

ФЕДЕРАЛЬНОЕ АГЕНТСТВО ВОЗДУШНОГО ТРАНСПОРТА
ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ
ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ
«МОСКОВСКИЙ ГОСУДАРСТВЕННЫЙ ТЕХНИЧЕСКИЙ
УНИВЕРСИТЕТ ГРАЖДАНСКОЙ АВИАЦИИ» (МГТУ ГА)

Кафедра иностранных языков

В.Б. Григоров, Ж.Л. Михалева, С.В. Пантюхова

ИНОСТРАННЫЙ ЯЗЫК.
АНГЛИЙСКИЙ ЯЗЫК
FLIGHT SAFETY FUNDAMENTALS

Учебное пособие

*Утверждено редакционно-
издательским советом МГТУ ГА
в качестве учебного пособия*

Москва
ИД Академии Жуковского
2018

УДК 811.111(075.8)
ББК Чи (Англ.)
Г83

Печатается по решению редакционно-издательского совета
Московского государственного технического университета ГА

Рецензенты:

Ковалева Н.Н. (МГТУ ГА) – ст. преподаватель каф. ин. яз. ;
Овчинникова Н.А. (РАНХ и ГС) – канд. филол. наук, доц. каф. ин. яз.

Григоров В.Б.

Г83 Иностранный язык. Английский язык Flight Safety fundamentals
[Текст] : учебное пособие / В.Б. Григоров, Ж.Л. Михалева, С.В. Пантюхова. – М. : ИД Академии Жуковского, 2018. – 40 с.

ISBN 978-5-907081-24-6

Данное учебное пособие издается в соответствии с рабочей программой дисциплины «Иностранный язык» для студентов I курса направления подготовки 20.03.01 очной формы обучения.

В учебном пособии представлены аутентичные профессионально ориентированные тексты по авиационной безопасности и фонетические, лексико-грамматические упражнения, направленные на формирование умений и навыков различных видов чтения, понимания, извлечения и обработки необходимой информации из иностранной научно-технической литературы.

В пособии подробно разбирается лексический материал. Содержит упражнения, задания для самостоятельной работы.

Рассмотрено и одобрено на заседании кафедры 26.02.2018 г. и методического совета 14.03.2018 г.

УДК 811.111(075.8)
ББК Чи (Англ.)
Св. тем. план 2018 г.
поз. 51

ГРИГОРОВ Владимир Борисович,

МИХАЛЕВА Жанна Львовна, ПАНТЮХОВА Светлана Владиславовна
ИНОСТРАННЫЙ ЯЗЫК. АНГЛИЙСКИЙ ЯЗЫК FLIGHT SAFETY FUNDAMENTALS
Учебное пособие

В авторской редакции

Подписано в печать 05.09.2018 г.

Формат 60x84/16 Печ. л. 2,5 Усл. печ. л. 2,325

Заказ № 304/0622-УП08 Тираж 35 экз.

Московский государственный технический университет ГА
125993, Москва, Кронштадтский бульвар, д. 20

Издательский дом Академии имени Н. Е. Жуковского

125167, Москва, 8-го Марта 4-я ул., д. 6А

Тел.: (495) 973-45-68 E-mail: zakaz@itsbook.ru

ISBN 978-5-907081-24-6

© Московский государственный технический
университет гражданской авиации, 2018

PART ONE

FLIGHT SAFETY

Безопасность полётов самолётов гражданской авиации
Охрана окружающей среды

...The FAA has worked closely with industry to develop targeted training relating to such problems as wind shear, turbulence, wake turbulence and turboprop icing. But the number one killer in the USA is controlled flight into terrain (CFIT) and the number two is loss of control. Commercial aviation safety strategy team will launch a joint safety analysis research to identify the most effective interventions possible to prevent accidents relating to loss of control. One challenge to Boeing and the airlines is the fact all these new initiatives generate training requirements. Multi-crew co-ordination has just recently come into regulation, but the industry recognized the need for crew communications several years ago...

What does Safety of Flight mean?

Throughout the world Safety of Flight presently means one and the same thing - safe and timely transportation of passengers and cargo no matter what are prevailing weather and environmental conditions, traffic congestion or turnaround problems. The current air transportation ideology comes to the assertion that the passenger is always right.

The required high level of air transportation reliability is impossible to attain without overall transition from old on-time types of maintenance to new and much more efficient on-condition types of maintenance. This transition in its turn requires-overall introduction of modern on-board computers with networks of probes and sensors, supplying data from all sensitive parts of the power plant and the airframe.

Comprehensive Text-Related Glossary

transportation [,trænspɔːr'teɪʃn] - перевозка

prevailing [prɪ'veɪ.lɪŋ]- преобладающая; по всему маршруту полета

environmental conditions [ɪn ,vaɪrən'mentl]- состояние окружающей среды

traffic congestion [kən'dʒestʃ(ə)n] - перегрузка, превышение пропускной возможности терминала

turnaround problems ['tɜːnə ,raʊnd] – сложности с оборотом транспортных средств (воздушное судно отправляется после прибытия)

assertion [ə'sɜːʃ(ə)n]- утверждение, преобладающее мнение

reliability [rɪ ,laɪə'bɪlɪti]- надежность

to attain [ə'teɪn]- достигнуть

overall transition [træn'zɪʃ(ə)n]- переход всего парка, всех служб

on-time maintenance [ɒn-taɪm 'meɪnt(ə)nəns]- регламентное техобслуживание (деталь заменяется на новую по истечении положенного срока эксплуатации)

on-condition maintenance [ɒn-kən'dɪʃ(ə)n]- техобслуживание по состоянию (деталь заменяется на новую при наличии соответствующего износа)

on-board computer [ɒn-bɔːdkəm'pjju:tə]- бортовой компьютер

networks of probes and sensors- сеть датчиков и сенсоров

sensitive parts ['sensɪtɪv] - критичные, важные с точки зрения степени изношенности части.

Aviation Briefing

...The following substances are known as the most harmful emissions of aviation jet engines:

1. Carbon dioxide (CO₂)

Emitted from burning oil and gas, carbon dioxide is the main contributor to global warming or the greenhouse effect.

2. Methane

Released in the production of coal and natural gas by burning vegetation and as a result of intensive cattle farming.

3. Nitrogen oxide (NOx)

NOx are emitted from burning fossil fuels. They contribute to ground level smog and, in combination with atmospheric water, form acid rain, which has detrimental effects on trees, lakes etc. Nitrogen oxides also add to ozone depletion in the upper atmos-

phere, contribution to the green house effect.

4. Chlorofluorocarbons (CFCs)

CFCs are found in aerosol cans, refrigerators and air-conditioning units.

Sometimes known as Freon, CFCs are stable, have low toxicity, do not combust rapidly and are not easily soluble.

They accumulate and diffuse into the upper atmosphere, where they are broken down by ultra-violet radiation, and rebase by-products destroying the ozone layer and also contributing to global warming.

Depletion of the ozone layer increases the risk of skin cancer, radiation blindness, cataracts and may be partly responsible for the Antarctic ozone hole. They are being phased out.

5. Carbon monoxide (CO)

CO, emitted from aircraft engines, can inhibit the blood's capacity to absorb oxygen.

Air transport environment bodies

- 1. United Nations Conference on Environment and Development**
- 2. ICAO Committee on Aviation Environment Protection**
- 3. International Air Transport Association**
- 4. European Civil Aviation Conference.**

Engine Emissions

Gaseous emissions from aircraft engines are also known as significant sources of pollution. But aviation's contribution to air pollution is marginal as compared to other modes of transport, e. g. road.

Today's aircraft engines are twice as fuel efficient as those 30 years ago. But, unfortunately, the very technology that contributed to better fuel efficiency and reduced carbon monoxide (CO) and carbon dioxide (CO₂) engine emissions has also resulted to greater emissions of nitrogen oxides (NO_x).

High altitude NO_x emissions have been implicated in the depletion of the ozone layer and global warming. But staged combustion in new engines for aircraft such as Boeing 777 eliminated this trade-off effect almost completely.

Comprehensive Text-Related Glossary

gaseous emissions[ˈgæsiəs]—газовые выбросы в атмосферу

marginal[ˈmɑ:dʒɪnl] - незначительный, несущественный

twice as fuel efficient[ˈfɪʃ(ə)nt]-имеющие в два раза более высокую топливную эффективность (оцениваемую по расходу топлива на тоннокилометр)

to contribute[kənˈtribju:t]- способствовать, содействовать

carbon monoxide[mænrksaɪd]- окись углерода

carbon dioxide[ˈkɑ:bən]- двуокись углерода

nitrogen oxide[ˈnaɪtrədʒ(ə)n ˈɒksaɪd]—семейство окислов азота

to implicate[ˈɪmplikaɪt]- считать виновным в чем-либо, рассматривать как причину

depletion[dɪˈpli:ʃ(ə)n]- исчезновение, сокращение размеров

ozone layer [ˈəʊzəʊn ˈleɪə]- озоновый слой, снижающий уровень ультрафиолетового излучения

stage combustion[ˈkæmˈbʌstʃ(ə)n]- двухзонное сжигание топлива в камере сгорания

to eliminate[ɪˈlɪmɪneɪt]- устранять, исключать

trade-off[treɪd-ɒf]- побочный, сопутствующий

Questions For Discussion

1. What are gaseous emissions from aircraft engines?
2. How does aviation's contribution to air pollution compare with other sources of pollution?
3. What is the presently attained level of fuel efficiency?
4. What is the unwanted byproduct of high fuel efficiency of modern jet engines?
5. Which of the two carbon oxides is more dangerous?
6. Are there any practical applications of carbon oxides?
7. What were high altitude nitrogen oxides emissions implicated with?
8. Is it correct to say that aviation engines are the main source of atmospheric pollution?
9. What does, in your opinion, contaminate the atmosphere most?
10. What is the result of introduction of two-zone combustion in aviation engines?
11. Is it possible to design an ecologically clean engine?
12. How do jet engines and piston engines compare ecologically?

Aviation Briefing

...Tests show that air quality is better in the vicinity of the airport than in comparable suburban areas around the city. What pollution is measured is due more to ground transport to and from the airport than to aircraft. Modern engines have dramatically lower emissions of carbon monoxide and of unburned hydrocarbons. The gas flow in combustors is extremely complex. Analysis of all gas flow interactions presents a most significant challenge to computational fluid dynamics, but the potential rewards are lower cost and lower emission combustors...

Wind Shear

Undetected wind shear is deadly to aviation and has been the cause of numerous accidents resulting in loss of life and aircraft. Practically it's quite common for an aircraft to encounter a flow of up-going warm air which is very soon superseded by a down-going flow of cold air.

For many years this common flight situation, or wind shear, was not identified or understood. Recently a wind shear program manager was developed by the United States Federal Aviation Administration to focus on an integrated approach to reducing the risk related to the wind shear hazard.

As part of this program, a wind shear training aid was developed by the Boeing Commercial Airplane Group in consultation with international organizations concerned, including ICAO.

The training procedures developed have application to nine models of U.S.-manufactured commercial transport aircraft. The training aid covers the emergency procedures to be used to provide the best possibility of a successful escape.

Comprehensive Text-Related Glossary

- Wind shear**[windʃiə]- сдвиг ветра, "ножницы", образуемые восходящим и нисходящим течениями воздуха
- to encounter**[in 'kauntə]- встречать, сталкиваться
- up-going warm air**[ʌpɡəʊɪŋ] –поток восходящего теплого воздуха
- to supersede**[s(j)u:pə'si:d] - заменять, приходить на смену
- down-going cold air**[daʊnɡəʊɪŋ]–поток нисходящего холодного воздуха
- threat**[θret]- угроза
- to identify**[aɪ'dentifaɪ] - устанавливать, выявлять
- program manager**['prəʊgræmmænɪdʒə]–установочная программа
- integrated approach** ['ɪntɪɡreɪtɪdə'prəʊtʃ] –обобщенный подход
- hazards**['hæzədz]- опасности
- organizations concerned**[ɔ:ɡənai'zeɪf(ə)nkən'sɜ:nd]- имеющие отношение, заинтересованные организации
- application**[æplɪ'keɪf(ə)n] - применение, приложение
- training aid**['treɪnɪŋ eɪd]–учебное пособие
- emergency procedures** [ɪ'mɜ:dʒ(ə)nsɪ prə'si:dʒə]- аварийные процедуры; действия в чрезвычайных условиях
- successful escape** [sək'sesf(ə)l ɪ'skeɪp]- успешный выход (из опасной ситуации)

Questions For Discussion

1. What is undetected wind shear to aviation?
2. What air flows are involved in a typical wind shear situation?
3. Why was wind shear threat unidentified and misunderstood for so many years?
4. What program was developed recently? What was the aim of this program?
5. How do you understand the term "integrated approach"?
6. What training aid was developed by the Boeing Group?
7. To what airplane models are the developed training procedures applicable?
8. What procedures are covered by the developed training aid?
9. Why the recommended procedures are classified as emergency procedures?
10. What steps can be taken by the pilot to avoid an encounter with a wind shear situation?

Aviation Briefing

...The ultimate solution to the wind shear problem requires the development of airborne equipment which can "see ahead" of the aircraft and warn the pilot. NASA studies evaluated several scenarios utilizing seven research and airline crews. At the conclusion of the tests, six of the seven pilots involved felt that 10 seconds was a sufficient warning time to make a normal go-around instead of a programmed escape maneuver. Tests measurements have since confirmed the adequacy of this determination. Among airborne equipment Doppler radars have shown greater potential in accurately detecting a wide variety of turbulent phenomena. Nevertheless, the big leap between research studies to operational utility is yet to be made. Passive, forward-looking infrared radars (FUR) have also been studied for use as airborne turbulence detectors. While these systems have many attractive features and may be of practical use in the detection of low-Level wind shear, their utility as an operational airborne turbulence detector awaits farther research and development...

Aircraft Noise

Strenuous opposition to aircraft noise from communities in the vicinity of airports is largely responsible for the extreme difficulty encountered in airport construction and expansion.

The most effective way to curtail aircraft noise is to reduce it at source. This is now done by withdrawing noisy aircraft from service, installing engine hush kits or re-engining. New high-bypass ratio engine technologies improve fuel efficiency and achieve 40 per cent noise reduction compared with older low bypass ratio designs.

Future emphasis will have to concentrate on specific noise-reduction technology. Engines will have to be even quieter, and airframe design may also be unproved to reduce aerodynamic noise. The question is not only whether such specific noise reductions are technologically feasible, but at what price to the air transport and travel industry they will be achieved.

Comprehensive Text-Related Glossary

aircraft noise['nɔɪz]- звуковой шум, создаваемый самолетом

strenuous['streɪnjuəs]- сильнейшая, отчаянная (оппозиция, борьба)

community[kə'mju:nɪti]- население района, квартала

vicinity[vɪ'sɪnɪti]- окрестность

extreme difficulty[ɪks'tri:m 'dɪfɪkəlti]- чрезвычайные трудности

to curtail[kɜ:'teɪl]- ограничить, сократить

at source[sɔ:s] - в месте возникновения, в источнике

withdrawing[wɪð'drɔ:ɪŋ]- снятие с эксплуатации, списание

engine hush kits['ɛndʒɪn hʌʃ kɪt] - глушители шума двигателя, насадки с глушителем

tore-engine[ri:'ɛndʒɪn] - установить новый двигатель, заменить двигатель

high-bypass ratio engine[haɪ'baɪpɑ:s 'reɪʃiəʊ 'ɛndʒɪn] - двигатель с высокой степенью двухконтурности

fuel efficiency[fjuəl ɪ'fɪjənsi] - топливная эффективность двигателя

specific noise-reduction technology[spɪ'sɪfɪk nɔɪz-rɪ'dʌkʃən tek'nɒlədʒi] - конкретная технология шумопонижения

quieter['kwaiətə]- с более низким уровнем шумов, малошумящие

aerodynamic noise[.eərəʊdaɪ'næmɪk nɔɪz] - аэродинамический шум, вызываемый обтеканием планера самолета воздухом

feasible['fi:zəbl] - реализуемы, осуществимы при данном уровне технологии

will be achieved[ə'ʃi:vɪd] - будут достигнуты, будут реализованы

Questions for Discussion

1. What is largely responsible for extreme difficulty encountered in airport construction and expansion?
2. Why do communities oppose airport construction in their vicinity?
3. What is the most effective way to curtail aircraft noise?
4. Is it always possible to withdraw noisy aircraft from service?
5. Can all airlines afford installation of new engines? Is it a cheap operation?
6. Which of the three noise reduction recommendations would you choose?
7. What is by-pass ratio?
8. Is it possible to distinguish high by-pass ratio jet engines from low by-pass ratio jet engines judging only by their appearances?

9. What is fuel efficiency? In what units is it measured?
10. What do aircraft designers do to reduce aerodynamic noise?
11. What are limiting factors to further noise reductions?
12. How does the number of spools influence the amount of generated noise?
13. Does by-pass ratio influence the amount of generated noise?
14. What type of noise does streamlining reduce?

Human Factors in an Accident Investigation

Significant conclusions are often drawn from the social aspects of understanding an accident. In the investigative process the commission must isolate and extract a very small part out of many objective facts and make them very significant. This selection process is influenced by the theory of what the commission believes causes accidents, in other words, by the current understanding of the Air Safety.

The established error chain expresses the association of a chain of human errors with accident causation. This approach conveys the idea that accidents do not have a single cause but a series of causes.

Accident causation models essentially define at what point the exploration for causes is stopped. The backtracking that is done leads the investigation further and further away from accident site and into the past of the accident occurrence. In other words, this backtracking goes through different levels of causality.

The first level of understanding, or the general scenario level, means that the commission can describe the events in detail, but not understand their inner meaning, connections, and causation.

The second level of understanding means that the investigating commission is able to understand the general meaning, inner connections, and causation of events, but not their implicit, hidden, or unseen elements.

The third level of understanding, or insight, means that the investigators can interpret all tactical problems, minute-by-minute actions of the crew and their individual errors in relation to the "big picture" of events. This is the systemic level of understanding and it means that the commission is capable of initiating reform that will produce real accident prevention.

Comprehensive Text – Related Glossary

accident [ˈæksɪdənt] –летное происшествие; катастрофа

investigative process [ɪnˈvɛstɪɡeɪtɪv]- ход, процесс расследования летного происшествия

to extract [ˈɛkstrækt] - выделить; извлечь

significant [sɪɡˈnɪfɪkənt] - важный, существенный для понимания

the current understanding[ˌkʌdəˈstændɪŋ] - современное представление, принятое в настоящее время понимание смысла (термина)

error chain [ˈɛrə ʃeɪn] - последовательность, цепочка ошибок

accident causation [ˈæksɪdənt kəˈzeɪʃən] - установление причины летного происшествия

exploration [ˌɛkspləˈreɪʃən]- расследование (причин)

backtracking - выявление предыстории, исследование предыстории (предыдущей деятельности)

occurrence[əˈklʌrəns]- момент или отрезок времени, когда произошло летное

general scenario level [sɪˈnɑːrɪəʊ] - уровень формирования сценария (общего представления о летном происшествии)

implicit [ɪmˈplɪsɪt]- неявный, подразумеваемый

hidden [ˈhɪdn]- скрытый

insight [ˈɪnsaɪt]- понимание внутренней сущности

“big picture”of events[ˈbɪkɪʃə] - общая картина событий

prevention- предотвращение, предупреждение

Questions For Discussion

1. What are significant conclusions often drawn from?
2. What must the commission do in the investigative process?
3. Is the process of selection influenced by any theory?
4. What does the established error chain express?
5. What idea does this approach convey?
6. What do accident causation models define?
7. Where does the backtracking lead the investigation to?
8. How do you understand different levels of causality?
9. What does the first level of understanding mean?
10. What does the second level of understanding mean? What elements of the general meaning remain unknown to the commission at this level?

11. What does the third level of understanding mean? What can the investigators do at this level?
12. What does the systemic level of understanding mean? What actions is the commission capable of initiating at this level of understanding?

Aviation Briefing

... The real conclusion of any accident investigation is imbedded in the set of recommendations that arise from the investigators' understanding of the events leading to the accident. The deeper is to their level of understanding, the broader their accident causation model and the more likely they are to identify the deep-rooted causes of accident...

Heavy Landing

The transport Tu-134 was carrying 76 British holidaymakers from Gatwick. It was refueled before departure with JPI fuel, 4000 kg of which remained at the time of crash. Heavy cumulonimbus was reported at the point of arrival in Yugoslavia. The aircraft entered a band of heavy rain and severe turbulence at approximately 4 km from the runway threshold; it was carried upwards and rolled to the right.

The flight recorder showed that 18 sec before impact engine power was increased and up elevator was applied. The aircraft was above the ILS glide path. At 800 m from the threshold, at a height of over 60 m, the decision was taken to land; power was reduced and the recorder shows that the descent angle increased to 10°.

The crew thought that they were closer to the runway and at a greater height above it than was, in fact, the case.

The aircraft struck the runway, right undercarriage first, at airspeed of 260 km/h and with a deceleration of 4 g. The landing gear strut destroyed the forward spar and the shock absorber broke the aft spar. As the right wing became detached the aircraft rolled on to its back, the remaining stub of the wing folding to block an emergency exit during the rotation. Fuel leaked out of the broken right wing on to the runway and was set on fire by sparks.

The twisting of the fuselage broke the connections from the emergency battery to the tailcoat, extinguishing the cabin lights. The wreckage slid for a distance of 700 m, the inside fire caught the whole cabin and an explosion occurred when the fire

reached the oxygen system. The crew could not get into the passenger cabin because the door was jammed. Four emergency exits were not opened, the cabin was full of thick, toxic smoke and the passengers did not even manage to unfasten their seat belts.

Comprehensive Text-Related Glossary

heavy landing [ˈhevi ˈləndɪŋ] - посадка в особо тяжелых условиях
to refuel [ˌriː ˈfjuəl] - дозаправлять топливом; проводить дозаправку топливом
departure [dɪ ˈpɑːtʃə] - вылет; отправление в рейс
crash [kræʃ] - катастрофа, авария
cumulonimbus [ˈkjuːmjʊlə ˈnɪmbəs] – кучево-дождевые облака
severe turbulence [sɪ ˈvɪə] - сильная турбулентность, "болтанка"
run way threshold [ˈθreɪ ˌhəʊld] - порог ВПП
rolled to the right [rəʊld] - с правым креном
flight recorder [flaɪt rɪ ˈkɔːdə] - бортовой регистратор, "черный ящик"
up elevator [ˈelɪvətə] - команда на набор высоты
ILS glide path [ɡlaɪd pɑːθ] - глиссада системы инструментальной посадки ILS (Instrument Landing System). Глиссада создается в результате пересечения конической глиссадной поверхности вертикальной плоскостью курсового маяка
descent angle [dɪ ˈsent ˈæŋɡl] - угол снижения (при посадке самолета)
right under carriage [ˈlaɪd ˌkærɪdʒ] - правая нога шасси
deceleration [ˌdiː sɛlə ˈreɪʃən] - отрицательное ускорение, снижение скорости g ускорение силы тяжести (9,80665 meters per second)
landing gear strut [strʌt] - стойка шасси
forward spar [spɑː] - передний лонжерон крыла
shock absorber [əb ˈsɔːbə] - амортизатор шасси
aft spar [ɑːft spɑː] – задний лонжерон крыла
stub - обломок крыла, оставшаяся часть крыла
emergency exit [ɪ ˈmɜːdʒənsɪ ˈeksɪt] - аварийный выход (для пассажиров)
sparks [spɑːks] - искры (возникающие при ударе)
twisting [ˈtwɪstɪŋ] - скручивание
to extinguish [ɪks ˈtɪŋɡwɪʃ] - гасить, отключить
explosion [ɪks ˈpləʊzən] – взрыв
oxygen system [ˈɒksɪdʒən ˈsɪstɪm] - система кислородного обеспечения
to jam [dʒæm] - заклинивать

thick toxic smoke [θɪk '] - густой ядовитый дым

seatbelts [si:t belts] - привязные ремни (пассажиров)

Questions For Discussion

1. Whom was the transport Tu-134 carrying?
2. What did the crew of the aircraft do before departure?
3. What were weather conditions at the point of arrival?
4. What did the transport enter at 4 km from the runway threshold?
5. In what way did the encounter of the aircraft with heavy rain and severe turbulence change its attitude?
6. What did the flight recorder show?
7. Where was the decision to land taken?
8. How did the aircraft strike the runway?
9. How were the forward and aft spars destroyed?
10. What was the result of twisting of the fuselage?
11. When did an explosion occur?
12. Were there in your opinion any chances of rescuing the passengers?
13. What corrective actions would you recommend?

Flight Safety Is Built in On The Ground

Airplanes are prepared for flight by ground personnel. These are the people who maintain aircraft. Every night of a modern jet liner must be very thoroughly prepared its ground crew. The ground crew of an aircraft are maintenance engineers, technicians, mechanics and other aviation specialists who test, maintain and repair aircraft's major parts and systems.

The primary duty of an aircraft maintenance engineer, his technicians and mechanics is to keep their airplane always trimmed and ready for flight. The maintenance engineer must know the whole of his aircraft very thoroughly. He tells his technicians and mechanics what and how to do in each case of trouble.

Different aircraft parts and systems require different aviation specialists for their maintenance. For instance, power plant technicians and mechanics maintain engines, fuel, oil and air systems and engine controls. The ground crew usually works at the aircraft parking place and does only minor repairs. Engine overhauls and major repairs of aircraft are done by specialists in the overhaul hangar.

Comprehensive Text-Related Glossary

- to prepare for flight** [pɪ'pɪə] - готовить ЛА к полету
- ground personnel** [graʊnd] –наземный состав (экипажа ЛА)
- to maintain**[meɪn'teɪn] - производить техническое обслуживание (ЛА)
- aircraft maintenance** ['meɪntənəns] - техническое обслуживание и ремонт ЛА; техническая эксплуатация ЛА
- jet liner** [dʒet 'laɪnə] - реактивный лайнер
- ground crew**[graʊnd kru:] - наземный экипаж
- maintenance engineer**[,eɪnʃɪ'nɪə] - инженер по эксплуатации ЛА инженер наземной службы
- aircraft technician**['eəkra:ft tek'nɪʃən] - авиационный техник
- aircraft mechanic**[mɪ'kæni:k] - авиамеханик
- to keep the plane trimmed and ready for flight** [trɪmd ænd 'redɪ] - поддерживать самолет в состоянии летной готовности
- power plant**['paʊəplɑ:nt] - силовая установка (обычно включающая несколько двигателей)
- fuel, oil, and air systems**[fjuəl, ɔɪl, eə 'sɪstɪmz] - система топливоподдачи, маслосистема, система воздухообеспечения силовой установки
- engine controls** [kən'trəʊlz] - органы управления двигателем, позволяющие регулировать обороты, подачу топлива, развиваемую тягу и другие параметры
- to repair**[pɪ'reə] - выполнять ремонтные работы, ремонтировать
- minor repairs**['maɪnə] - мелкие ремонтные работы
- engine overhauls and major repair**-профилактический и капитальный ремонт двигателя
- overhaul** ['əʊvəhɔ:l] - полная переборка двигателя
- overhaul hangar**['hæŋə] - ангар для тех обслуживания и ремонта
- parking place** ['pɑ:kɪŋ pleɪs] – стоянка самолета

Questions for Discussion

1. How do you call people who prepare airplanes for flight?
2. What is the job of the ground crew?
3. Who are the members of the ground crew?
4. What is the primary duty of the people who maintain aircraft?
5. Who tells technicians and mechanics what and how to do in each case of trouble?

6. What must maintenance engineer know?
7. Do members of the ground crew fly?
8. Where does the ground crew usually work?
9. What types of repairs does the ground crew usually do?
10. Where are engine overhauls and major repairs of aircraft usually done?
11. What do maintenance engineers mean when they say that safety of flight is built in on the ground?
12. How would you translate the term "built-in safety"?

Aviation Briefing

...The real conclusion of any accident investigation is embedded in the set of recommendations that arise from the investigator's understanding of the events leading to the accident. These recommendations often seek "only to avert identical accidents or very similar ones. This represents a reactive approach to safety, an approach that has resulted in remarkable advances, but one that will be less and less efficient in the future. The likelihood that the same accident scenario occurs again will be more and more remote with the advent of computer technology and organizational accidents. The unearthing deep root causes common to a potential family of accidents...

PART TWO

FLIGHT SECURITY

Охрана полётов и служб гражданской авиации
 Меры и средства предупреждения
 террористических актов и угонов самолётов
 гражданской авиации

...Security of Flight deals with wide scope of measures means of observation and detection, and special equipment directed against aviation terrorism and high jacking attempts. Presently it's common practice to imbed specially trained security officers among passengers of practically all CA flights...

Security of Flight

Aviation security comprises a wide range of ground and in-flight activities and measures aimed at safeguarding international civil aviation against all acts of unlawful interference. On the average, out of every 30 acts of unlawful interference committed every year, twenty-one of the incidents are unlawful seizures, four are attempted seizures, two constitute in-flight attacks, one is an attack on a ground facility, and one is an unlawful act against Safety of civil aviation.

ICAO has developed an aviation security training program, consisting of several specialized packages. The first such package is designed for airport security personnel. The rest of the packages address aviation security management, aviation security crisis management, aviation cargo and mail security, airline security training programs, and aviation security instructors.

Comprehensive Text-Related Glossary

security of flight[sɪ'kjʊərti] –охрана полетов; меры защиты полетов от актов авиационного терроризма

safeguarding ['seɪfɡɑːdɪŋ] - охрана, защита полетов от актов незаконного вмешательства

unlawful seizures ['siːʒəz] - незаконные захваты

ground facility [fəʊ' sɪlɪti] - наземная служба ГА

airport security personnel [,pɜːsə'neɪl] –личный состав службы охраны аэропорта

aviation security management ['mæniʃmənt] –руководящий состав службы охраны полетов

aviation cargo and mail security ['kɑːɡəʊ] - служба охраны перевозок грузов и почты

airline security training programs- программы подготовки личного состава служб охраны авиакомпаний. программы противоугонной подготовки

aviation security instructors [ɪn'strʌktəz] - инструкторы FAA (Federal Aviation Administration) по организации служб охраны полетов авиакомпаний

Questions For Discussion

1. What does the notion of Aviation Security mean?
2. Does high jacking comprise an act of unlawful interference?
3. How do we call persons who perform unlawful seizures of CA transport?
4. What CA ground facilities can be subjected to terrorist attacks?
5. What unlawful acts can endanger the safety of civil aviation?
6. What kind of a training program was developed by ICAO? How many specialized packages does this program consist of?
7. Whom is the first package of this program addressed to?
8. What is airport security personnel supposed to do?
9. Whom does the rest of the packages address?
10. What are the duties of aviation Security instructors?

Aviation Briefing

Here are some articles from the CA Tokyo Convention which reciprocally abroad: Article 55 - "A person shall not recklessly or negligently act in a manner likely to endanger an aircraft or any person therein".

Article 56 - "A person is forbidden recklessly or negligently to cause or

permit an aircraft to endanger persons or property".

Article 57(1) - "A person shall not enter any aircraft when drunk, or be drunk in any aircraft". Article 57(2) - "A person shall not smoke in any compartment of an aircraft registered in the UK at time when smoking is prohibited in that compartment by a notice to that effect exhibited by or on behalf of the commander of the aircraft".

Aviation Security

The subject of aviation security is safeguarding of civil aviation against all acts of unlawful interference. Ineffective implementation of aviation security rules can have a horrendous impact on airlines.

Should a serious incident occur, a 30 to 40 percent drop in passengers can be expected. For States that have a high level of economic dependency upon tourism, the resulting loss of income can be extremely serious.

The management system needs to be based on the aim of achieving and maintaining a high level of confidence that the security program is being properly implemented at every level of the organization, for every flight departure. Responsibility for security implementation must be delegated to everyone, from the chief executive at headquarters to the baggage handler at the ramp.

The final key to achieving confidence in the effectiveness of a security program is periodic independent monitoring checks or spot checks. Ideally, these checks are carried out by someone with as independent responsibility who reports the results directly to top management.

Comprehensive Text-Related Glossary

aviation security [ˌeɪvɪ'eɪʃ(ə)n sɪ'kjʊərti] - служба охраны ГА

to safeguard ['seɪfɡɑ:d] - охранять, предупреждать

acts of unlawful interference [ɹn'ɔ:ləfʊl ˌɪntə'fɪərəns] – акты незаконного вмешательства

implementation [ˌɪmplɪmen'teɪʃən] - применение, внедрение

horrendous [hɒ'rendəs] - крайне нежелательные, ужасные (последствия)

impact ['ɪmpækt] - воздействие

to occur [ə'kɜ:] –иметь место, случаться

drop[drɒp] - падение, снижение уровня
dependency[diˈpendənsi] - зависимость
loss of income[ˈɪŋkʌm] – потеря доходов
extremely [ɪksˈtriːmli] - чрезвычайно, весьма
management [ˈmænidʒmənt] - управление, руководство
aim[eɪm] - цель, задача
to achieve[əˈtʃiːv] - достигать
to maintain[meɪnˈteɪn] - поддерживать, сохранять
confidence [ˈkɒnfɪdəns]- уверенность
flight departure[dɪˈrɔːtʃə] - вылет, отправление в рейс
responsibility [rɪs.pɒnsəˈbɪlɪti] - ответственность
to delegate[ˈdeɪlɪɡeɪt] - возлагать (ответственность)
chief executive[tʃiːfˈzɛkjʊtɪv] - президент авиакомпании
headquarters [ˈhɛdˈkwɔːtəz] - штаб, главное управление
baggage handler [ˈbæɡɪdʒ] - подносчик багажа носильщик
ramp[ræmp] - место стоянки, стоянка(самолета)
final key [ˈkiː] - заключительное мероприятие
monitoring check[ˈmɒnɪtərɪŋ] - регулярные проверки
spot checks [spɒt] – выборочные проверки
top management[tɒp] - высшее руководство; президент авиакомпаний

Questions For Discussion

- I. What problems does aviation security deal with?
2. What kinds of people are committing acts of unlawful interference?
3. What does the requirement of very high effectiveness of all measures of security imply?
4. What drop in passengers can be expected after each serious incident?
5. For what States can the resulting loss of income be very serious?
6. What aim does the management system need to be based on?
7. Who must share responsibility for security implementation?
8. What must be the final key to achieving confidence in the effectiveness of a security program?
9. Who must carry out independent checks of a security program?
10. Who is to be informed about the results of independent checks?

Aviation briefing

...To meet its security objectives each CA organization must have an ongoing commitment to ensure that everyone who plays a part in security implementation - no matter how small a role - knows what it is they have to do and how to do it Staff must also know how they are performing in terms of meeting the required standards and must be tested periodically to confirm that they are applying the practice or procedures in a competent manner.

CA Security Regulations

To deal with regulatory requirements, the Civil Aviation Security Regulations were recently passed into law. Established under the authority of the Civil Aviation Act, these regulations deal with basic security requirements and their practical implementation.

Aerodrome operators are required to establish a secure physical environment including the erection and maintenance of fences, gates, and other control measures to prevent unauthorized access. Penalties for non-compliance with these requirements are provided.

The regulations also contain miscellaneous provisions to control carriage of firearms in the cabin of aircraft on passenger flights, carriage of firearms as baggage, access to persons who have been screened for a flight travel by persons in custody or under other administrative direction.

Previously the system relied on manuals and programs developed by each organization and frequent inspections by CAA officials often revealed weaknesses. The airline security programs, for example, often used glossy and detailed documentation to outline the means of achieving the security standards, but really effective implementation of the procedures was rare.

Comprehensive Text-Related Glossary

security regulations [sɪˈkjʊərɪti] – законодательные акты по охране полетов
have been passed into law [ˈlɔː] - получила статус закона
under the authority [ɔːˈθɒrɪti] - в соответствии, на основе
practical implementation [ˈpræktɪkəl ɪmˈpleɪntətʃən] - практическая реализация

secure physical environment [ɪn'vætəɹənmənt] - надежное физическое окружение
erection [ɪ'rekʃən] - сооружение, установка
fences ['fensɪz] - ограждения, заборы
gates [gɛts] - ворота (контрольно-пропускных пунктов)
unauthorized access [ʌn'ɔ:θəraɪzd 'æksɛs] - несанкционированный доступ
penalties ['pɛnltɪz] - штрафы; наказания
non-compliance [nɒnkəm'praɪəns] - невыполнение требований
miscellaneous provisions [mɪs'telɪnjəs] - различные положения
to control carriage of firearms ['kærɪdʒ]- запрещающие ношение огнестрельного оружия
access to persons ['æksɛs] - доступ к лицам (уже прошедшим досмотр)
persons in custody ['kʌstədi] - лица, находящиеся под охраной сопровождающих
under other administrative direction [dɪ'rekʃən] – лица обладающие особым административным статусом
to reveal [rɪ'veɪl] -выявлять(упущения, недостатки)
glossy and detailed documentation ['glɒsi] -отпечатанные на глянцевой бумаге излишне-подробные документы
rare [rɛə]-редко встречающийся

Questions For Discussion

1. What were Civil Aviation Security Regulations passed into law for?
2. What do these Security Regulations deal with?
3. What are airdrome operators required to establish?
4. What are fences, gates and other control measures for?
5. What does non-compliance with these requirements entail?
6. Is carriage of firearms on passenger flights allowed?
7. Can passengers carry firearms as baggage?
8. Why is access to persons who have been screened for a flight prohibited?
9. What did frequent inspections by CAA officials often reveal?
10. Does glossy and detailed documentation always mean effective implementation of security procedures?

Aviation Briefing

...The integration of electronic systems for surveillance, detection and communication with such essential physical elements as fences, barriers and gates, is just one step in the process of developing total security. While integration and control are clearly vital, no item of equipment will play its full part unless operators are properly trained and provision for maintenance has been made. These post installation items should be part of any turnkey contract and they may well involve an active participation of the prime contractor in developing airport security long after the system has been implemented.

...Industry and government are not always in really close agreement Current regulations call for pilots to make at least three take-offs and landings every 90 days to maintain their flight status. The FAA is now considering a new rule that would establish currency of experience for pilots of long range aircraft - of the three take-offs and landings at least one would have to be in a real aircraft at a real airport That was not a problem with pilots flying routs from Baltimore to New York or Washington DC, to London. It is with much longer flights...

PART THREE

AVIATION ENGLISH

ENGLISH AS A WORLD LANGUAGE AND AN INTERNATIONAL AVIATION LANGUAGE

English has become a world language because of its establishment as a mother tongue outside England, almost in all the continents of the world. This exporting of English began in the XVII-th century, with the first settlements in North America. Above all, the great growth of population in the United States together with massive immigration in the nineteenth and twentieth century has given the English language its present standing in the world. Besides, basic characteristics of English also contribute to the situation that nowadays it is the most spread language on Earth. These characteristics are: simplicity of forms (very few endings); flexibility (the same word can operate as some different parts of speech); openness of vocabulary (English words are frequently admitted by other languages). At present English is the language of business, technology, sport and aviation.

There are four working languages in ICAO – English, French, Spanish and Russian. But all meetings, conferences and assemblies are conducted in English and then all materials are translated into other languages. For this purpose ICAO has a special “Language and Publications Branch” with four sections.

The most urgent problem in aviation is safety. The progress in safety is achieved by intensive efforts in various spheres – engineering sciences, meteorology, psychology, medicine, economics and “last but not least” the English language. Insufficient English language proficiency often results in accidents and incidents. For example, the worst disaster in aviation history occurred in 1977 when two Boeings 747 collided at Tenerife, Canary Islands. The crew of Pan American 747 missed or misunderstood taxi instructions requiring a turn off the active runway. At the same time KLM 747 initiated a shrouded take off on the opposite direction. The two aircraft met on the active runway, with heavy loss of lives.

Between 1976-2000 more than 1100 passengers and crews lost their lives in accidents in which language played a contributory role.

Concern over the role of language in airline accidents brought real actions. So in March 2003 ICAO adopted Amendments to ICAO Annexes 1, 6, 10 and 11. These Amendments make clear and extend language requirements. In addition, they contain new more strict requirements for language testing.

Additional standards in Annex 10 demand to adhere (=follow) more closely to standard phraseology in all air- ground exchanges and to use plain language when phraseology is not sufficient. Phraseology alone is unable to cover all of the potential situations, particularly (especially) in critical or emergency situations. Therefore the PELA (Proficiency in English Language) test examines use of both ATC phraseology and plain English.

EXERCISES

I. Ответьте на вопросы:

1. When did the exporting of English begin?
2. In what spheres of life is English most widely used?
3. How many working languages are there in ICAO?
4. In what language are meetings, conferences and assemblies conducted in ICAO?
5. How is the progress in safety achieved?
6. Could you explain why English language is so important in solving safety problem?
7. What are ICAO real actions for improving English language proficiency?
8. Will you describe the Amendments to ICAO Annexes adopted in 2003?
9. What do additional standards demand?
10. Can phraseology alone cover all of the potential situation in the air?
11. What are the PELA test requirements now?

II. Переведите слова, обращая внимание на словообразующие элементы:

establish – establishment

special – specially – specialist – speciality – specialize – specialization

urgent – urgency

safe – unsafe – safely – safety

achieve – achievement – achievable

vary – various – variously – variety – variant – variable – variability

sufficient – sufficiently – sufficiency

collide – collision

critical – uncritical – critically – criticize – criticism

require – requirement – unrequired

oppose – opposite – opposition – oppositionist
 add – addition – additional – additionally
 act – active – actively – activate – activity – action
 heavy – heavily – heaviness
 contribute – contributory – contribution
 lose – loser – loss
 strict – strictly – strictness
 cover – coverage – discover – discovery
 real – really – realist – realistic – realism – reality

FROM THE HISTORY OF AVIATION

Men have wanted to fly for more than two thousand years. Observations of flying birds gave man the idea of human flight. Every nation has many legends and tales about birdmen and magic carpets.

One of the most famous Greek legend is the legend of Daedalus and his son Icarus who made wings and fastened them on with wax. Daedalus landed in safety, Icarus was not so careful and he flew closer and closer to the sun. The wax melted, the wings came off and he fell into the sea.

The first scientific principles of human flight appeared in the 14-th century. The problem was studied by the great scientist Leonardo de Vinci. He observed the flight of birds, studied the air and its currents and designed a flying machine the wings of which were operated by a man.

But the first actual flight which man made was that in the balloon. In October 1783 the Montgolfier brothers in France sent two men almost 25 metres up in a balloon which descended 10 minutes later, about 2.5 kilometres away. The first Russian aircraft designer was Alexander Mozhaisky. His airplane, a monoplane, with two light steam engines was tested on August 1, 1882. With the first Russian pilot, I.N. Golubev the plane rose into the air and flew a distance of 200 metres before it landed.

At that time the same work was being conducted by Otto Lilienthal, a remarkable German inventor. In 1891 he made his flight in a glider covering 35 metres. In 1903 two Americans, the brothers Wilbur and Orville Wright, built their aeroplane. It flew only 32 metres but it was the first aeroplane with an internal combustion engine that was a big step forward.

In the following years aviation made big advances. In 1908 Henry Farman, in France, made a circular flight of one kilometre. A year later Bleriot crossed the English Channel. In 1913 a Russian student Lobanov invented aeroplane skis and this enabled to land and take off in winter.

In 1913 the Russian designer Igor Sikorsky built the world's first multiengined heavy aircraft. That same year the Russian pilot Nesterov executed the first loop. Another Russian pilot, Artseulov, in 1916 proved that a pilot can take his plane out of a corkscrew.

At the beginning of the 20-th century the dirigible was invented. The most known inventor of a dirigible is Count Ferdinand von Zeppelin, a retired German army officer. His famous "Graf Zeppelin" in 1929 began a cruise which took 21 days 8 hours and 26 minutes to circle the world.

An outstanding event in the history of aviation took place in Petersburg in 1913. That year a heavy multiengined aeroplane "Russky Vityaz» was constructed. It weighed 4,940 kg and had a 1,440 kg useful load. On August 2, 1913 with seven passengers on board it set up a world record by remaining in the air for 1 hour 34 minutes. Its top speed was over 90 km/hr.

In 1914 an improved version of the multiengined heavy bomber of the Ilya Murometz type was built. It weighed 3,000 kg and had a 1,760 kg useful load, a maximum cruising range of 700 km and a top speed of more than 110 km/hr.

Among the pioneers of aviation are the names of aircraft designers Tupolev, Polikarpov, Sukhoi, Arkhangelsky, Ilyushin, Yakovlev and others; the pilots Vodopyanov, Doronin, Kamanin, Lyapidevsky and some others - the first Heroes of the Soviet Union who were awarded this title for saving the passengers and the crew after ice-breaker Chelyuskin had been crashed by ice. In 1937 the world applauded the daring non-stop flight by Chkalov and his crew to the USA via the North Pole on the ANT-23. In 1938 Soviet aviatrixes Grisodubova, Raskova and Osipenko made a non-stop long-distance flight to the Far East and became the first Heroes of the Soviet Union among women.

And, of course, it is necessary to mention the names of the outstanding Russian scientists who considerably contributed aviation. It is the great Russian scientist M.V.Lomonosov who developed the scientific principles of flight of bodies heavier-than-air and built the first helicopter model in the world.

The Great Russian scientist D.I.Mendeleyev is the author of man outstanding researches in aeronautics. He developed the principles of the stratostat design with a pressurized cabin.

S.A.Chaplygin, the outstanding scientist in mechanics, is one of the founders of the modern aviation theory and the pioneer in aerodynamics of high speeds.

Special services in science belong to another famous scientist who is called "father of Russian aviation". And this is N.E.Zhukovsky. He was the first to develop a scientific wing theory and the principles of airscrew design. From that time aerodynamics has been a science combining theoretical knowledge with practical experiments. All modern aerodynamical calculations are based on his outstanding theoretical works.

N.E.Zhukovsky is the founder of the Central Aero-Hydrodynamic Institute (Z.A.G.I) which became the leading centre of the aeronautics and aeronautical engineering. The rapid development of aviation began after the World War II. But this is another story.

EXERCISES

I. Ответьте на вопросы:

1. Was it interesting for you to read this text?
2. Did you read about the history of aviation at school?
3. When did the first scientific principles of human flight appear?
4. Who was the first to study the problem of human flight?
5. Describe the flying machine designed by Leonardo de Vinchi.
6. What was the first actual flight man made?
7. Why was it impossible to fly in a balloon?
8. Who was the first Russian aeroplane designer?
9. What plane was designed by him?
10. What distance did the plane cover?
11. Who designed the first glider?
12. What is glider?
13. What event took place in Petersburg in 1913?
14. How long did "Russky Vityaz" stay in the air?
15. Who is called "the father of Russian aviation"?

II. Переведите слова, обращая внимание на словообразующие элементы:

observe – observer – observation

safe – safely – safety – unsafe

science – scientist – scientific

design – designer

fly – flight

invent – inventor – invention
 construct – constructor – construction
 improve – improvement
 weigh – weight - weightless
 develop – development

III. Найдите в тексте эквивалент следующим словосочетаниям:

полет человека, поток воздуха, конструктор самолета, конструкция крыла, модель вертолета, мировой рекорд, максимальная скорость, беспосадочный полет, паровой двигатель, лыжи самолета.

INTERNATIONAL CIVIL AVIATION ORGANIZATIONS

It is known that the pioneers of aviation were men of different nationalities and of many countries: Deodalus and Leonardo de Vinci, Lilienthal and Bleriot, Mozhaisky and the Wright brothers and others. So the aeroplane is a creature of no one country's knowledge and efforts. A peculiarity of air transport made it clear from the start that the development of aviation was impossible without international agreement. That's why the International Civil Aviation Organization (ICAO) was created. It happened in 1944 at a conference of 52 nations held in Chicago. At present there are about 200 member States in ICAO. Its headquarters is in Canada, Montreal. The working languages of ICAO are English, French, Spanish and Russian. Russia has been the member of ICAO since 1970.

It is very difficult to describe all of ICAO's activities. ICAO solves many problems on the international level. ICAO has a coordination agency. One of its purposes is to gather knowledge widely scattered among nations and to standardize the equipment and operational techniques used in air navigation in and over the territories of its member-states. The main task of ICAO is the flight safety. The aims of the Organization are spelt out in Article 44 of the Chicago Convention. These are to develop the principles and techniques of international air navigation, to plan and develop international air transport; to encourage the arts of aircraft design and operation for peaceful purposes; to encourage the development of airways, airports and air navigation facilities for international civil aviation, and so on.

To ensure the safe and efficient worldwide aviation operation ICAO has developed technical specifications forming the basis for uniform rules and procedures. Standardization affects the air-worthiness of aircraft, facilities and services required

for aircraft operations elsewhere. These include: aerodromes, communications, navigational aids, meteorology, air traffic services, search and rescue, information services. ICAO is doing much to make the air more clear. There are special standards to reduce noise by designing new quieter aircraft. ICAO has set up standards for air crew and controllers as well. ICAO is also doing much to prepare and train aviation specialists.

The second in its importance organization after ICAO for international civil aviation is IATA - International Air Transport Association founded in 1945. It is one of the international civil aviation organizations uniting world airlines. IATA is concentrated on the safety problem. Its main objective is to contribute to safe and regular development of civil aviation and to cooperation of world airlines. Its Technical Committee deals with the problem of safety, standardization of aviation equipment, training of flying personnel, communications, meteorology, aerodromes, navigational aids, etc. All IATA members report the data on flying, taxiing and other ground incidents including maintenance deficiencies. Flight safety experts, aviation specialists and scientists of the member States investigate these accidents to prevent them in future. Russia is a member of IATA, it conforms to the IATA's standards, procedures and documents which is of great importance for studying and solving the problems which IATA deals with.

International Federation of Air Traffic Controllers' Association (IFATCA) was founded in 1961 with the purpose to enable the national associations to study and solve the problems for the development of air traffic control art and to create a better understanding among the controllers serving international aviation.

Euro control is the European organization working for air navigation safety. It was created in 1963 for better service of European airspace. Some European countries have signed the agreement of cooperation for the safety of air navigation and organized common air traffic services in the upper airspace.

EXERCISES

Отвѣтьте на вопросы:

1. What is ICAO?
2. When and where was ICAO created?
3. How many member States are there in ICAO?
4. Is Russia a member State of ICAO?
5. How long has Russia been the member of ICAO?
6. Where is the ICAO's headquarters?
7. What are the working languages of ICAO?

8. What is the main task of ICAO?
9. Where are the main aims of ICAO spelt out?
10. How does ICAO ensure the safe and efficient aviation operation?
11. What for are the uniform rules and procedures required?
12. What other international Civil Aviation Organizations do you know?
13. What is IATA? IFATCA? Euro control?

II. Переведите слова, обращая внимание на словообразующие элементы:

different – difference – differently

difficult – difficulty

active – activity

standard – standardize – standardization

equip – equipment

facility – facilitate

efficient – efficiency – efficiently

require – requirement

reduce – reduction

control – controller

investigate – investigation – investigator

prevent – prevention – preventive

III. Найдите в тексте эквивалент следующим словосочетаниям:

воздушный транспорт, безопасность полета, конструкция самолета, навигационные средства, правила воздушного движения, авиационные специалисты, проблема безопасности, информационная служба, мировые авиакомпании, воздушная навигация, полет самолета.

AERONAUTICAL INFORMATION SERVICES (AIS)

Standards and Recommended practices for Aeronautical Information Services were first adopted by the Council on 15 May 1953, and were designated as Annex 15 to the ICAO Convention. This Annex became applicable on 1 April 1954.

Each country provides aeronautical information concerning its own territory. It is published in the Aeronautical Information Publication (AIP) and in Notices to

Airmen (NOTAM). ICAO personnel engaged in aeronautical information services do not provide actual service, but check on whether these services are provided in ICAO's members States. NOTAM are classified into two categories, I and II. Both classes contain information concerning the establishment, condition or change in any aeronautical facility, service procedure or hazard the timely knowledge of which is essential to personnel concerned with flight operations.

Information generated by AIS and AIP system is directed to pilots before taking off. NOTAM information might include advice that a certain airspace will be temporarily closed because of rocket launching, for example, or that a non-directional radio navigation beacon at a particular location is inoperative.

In addition to NOTAM ICAO adopted a SNOWTAM, a special series of NOTAM informing about the presence or removal of hazardous conditions at airport due to snow, ice and slush or standing water on the aircraft movement areas of airports.

A pilot planning a flight will prepare his flight plan according to the NOTAM information. What information does a pilot need? This information is quite varied. First of all he wants to know which airway to follow to the aerodrome of his destination. Further information needed by the pilot is that about facilities available en route and at the point of destination, the length of the runways, the communication frequencies, meteorological information, etc. He fills out a flight plan giving the route he is to follow and the description of the route, the name of the aerodrome of his destination and also the name of the alternate aerodrome and other information. He must indicate whether he will fly IFR (Instrument Flight Rules) or VFR (Visual Flight Rules) or, a combination of both.

Having the information received from the pilot Air Traffic Control can control the flight.

EXERCISES

I. Ответьте на вопросы:

1. When did Annex 15 become applicable?
2. What is NOTAM?
3. What information does NOTAM contain?
4. Where is aeronautical information published?
5. Is AIP an international publication?
6. What is the task of ICAO aeronautical information services personnel?
7. When is the necessary information directed to pilots?
8. When does the pilot need the information?
9. What information does a pilot need to plan his flight?

10. How is a flight planned?

11. What flight rules there exist?

II. Переведите слова, обращая внимание на словообразующие элементы:

apply – appliance – applicable – applicant – application

provide – provider – provision – provisional

inform – informer – information – informal – informality – informative

direct – direction – directional – directly – director

locate – location – locally – localize – local

move – movement – movable – moveless – mover

service – serviceable – unserviceable

change – changeable – changeability – changeless

present – presence – presently – presentable – presentation

control – controllable – controller – uncontrollable

vary – variable – variability – variety – variation – variant

III. Найдите в тексте эквивалент следующим словосочетаниям:

стандарты и рекомендуемые практики, служба аэронавигационной

информации, государства – члены ИКАО, выполнение полетов, зоны движения

самолетов, частоты связи, запуск ракет, правила инструментального полета,

правила визуального полета.

AIRPORT

There are airports in every country. In theory, an aircraft can fly an infinite number of paths through the air from any surface point to any other. In practice, paths of flight lead from airport to airport. Aircraft not only need proper landing and takeoff facilities. Moreover, those who use aircraft need services and accommodations which the airport must provide.

In the early days of aviation when aeroplanes were small a cow pasture could be used as a "flying field". But with the continuous increase of air traffic and the introduction of high-capacity aircraft it became necessary to expand airport facilities, to build new terminal buildings and to construct new airports.

In the interest of aviation safety and air traffic assistance and control air traffic rules were established. The rules relate chiefly to weather minima, flight altitudes and traffic patterns which are to be used under different circumstances. Much can be learned about the nature of a specific airport from aeronautical charts which pilots use. For example, the chart reveals the type and size of an airport, the radio facilities it uses and its altitude and location.

The modern airport is a complex structure, a centre of most diversified services. Millions of passengers and thousands of tons of airfreight are handled by modern airports. Thousands of people are working at airports.

In practical any airport can be divided into two main parts: the landing area (runways and taxiways) and the terminal area (aprons, buildings, car parking areas, hangars, etc.). There is also a third part - terminal air traffic control. The landing area includes runways and taxiways. The number of runways, their length and location depend on the volume and character of traffic, the prevailing wind direction and other factors. The runways and taxiways should be arranged so that to prevent delays on landing, taxiing and take off operations.

Aprons are required for aircraft to make final checks prior to departure. The main function of the terminal buildings is to handle the departing and arriving passengers and their baggage.

Among the airport services are: flight assistance service, air traffic control services - airport traffic control, approach control, air route traffic control, radio communications and weather observation and forecasting service.

At every airport there is a number of supplementary services such as rescue and security services, an airport clinic, a fire brigade, special vehicles and equipment units (water trucks, tow tractors, etc.).

Other services include maintenance, overhaul and repair of stationary and mobile equipment, the supply of electricity, water, heat and air conditioning.

The facilities include runways, air navigational aids, passenger and cargo terminals. The airport has a hotel, a post office, bank offices, restaurants, car rental firms, etc. In the terminal there is everything for quick passenger handling: check-in desks, electronic flight information board of departure and arrival times, the baggage claim carousel and many others.

Nowadays there exists one more pressing problem - that of air piracy. The number of acts of unlawful interference resulted in deaths and injuries of some hundreds of persons. So the ICAO Council has adopted Amendment 8 to Annex 17 (Security). The Amendment covers security screening and inspecting passengers, checked baggage, security control over cargo, courier and express parcels and mail.

Every airport has new specific detection systems capable to screen airline passengers and their baggage within less than 8 seconds.

EXERCISES

I. Ответьте на вопросы:

1. Why was it necessary to build new terminal buildings and construct new airports?
2. Why were air traffic rules established?
3. What do these rules relate to?
4. What does the aeronautical chart reveal?
5. What are the main two parts of the airport?
6. What is the third part of the airport?
7. What factors influence the number of runways, their length and location?
8. What does the aircraft crew do on the apron?
9. What is the main function of the terminal building?
10. What airport services do you know?
11. What supplementary services are there at the airport?
12. What does the electronic information board indicate?
13. What equipment is used at the airport for preventing piracy?
14. How many airports are there in Petersburg?
15. What is the distance between the center of the city and Pulkovo-1?
16. How can you get to the airport?
17. Is there an airport in your native city?
18. Is it an international or domestic?

II. Переведите слова, обращая внимание на словообразующие элементы:

continue – continuation – continuous – continuously

introduce – introduction – introductory

necessary – necessity – necessitate

divide – division – divider

depend – dependent – dependence

prevent – prevention – preventive

detect – detection – detective – detector

depart – departure

arrive – arrival

III. Найдите в тексте эквивалент следующим словосочетаниям:

средства посадки и взлета, правила управления воздушным движением, схема движения, радиосредства, зона посадки, преобладающее направления ветра, службы аэропорта, контроль подхода, наблюдение за погодой, служба поиска и спасания, обслуживание пассажиров, грузовой терминал.

SAFETY

Safety is the most important problem in aviation. The prevention of collisions between aircraft in the air and on the ground is the main task of aviation specialists.

The achievement of aviation safety is the result of progress in many sciences and disciplines including engineering, aerodynamics, meteorology, psychology, medicine and economics.

Safety is ensured by thousands of ICAO and governmental regulations, by high standards in the design and manufacture of an aircraft and by rigid (strict) procedures of airline safety practices.

The aviation industry is constantly taking steps to prevent accidents but the crashes do occur time after time. They result from different causes: failure in the aircraft structure, human errors, navigational failures, malfunctioning of airborne and ground aids, hazardous weather conditions and so on.

Poor knowledge of English can also contribute to or result in an accident or incident. Therefore ICAO revised the provisions related to the use of the language for radiotelephony communications and demands good discipline to follow more closely to standard phraseology in all air-ground exchanges.

Experience has shown that phraseology alone is not sufficient to cover all of the potential situations, particularly in critical or emergency situations. That's why proficiency in common or plain language is also of great importance.

One of ICAO's chief activities is standardization in all spheres of aviation operations. The main ICAO document is SARPS (International Standards and Recommended Practices). Its main task is to provide the necessary level of standardization for safe and regular air operations.

EXERCISES

I. Ответьте на вопросы:

1. What is the most important problem in aviation?
2. What is the main task of aviation specialists?
3. By what means is safety ensured?

4. What factors may cause accidents?
5. What can you say about the role of language in the problem of safety?
6. Can radiotelephony alone cover all of the potential situations?
7. What is the main document ICAO?
8. What is the main task of SARPS?

II. Переведите слова, обращая внимание на словообразующие элементы:

terror – terrible – terribly – terrific

danger – dangerous – dangerously

care – careful – careless – carelessness

safe – safety – unsafe

prevent – preventive – prevention

collide – collision

special – specially – specialist – speciality – specialize – specialization

achieve – achievement

ensure – insurance

govern – governor – government – governmental

regular – regularly – regulation – regularity – irregular

differ – different – differently – difference

fail – failure

navigate – navigator – navigation – navigational

hazard – hazardous

know – knowledge – unknown

provide – provision – provider

relate – relation – relative – relatively – relativity

communicate – communication – communicative – community

sufficient – sufficiently – sufficiency – insufficient

proficient – proficiently – proficiency

necessary – necessarily – necessity – unnecessary

critical – critically – criticize – criticism – uncritical

close – closely

HUMAN FACTORS IN AVIATION

Human factors is a critical aspect of aviation safety, one that ICAO began to address more than a decade ago. ICAO convened the first in a series of global symposia on flight safety and human factors in 1990. From the beginning, when the first event was held in a city known then as Leningrad, there was a conviction that international aviation could make enormous progress in improving safety through the application of human factors knowledge.

The first symposium was a turning point and the stage for following meetings in the United States in 1993, in New Zealand in 1996 and, finally in Chile in 1999. There have been encouraging developments since 1990, but we still have challenges to pursue: after the Leningrad symposium, human error remains a significant safety concern.

The purpose of the worldwide symposia and 10 regional seminars which were held in the past decade was to increase the awareness of States, industry and organizations in all ICAO regions about the importance of human factors. The ongoing implementation of the ICAO communication, navigation, surveillance and air traffic management (CNS/ATM) systems concept has introduced new challenges, and also new possibilities for human factors. The reason the community must respond to is, of course, to ensure that civil aviation continues to achieve its ultimate goal: the safe and efficient transportation of passengers and goods.

The ICAO flight safety and human factors programme is safety-oriented and operationally relevant. Moreover, it is practical since it must deal with real problems in a real world. Through the programme, ICAO has provided the aviation community with the means and tools to anticipate human error and contain its negative consequences in the operational environment. Furthermore, ICAO's efforts are aimed at the system – not the individual.

The global aviation safety plan (GASP) was developed by the ICAO Air Navigation Commission in 1997 and subsequently approved by the ICAO Council and endorsed by the ICAO Assembly. GASP was designed to coordinate and provide a common direction to the efforts of States and the aviation industry to the extent possible in safety matters. It is a tool that allows ICAO to focus resources and set priorities giving emphasis to those activities that will contribute the most to enhancing safety. Therefore the flight safety and human factors programme is among the six major activities that comprise the plan.

EXERCISES

I. Ответьте на вопросы:

1. When did ICAO begin to address to the aspect of human factors?
2. When and where was the first symposium on flight safety held?
3. What can improve aviation safety?
4. How many symposia on flight safety were held by ICAO?
5. What was the purpose of the symposia and seminars?
6. Where can the knowledge of human factors be applied?
7. What is the ultimate goal of civil aviation?
8. What is the ICAO flight safety and human factors programme?
9. What for was the global aviation safety plan developed?
10. Why is the flight safety and human factors programme so important?

II. Переведите слова, обращая внимание на словообразующие элементы:

safe – safety – safely – unsafe

navigate – navigation – navigator – navigable – navigability

operate – operation – operative – operator – operational - operationally

industry – industrial – industrious - industrialist – industrialization

communicate – communication – communicative – communicable – communicator

progress – progressive – progression – progressionist

improve – improvement – improvable – improver

organize - organization – organizer - disorganization

efficient – efficiency – inefficient – efficiently – inefficiency

III. Найдите в тексте эквивалент следующим словосочетаниям:

знание человеческого фактора; важное дело для безопасности; идея систем связи, навигации, обзора и управления воздушным пространством и воздушным движением; программа ИКАО по безопасности полетов и человеческому фактору; план по авиационной безопасности в мировом масштабе; комиссия ИКАО по воздушной навигации; вопросы безопасности.