

Unit One

Air Crew

Lesson 1

Air Crew

Preview

The pilot, a vital asset to the survival of any airlines, needs to know what elements constitute a qualified pilot. Text A serves to offer some fundamental knowledge concerning duties and awareness of captains, F/Os, PICs, student pilots, and flight instructors. Text B is centered on the job of cabin crew.

Text A

Warming-up Activities

Picture Description

Please describe the following picture and be prepared to answer some questions.

Relevant Questions



1. Which airline will you work with after graduation?
2. Why do you want to be a pilot?
3. What should you often do to be a good pilot?
4. What is your long-term plan to be a qualified captain?

Captain and F/O Duties

There are usually 2-3 flight crew members and 1-3 flight attendants aboard an airliner. In the flight deck are the Captain, Co-pilot and flight engineer. When there are only two flight crew members, to reduce costs there's no flight engineer. The Captain is the Pilot in Command (PIC) who has the final authority of all decisions and all responsibilities rest on his shoulders. The Co-pilot assists the Captain and does things like calculating fuel consumption, weight and balance, navigation, etc. He is Second in Command (SIC). The Flight Engineer helps reduce the workload of the Captain and Co-pilot. Some of his duties may include calculating fuel consumption rate, weight and balance, and communicating with the cabin crew.

The Pilot in Command (PIC) of an aircraft is the person aboard the aircraft who is ultimately responsible for its operation and safety during flight. According to ICAO, the Pilot in Command is responsible for operating an airplane in accordance with rules of the air, and has final authority as to the disposition of the airplane while in command. This would be the "captain" in a typical two- or three-pilot flight crew, or "pilot" if there is only one certified and qualified pilot at the controls of an aircraft. The PIC must be certified to operate the aircraft for the specific flight and flight conditions, but need not be actually controlling the

aircraft at any given moment. The PIC is the person legally in charge of the aircraft and its flight safety and operation, and would normally be the primary person liable for a violation of any flight rule.

According to FAA, the PIC is responsible for the operation and safety of the aircraft during flight time, which means the total time from the moment an aircraft first moves under its own power for the purpose of taking off until the moment it comes to rest at the end of the flight. This would normally include taxiing, which involves the ground operation to and from the runway. But it is legal for a mechanic or other person to taxi an aircraft on the ground for the purpose of moving it from one spot to another without a pilot's license.

As the FAA puts it, the pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft. In an in-flight emergency requiring immediate action, the pilot in command may deviate from any rule of this part to the extent required to meet that emergency. Each pilot in command who deviates from a rule of this section shall, upon the request of the administrator, send a written report of that deviation to the administrator.

Especially interesting is FAR 91.3, which empowers the PIC to override any other regulation in an emergency, to take the safest course of action at his/her sole discretion. It essentially gives the PIC the final authority in any situation involving the safety of a flight, irrespective of any other laws or regulations. In commercial aviation, the first officer is the second pilot (or co-pilot) of an aircraft. The first officer is second-in-command of the aircraft. In the event of incapacitation of the captain, the first officer will take on the duties of the PIC. Control of the aircraft is normally shared equally between the first officer and the captain, with one pilot being the "Pilot Flying" (PF), and the other the "Pilot Not Flying" (PNF), or "Pilot Monitoring" (PM), for each flight. Even when the first officer is the flying pilot, however, the captain remains ultimately responsible for the aircraft, its passengers, and the crew. In typical day-to-day operations, the essential job tasks remain fairly equal.

Because many airlines promote by seniority only within their own company, the first officer may at times have more flight experience than the captain, in that they may have experience from other airlines or the military. Traditionally, the first officer sits on the right-hand side of a fixed-wing aircraft and the left-hand side of a helicopter. (686 words)

NEW WORDS

crew	/□▢▣/	<i>n.</i>	人员, 组员
airliner	/▤▥▦▧▨▩/	<i>n.</i>	公司班机

flight crew 机组人员
flight attendant 空中乘务员
flight engineer 飞行机械师
Pilot in Command 责任机长

Pilot Flying 操纵飞机飞行员
Pilot Not Flying 未操纵飞机的飞行员
Pilot Monitoring 监控飞行员
First Officer 副驾驶

NOTES

ICAO	International Civil Aviation Organization	国际民航组织
FAA	Federal Aviation Administration	联邦航空局（美国）
FAR	Federal Aviation Regulations	《联邦航空条例》（美国）

EXERCISES

Comprehension of Text A

I. Describe the given aviation terms from Text A in English.

- | | |
|-------------------|----------------|
| 1. flight deck | 2. PIC |
| 3. incapacitation | 4. flight time |
| 5. captain | 6. PNF |

II. Answer the following questions after you have read Text A.

1. What crew members are included in an airplane?
2. What are the duties for different crew members?
3. In what condition will the co-pilot take on the responsibility of commanding an aircraft?
4. Can you tell the differences between PIC, captain and pilot?
5. According to FAA, what are the responsibility and authority of PIC?
6. According to ICAO, what is the Pilot in Command responsible for?
7. Why does FAR give final authority to PIC in an emergency?
8. Should PF always be the Pilot in Command? Give your reasons.
9. Why do some First Officers have more experience than their captains? Can you give an example?
10. Where does the first officer normally sit in a helicopter?

Reading Aloud

III. Read the following paragraph aloud until you can say it in a natural way from your memory.

Learning to fly from a flight instructor (飞行教员) is one of the most exciting and costly opportunities that student pilots can have. He will be the most influential person in our careers to fly.

Instructors are life savers. Making a mistake in a plane can lead to a lot of problems unless the instructor is qualified. Often, the quality of a pilot, especially in the early stages, is a reflection of the quality of the person who has taught them. During flight training, the instructor will save us and the aircraft from many of mistakes, which are possibly fatal. Therefore, an instructor is supposed to have appropriate experience and knows how to correct the problem, or in extreme cases, to take over and save both of our lives.

Good instructors make great pilots. It is important to have a strict instructor who will work with us in order to reach perfection. A patient instructor can make young pilots feel confident in their abilities. Also, teaching technique is very important. Many instructors prefer to teach in briefing rooms before taking students up into the air. Others bring students up in the air right at the beginning and teach them how to fly by having them fly. (205 words)

Vocabulary

IV. Complete the following short passage by filling the blanks with the words given in the box.

optimal airplanes while transport regulations flight
turns functioning in-flight communicate

Airline Pilots

Airline pilots 1_____ passengers and cargo (货物) via commercial aircraft. They are responsible for various 2_____ and non-flying duties. Airline pilots are responsible for a variety of tasks related to the safe operation of the 3_____. they are responsible for flying.

Prior to takeoff, airline pilots are responsible for verifying that the instruments (仪表), controls, engines, and other flight systems are 4_____ the way they should. Monitoring continues throughout the 5_____, and changes are requested and implemented as needed 6_____ en route (航路上).

On commercial flights, there are two pilots at the helm of the airplane. Each flight is staffed by a captain and a first officer, and the two pilots typically take 7_____ flying different legs (航段) of each trip. They 8_____ with flight dispatchers (签派人员), air traffic controllers, and meteorologists to select the best route (航线) for their trip, including

determining the 9 _____ altitude and speed for travel.

Once a flight lands, airline pilots are required to complete records about their journeys in compliance with the 10 _____ of both the company for which they work and the Federal Aviation Administration (FAA).

Reading for More

V. Read the following passage and answer the given questions briefly.

To Be a Student Pilot

The first step for you to become a pilot is to get your FAA Medical Certificate prior to starting any flight training. This way, you'll know for sure that your physical condition meets the FAA standards. When you take the physical examination from a FAA Designated Medical Examiner in your area, we recommend that you apply for a Student Pilot / 3rd Class Medical Certificate, since this is the minimum required prior to soloing (单飞).

In order to hold a Student Pilot Certificate, you must successfully complete the necessary ground and flight training covering the required aeronautical (航空) and piloting (驾驶) skills necessary for safe solo flight. You must pass the Pre-Solo Written Test, given by your instructor, prior to your first solo flight. To solo usually takes between 10-20 hours of flight instruction. Once you and your instructor have determined that you're ready, you will be given the opportunity to take the aircraft for your first solo flight! This will undoubtedly be one of the most memorable days you will ever experience!

After your first solo, you'll still continue your flight instruction with your instructor on a regular basis. But now you will complement that instruction by practicing maneuvers on your own to reinforce what you have learned and to gain skills, judgment, and confidence to operate an airplane all by yourself. This solo time is necessary towards the flight experience requirements for your Private Pilot Certificate (私人驾驶执照). As a Student Pilot, you are restricted from carrying passengers, and can only fly in the area or to the airports that your instructor has authorized. (263 words)

Question 1 Why should a pilot have a Medical Certificate before flight training?

Question 2 To hold a Student Pilot Certificate, what tasks are student pilots required to accomplish?

Question 3 According to the passage, what should you do after the first solo?

VI. In this section, there are two passages. After you have read the two passages, there are five questions followed by four choices marked A, B, C and D. Decide which one is the most appropriate answer.

Passage One

Positive Transfer of Control

During flight training, there must always be a clear understanding between the student and flight instructor of who has control of the aircraft. Prior to any dual training flight, a briefing (讲评) should be made that includes the procedure for the exchange of flight controls. The following three-step process for the exchange of flight controls is highly recommended.

When a flight instructor wishes the student to take control of the aircraft, he/she should say to the student, "You have the flight controls." The student should acknowledge immediately by saying, "I have the flight controls." The flight instructor confirms by again saying, "You have the flight controls." Part of the procedure should be a visual check (目视检查) to ensure that the other person actually has the flight controls. When returning the controls to the flight instructor, the student should follow the same procedure the instructor used when giving control to the student. The student should stay on the controls until the instructor says, "I have the flight controls." There should never be any doubt as to who is flying the airplane at any one time. Numerous accidents have occurred due to a lack of communication or misunderstanding as to who actually had control of the aircraft, particularly between students and flight instructors. Establishing the above procedure during initial training (初始训练) will ensure the formation of a very good habit pattern. (226 words)

1. What does the first sentence of the first paragraph mean?
 - A. Control of the airplane can never be neglected.
 - B. The three steps for exchange of control should be stressed.
 - C. It is the instructor who always has the final saying in training.
 - D. Preflight briefing is an integral part of any flight training.
2. Besides saying "You have the flight controls", the instructor should _____.
 - A. make a briefing
 - B. acknowledge the transfer
 - C. make a visual check
 - D. keep monitoring systems
3. When receiving the transfer of control, the student pilot should _____.
 - A. acknowledge and take control
 - B. make a visual check
 - C. check the flight controls
 - D. confirm the check procedure
4. The purpose of the three-step procedure is to ensure the aircraft _____.
 - A. is controlled by two pilots
 - B. is controlled at any one time
 - C. is following the same procedure
 - D. is undoubtedly flying on time
5. "A very good habit pattern" refers to _____.
 - A. the control of the airplane
 - B. a specific flight progress
 - C. the lack of communication
 - D. the three-step procedure

Passage Two

Collision Avoidance Awareness

All pilots must be alert to the potential for midair collision and near midair collisions. The general operating and flight rules in 14 CFR part 91 set forth the concept of “See and Avoid”. This concept requires that vigilance (警惕) shall be maintained at all times by each person operating an aircraft, regardless of whether the operation is conducted under instrument flight rules (仪表飞行规则) or visual flight rules (目视飞行规则). Pilots should also keep in mind their responsibility for continuously maintaining a careful lookout regardless of the type of aircraft being flown and the purpose of the flight. Most midair collision accidents and reported near midair collision incidents occur in good VFR weather conditions and during the hours of daylight. Most of these accident/incidents occur within 5 miles of an airport and/or near navigation aids (助航台).

The “See and Avoid” concept relies on knowledge of the limitations of the human eye, and the use of proper visual scanning (扫视) techniques to help compensate for these limitations. The importance of, and the proper techniques for, visual scanning should be taught to a student pilot at the very beginning of flight training. The competent flight instructor should be familiar with the visual scanning and collision avoidance information, pilots’ role in collision avoidance, and the Aeronautical Information Manual (航空情报手册).

There are many different types of clearing procedures. Most are centered around the use of clearing turns. The essential idea of the clearing turn is to be certain that the next maneuver (机动) is not going to proceed into another airplane’s flight path (飞行轨迹). Some pilot training programs have hard and fast rules, such as requiring two 90° turns in opposite directions before executing any training maneuver. Other types of clearing procedures may be developed by individual flight instructors. Whatever the preferred method, the flight instructor should teach the beginning student an effective clearing procedure and insist on its use. The student pilot should execute the appropriate clearing procedure before all turns and before executing any training maneuver. Proper clearing procedures, combined with proper visual scanning techniques, are the most effective strategy for collision avoidance. (345 words)

6. From this passage the word “clearing” can be replaced by _____.
A. avoiding B. cleaning C. limiting D. alerting
7. Most midair collision occurred in good weather conditions because _____.
A. pilots are not familiar with instrument flight
B. pilots ignore the airplanes’ flight characteristics
C. pilots do not keep looking out in the air

- D. pilots are unaware of the purpose of their flights
8. A flight instructor should teach students to learn visual scanning techniques to _____.
A. enrich their knowledge of instrument flight
B. know the roles of student pilots
C. compensate for human eye's limitation
D. ensure normal operation of instruments
9. To make a clearing turn, it is important not to _____.
A. follow hard training programs B. obey the rules of avoiding traffic
C. execute another training maneuver D. invade another airplane's flight path
10. From the end of the passage, it seems obvious that _____.
A. flight instructors should get well along with student pilots
B. clearing procedures go with proper visual scanning
C. effective strategy for collision avoidance is not easy to acquire
D. "See and Avoid" concept relies only on students themselves

VII. Read the following passage and retell it in your own words.

Role of the Flight Instructor

The flight instructor is the **cornerstone**^[1] of aviation safety. The FAA [1] 基石 has adopted an operational training concept that places the full responsibility for student training on the authorized flight instructor. In this role, the instructor assumes the total responsibility for training the student pilot in all the knowledge areas and skills necessary to operate safely and competently as a **certificated**^[2] pilot in the National Airspace System. This training will [2] 持照的 include airmanship skills, pilot judgment and decision making, and accepted good operating practices.

An FAA certificated flight instructor has to meet broad flying experience requirements, pass knowledge and practical tests, and demonstrate the ability to apply recommended teaching techniques before being certificated. In addition, the flight instructor's certificate must be renewed every 24 months by showing continued success in training pilots, or by satisfactorily completing a flight instructor's refresher course or a practical test designed to upgrade **aeronautical**^[3] knowledge, pilot [3] 航空的 proficiency, and teaching techniques.

A pilot training program is dependent on the quality of the ground and

flight instruction the student pilot receives. A good flight instructor will have a thorough understanding of the learning process, knowledge of the fundamentals^[4] of teaching, and the ability to communicate effectively with [4] 基础 the student pilot.

A good flight instructor will use a **syllabus**^[5] and insist on correct [5] 教学大纲 techniques and procedures from the beginning of training so that the student will develop proper habit patterns. The syllabus should embody the “building block” method of instruction, in which the student progresses from the known to the unknown. The course of instruction should be laid out so that each new maneuver embodies the principles involved in the performance of those previously undertaken. Consequently, through each new subject introduced, the student not only learns a new principle or technique, but broadens his/her application of those previously learned and has his/her **deficiencies**^[6] in the previous maneuvers emphasized. [6] 缺陷

The flying habits of the flight instructor, both during flight instruction and as observed by students when conducting other pilot operations, have a vital effect on safety. Students consider their flight instructor to be a **paragon**^[7] of flying proficiency whose flying habits they, consciously or [7] 典范 unconsciously, attempt to imitate. For this reason, a good flight instructor will strictly observe the safety practices to teach the students. Additionally, a good flight instructor will carefully observe all regulations and recognized safety practices during all flight operations.

Generally, the student pilot who enrolls in a pilot training program is prepared to commit considerable time, effort, and expense in pursuit of a pilot certificate. The student may tend to judge the effectiveness of the flight instructor, and the overall success of the pilot training program, solely in terms of being able to pass the **requisite**^[8] FAA practical test. A good flight [8] 必要的 instructor, however, will be able to communicate to the student that evaluation through practical tests is a mere sampling of pilot ability that is compressed into a short period of time. The flight instructor’s role, however, is to train the “total” pilot. (500 words)