure 1.2