主编 陈艾莎

飞行翻译教程

Flight Interpretation Course

西南交通大學出版社
Http://press.swjtu.edu.cn

Flight Interpretation Course

飞行翻译教程

主　编　陈艾莎
副主编　刘德仲　何均洪　龚琼兰
郑　丽　张建文

西南交通大学出版社
·成　都·

图书在版编目（CIP）数据

飞行翻译教程 / 陈艾莎主编. —成都：西南交通大学出版社，2007.3
ISBN 978-7-81104-563-5

Ⅰ. 飞… Ⅱ. 陈… Ⅲ. 民用航空－英语－翻译－教材
Ⅳ. H315.9
中国版本图书馆 CIP 数据核字（2007）第 034753 号

飞 行 翻 译 教 程

主编　陈艾莎

责任编辑	秦　薇
封面设计	本格设计
出版发行	西南交通大学出版社 （成都二环路北一段 111 号）
发行部电话	028-87600564　028-87600533
邮　　编	610031
网　　址	http: //press.swjtu.edu.cn
印　　刷	成都蓉军广告印务有限责任公司
成品尺寸	185 mm×260 mm
印　　张	23.625
字　　数	753 千字
版　　次	2007 年 3 月第 1 版
印　　次	2007 年 3 月第 1 次印刷
书　　号	ISBN 978-7-81104-563-5
定　　价	35.80 元

图书如有印装问题　本社负责退换

Preface

Flight Interpretation Course is designed to help those who are interested in aviation English to become flight interpreters.

To be flight interpreters they should do all the translations and interpretations for flight crews in the initial trainings, the recurrent trainings, and the conversational trainings. This is a specific task for the flight interpreters. In order to accomplish the task the flight interpreters are required the English language proficiency as well as specific competence of Flight Aviation English.

Flight Interpretation Course covers all the information required for the flight training: the principle of flight; aircraft systems; flight procedures; performance; the basic techniques of flight; the aviation weather; JEPPESON charts; radiotelephony communication. All information is discussed in the book without aeronautical details but with general knowledge that might be appropriate to a comprehension level. The book has tried to avoid technical language and aeronautical jargon as much as possible in favor of plain language. And because diagrams are frequently more helpful than reading the text, the book is amply illustrated with photographs.

Flight Interpretation Course focuses upon the Chinese translation and interpretation of flight aviation English. For flight interpreters oral interpretation is of most importance, so is the listening comprehension, therefore *Flight Interpretation Course* has prepared large quantity of various kinds of exercises for oral interpreting practice and listening exercises. The course also presents many figures and videos for better comprehension.

The "Notices" are written for the purpose of helping to understand what the flight interpretation is and to give some interpretatation tactics.

To help to get some idea of CAAC flight interpreter certificate tests, at the end of the book a general introduction of the tests is given and a set of samples of written test, listening comprehension test and oral test is attached. The candidates may take them as references.

This book and the materials that accompany are truly the result of a team effort. Those who were instrumental in the development of the book include: Liu dezhong, He junhong, Gong qonglan, Zhengli, Zhang jianwen. Liu dezhong contributed enormously to the flight techniques; Gong qonglan compiled three of the aircraft systems, Jepperson charts and

aviation weather. He junhong, Zhengli, Zhang jianwen, editted some of the aircraft systems. All the rest were written or complied by Chen aisha. The whole book has been processed by Chen aisha including all the notices, most of exercises, background knowledge, nearly all the texts of the aircraft system, and reading materials.

The book has benefited greatly from the Boeing series materials, Airbus 320 non-print VCD and also got material resources from *Airline Pilot*, *Developing Reading Skill Course*, which are extremely helpful in putting together the book.

I would like to give thanks to all the books' authors. Special thanks are also given to Airbus China, who has authorized to use A320 VCD non-print materials. All this helps us make the book possible.

If the book helps you to understand the flight training, if the book helps you to improve interpretation of flight training, then it will have achieved its objectives!

Chen Aisha

Jan. 1, 2006

CONTENTS

UNIT ONE

LESSON ONE Air Conditioning System

Part One

Warming-up Activities

I. Basic vocabulary study

hot bleed air	热引气
outlet duct	外流管
bypass valve	旁通活门
ram air	冲压空气
inlet scoop	勺形进气口
trim air valve	调节空气活门
pack flow switch	空调主件流量电门
extractor fan	排气风扇
guarded flap	有保护盖的导片
isolation valve	隔离活门
“light out” auto position	“灯灭”自动位置
blower	鼓风机
pack	空调主件
extractor	排风扇
overboard	机外
onboard	机上
open-circuit	开路
closed-circuit	闭路
configuration	形态
passenger load	乘客载荷
downstream	下游
channel	通道
pneumatic	气源
dual	双
heat exchanger	热交换机
compressor	压缩机
stage	级

power	功率
switch over	交换
pre-cooler	预冷机
coolant	冷却剂
Fahrenheit	华氏
amber	琥珀色
ventilation	通风
illuminate	亮
cargo	货舱
lavatory	厕所
galley	厨房
avionics	电子设备
circuit breaker	跳开关
re-circulation fan	再循环风扇
compartment	机舱
mixing unit	混合组件

Abbreviations

ATLN	alternate	备份
ECAM	electronic centralized aircraft monitoring	电子式飞机集中监控
Pb	push button	按钮
Sw	switch	电门

II. Background knowledge

When you are in the aircraft, you' ll breathe easy and you' ll feel comfortable. As a complete systems supplier, the temperature and pressure control for aircraft of all sizes is provided.

Air management system (AMS) is a generic term used in the aircraft industry for the systems and equipment associated with the ventilation, heating, cooling, humidity/contaminant control, and pressurization within the aircraft occupied compartments, cargo compartments, and electronic equipment bays. The AMS often encompasses other functions such as windshield defog, airfoil anti-ice, and other pneumatic demands such as door seal or fuel tank pressurization, and air turbine motors or pumps. AMS is also known by the older term environmental control system (ECS).

Air conditioning system is included in the Air management system. Air conditioning includes heating, cooling, ventilation, moisture/contaminant control, temperature control, distribution, and cabin pressure control. Common systems are the air conditioning system (ACS) and the cabin pressure control system (CPCS). The function of an air conditioning system is to maintain a comfortable air atmosphere within the aircraft fuselage. Besides air conditioning provides ventilation air to some aircraft equipment and equipment compartments to prevent heat buildup and consequent damage to the equipment. The system will increase or decrease the temperature of the air as needed to obtain the desired value. The system, in addition, must provide for the control

of humidity, it must prevent the fogging of windows, and it must maintain the temperature of wall panels and floors at a comfortable level.

Air cycle refrigeration is the predominant means of air conditioning for commercial and military aircraft of all types. The aircraft air cycle air conditioning system utilizes the high-pressure air extracted from the gas turbine engine compressor to satisfy the aircraft ventilation, heating, cooling and pressurization requirements. A water separator removes moisture condensed during the refrigeration process. The refrigerated air is then delivered to the aircraft compartments to cool, pressurize and ventilate these areas with fresh air.

In a typical system the air temperature is measured and compared to the desired setting of the temperature controls. Then, if the temperature is not correct, heaters or coolers are set into operation to change the air temperature. The air is mixed together to create a uniform temperature in the cabin. In summary, an air conditioning system is designed to perform any or all of the following functions: (1) supply ventilation air (2) supply heated air, and (3) supply cooling air.

III. Comprehension exercises

1. What's the function of the air conditioning?
2. What are AMS and ECS?
3. Why must air conditioning system provide the control of humidity?
4. Why is high-pressure air used?
5. How does the air conditioning get desired temperature?

Part Two

Text

Air Conditioning System

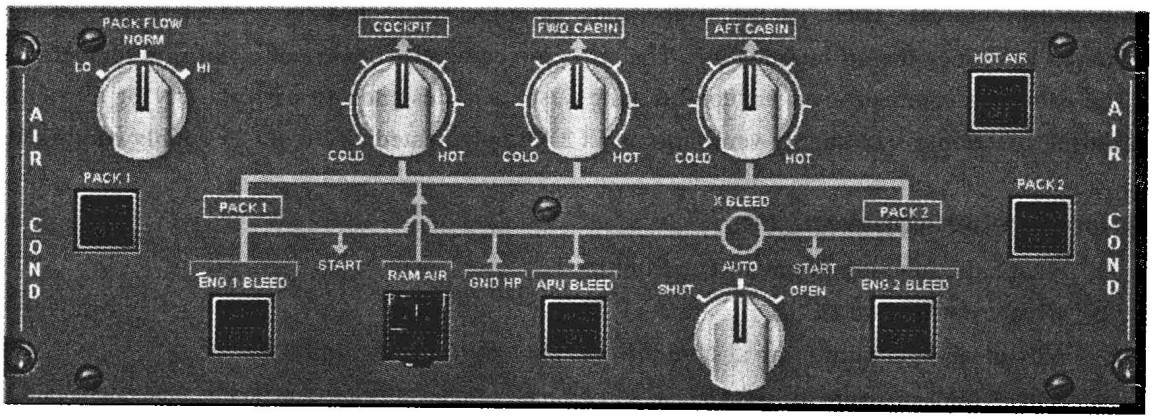
The air conditioning system operation is fully automatic. It provides a continual renewal of air and maintains a constant selected temperature in the three following zones: cockpit, forward cabin, after cabin.

The air is supplied by the pneumatic system via two pack flow control valves, two packs, the mixing unit, which mixes the air coming from the cabin and from the packs. The Aircraft is equipped with two air conditioning packs located in the wing root area forward of the landing gear bay.

This is how a pack works. Hot bleed air enters the pack via a pack flow control valve. The air then passes through several stages within the pack that progressively cools the air to provide a conditioned air output. Two of the stages are heat exchangers that use a flow of ambient air over them to cool the hot bleed air. This flow of cool air enters via a pack inlet scoop and exits via an

outlet duct. The output temperature of the pack can be adjusted if a by-pass valve is fitted. This valve allows warmer air to be mixed with the cold air. The pack flow control valve and the by-pass valve are regulated by a pack controller to vary the flow rate and temperature output. The pack controller also controls the inlet scoop and outlet duct to vary the amount of air passing over the heat exchangers. The conditioned air from the packs is then fed to a mixing unit.

The temperature regulation is optimized through the hot air pressure regulating valve and the trim air valves which add hot air tapped upstream of the packs to the mixing unit air. The temperature regulation is controlled by a zone controller and two pack controllers. Flight deck and cabin temperature can be selected from the air condition panel in the cockpit.



Here is the normal operation of the system. As part of the aircraft walk-around check, the pack inlet and outlet areas are clear of debris and the ram air valve is closed.

The flight crews are assumed about to start the flight. The APU is running and flight crews require air conditioning. Now they are in the cockpit. They must check the Air Conditioning panel during the scanning sequence. At this time, except for the "Off" lights on the two pack pbs, all other pbs are in the normal "light out" position. One of the items in the cockpit preflight is to extinguish all white lights on the overhead panel. In order to extinguish "Off" lights, the pilots should first call the ECAM bleed page, then extinguish the packs "Off" lights, for that, switch packs to "On", because no bleed air is available to the packs, the pilots will find amber "fault" light on the packs pbs, and control valve indication switching from green to amber.

Since the flight crews are expecting a standard passenger load, the packs flow selector can be selected to "Normal". There is no change to the ECAM indication, because the pack flow selector only affects the pack flow rate once the engines are running and supplying bleed air to packs.

Now it is time to get some air to the packs. As the APU is already running, set the APU bleed air to "on" and then the X-bleed valve has automatically opened, at this time the X-bleed switches in auto-position. Both feed lines to the packs have been connected. The fault lights are extinguished due to air supply; the pack flow valves are opened, the pack flow increases and the bypass valve moves. The supply lines to the mixing unit are now connected. Both packs are now providing air conditioning.

Here is the discussion of temperature regulation of air conditioning system of ECAM COND page. Indications of the zone temperatures suppose to be 15 degrees celsius and the duct inlet

temperature 25 degrees celsius are shown. The zone temperature selectors are in 12 o'clock position. In this position a zone temperature of approximately 24 degrees celsius is demanded. As 15 degrees celsius of the zones are well below the demanded 24 degrees. The zone controller sends a command to increase the amount of air added. Due to this command the trim air valve opens, the zone duct temperature increases and so warm air is supplied to the cockpit zone, and cockpit zone starts to warm up. Once the cockpit zone reaches the demanded temperature the trim air valve will move, reducing the required bleed air to maintain the zone temperature.

As soon as the engine start sequence begins the pack valves close. All of the APU bleed air can be used to start the engines. When the engine starting sequence is completed the pack valves open and the APU bleed supplies the packs. But the engine bleed valves are closed, even with both engines running. This is because APU bleed has priority over the engine bleed. So, if the aircraft was departing from a performance limited runway, the packs could run from the APU bleed air, resulting in no loss of engine performance when the APU bleed switch is selected off; the pack flow reduces. This is because the engines provide a higher flow rate than the APU.

During the flight phase the air conditioning system will work automatically and the only likely pilots input that may be required is to adjust zone temperature.

Assuming that the pilots wish to cool down the cockpit, they have now demanded a cockpit zone temperature of 18 degrees. Because a low temperature has been demanded, the trim air valve will close and the cool pack output will feed the cockpit zone. In situations of low passenger numbers the pack flow selector can be set to LOW. This has the effect of reducing the bleed demand from the engines and will therefore save fuel.

Once airborne the flow selector should be returned to normal and the temperature selectors is adjusted as required.

After landing and engine shutdown the system can be set to run from the APU, switched off completely, or an external conditioning unit can be connected via a low pressure connection point on the underside of the aircraft. The low-pressure air is fed to the mixing unit and then into the three zones. There are no indications in the cockpit to show that an external conditioning unit is in use.

Notice

什么是飞行翻译

飞行翻译属科学翻译的范畴。科学翻译就是译者用译语表达原语科学信息以求信息量相似的思维活动和语际活动。飞行翻译则是译者用译语表达与飞行训练有关的信息的翻译活动，它具有客观性、规范性、科学性、快捷性、逻辑性等特点，而这些特点均融于以信息为主的翻译活动中。

Part Three

Exercises

I. Listen and fill in the blanks, then interpret the sentences into Chinese

1. Once the cockpit zone reaches _____ the trim air valve _____.
2. Each cargo compartment has _____ which controls _____ to regulate the temperature of the compartment.
3. Since the pack valve _____, the supply line from the pack to _____ has turned amber. This happens because _____ from the pack to the mixing unit.
4. To reduce bleed air demands, _____ automatically programs _____ to meet conditioned air and ventilation requirements _____.
5. _____ is extinguished, and the compressor _____ is green; so we can conclude_____.
6. When pack one _____, an Off light illuminates in the switch and _____ turns green showing _____.

II. Listen and interpret the sentences into Chinese

1. Let's call _____.
2. The fault light _____ and to indicate _____.
3. Hot bleed air enters _____. The purpose of this valve is _____.
4. The air _____ cools the air _____.
5. On the ground _____ is taken from outside _____.
6. Occasionally with _____ it may be necessary to _____.

III. Listen and interpret the following sentences into Chinese

1. _____.
2. _____.
3. _____.
4. _____.
5. _____.
5. _____.
6. _____.

IV. Describe the normal system working process in English

(While one student acts as the flight instructor to describe the system, another one does the oral interpretation.)

V. Translate the following sentences into English

1. 空调系统的工作完全是自动的。
2. 从混合组件流出的引气分别流入飞机的三个区域。
3. 飞机不同区域需要的冷气量和热气量不同，热引气可以通过调节引气活门达到该区域所需温度。
4. 组件按钮上的故障灯亮既会帮助你找到该故障组件又指示过热状态。
5. ECAM BLEED 页面会自动出现并显示琥珀色指示。

VI. Translate the passage into Chinese

The function of an air conditioning system is to maintain a comfortable air temperature within the aircraft fuselage. The system will increase or decrease the temperature of the air as needed to obtain the desired value. Most systems are capable of producing an air temperature of 70 degrees to 80 F, with normally anticipated outside air temperatures. This temperature-conditioned air is then distributed so that there is a minimum of stratification. The system, in addition, must provide for the control of humidity, it must prevent the fogging of windows, and it must maintain the temperature of wall panels and floors at a comfortable level.

Part Four

Supplementary Study

Cargo System Presentation

The conditioning of the air in the two cargo compartments is fully automatic. The operation for both compartments is similar. Ambient air from the cabin area enters the cargo compartment via an inlet isolation valve. The air is removed from the compartment either by an extractor fan, or by differential pressure. The air is discharged overboard via an outlet isolation valve.

The operation of the two isolation valves and the extraction fan is controlled automatically by a cargo ventilation controller. To provide heating of the cargo compartment, hot bleed air is supplied via a trim air valve. The operation of the cargo trim air system is very similar to the trim air system for the air conditioning system.

Each cargo compartment has a cargo heating controller, which controls the trim air valve position to regulate the temperature of the compartment. Let's look at the ECAM COND page to see how information on the cargo conditioning system is presented to the pilots. The cargo heating system is an extension of the air conditioning system. Hot air is routed from the trim air system, for the forward cargo hold, and via an independent hot air valve for the aft cargo hold.

On the ECAM COND page the indications associated with the cargo compartments are: the

isolation valves, the trim air valves, duct inlet temperature, compartment temperature, aft cargo hot air valve (Notice that there are no indications for the extractor fans). On the overhead panel there is a CARGO HEAT panel that contains the controls associated with cargo heating and conditioning.

For each cargo compartment there is an ISOLATION VALVE pb sw. These pb sws normally remain in their "lights out" position. When in this position the cargo ventilation controller will automatically open and close the isolation valves. The temperature selectors send demand signals to the associated cargo heat controllers. The cargo heat controllers then move the trim air valves to adjust the temperature of the air entering the compartment. The hot air pb sw controls the aft cargo compartment hot air valve via the aft cargo heating controller. This pb sw normally remain in the "lights out" position.The forward cargo trim air system is fed from the cabin hot air valve. For normal operation of the cargo conditioning system the only pilot inputs required are to confirm that the pb sws are in their normal "lights out" position; to set the required temperatures.