

## **Part I**

**Lebedeva N.A.**

# **AVIATION**



# **JOBS**

**Part II:**

**SECURITY and SAFETY in Aviation**

**Saint Petersburg**

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Учебно-методическое пособие по изучению авиационного английского языка для студентов факультета летной эксплуатации специальности «Эксплуатация воздушных судов и организация воздушного движения» направления "Аэронавигация".

Целью настоящего пособия является развитие иноязычных коммуникативных умений у студентов младших и старших курсов авиационного вуза. Научить слушателей вести беседу на английском языке на темы, связанные с профессиональными процессами в аэропорту.

Для закрепления лексико-грамматического материала предлагается система упражнений. Структура каждого урока включает: фонетические и словообразовательные упражнения, упражнения на закрепление грамматических моделей, лексические упражнения, текст для чтения и активного усвоения определенного лексического и грамматического материала, разговорные упражнения, упражнения на перевод. Видео поддержка по грамматическим темам и разговорным. Грамматические трудности рассматриваются по мере их встречаемости именно в тексте. В учебном пособии использован аутентичный материал.

Учебное пособие состоит из **Part I Aviation jobs** и **Part II Security and Safety in Aviation**, где отражены основные профессиональные процессы. Пособие рассчитано как на контактную, так и на самостоятельную работу.

Пособие рассчитано на студентов, продолжающих изучение английского языка и авиационного английского языка.

Пособие выпущено в электронном варианте для использования только в локальной сети Санкт-Петербургского университета гражданской авиации.

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## UNIT 1. AIRLINE PILOT

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### PHONETICS

Pay attention to the correct pronunciation of the combinations of letters. -

<b>tion</b> [ʃn]	<b>sure</b> [ʒə]	<b>th</b> [θ]
<b>national</b>	<b>measure</b>	<b>length</b>
<b>international</b>	<b>leisure</b>	<b>think</b>
<b>satisfaction</b>	<b>treasure</b>	<b>thousand</b>

**Ex.1. Read the words and word combinations correctly.**

- International, measure, communication, authority, promotion, certification.
- Leisure purposes, noise regulations, length of the journey, in perfect condition.

### REMEMBER THE PARTS OF SPEECH

- N. (Noun) – имя существительное (Кто? Что?)  
 Adj. (Adjective) – имя прилагательное (Какой?)  
 V. (verb) – глагол (Что делать? Что сделать?)  
 Adv. (Adverb) – наречие (Как? Каким образом?)  
 Prep. (Preposition) – предлог

### WORDFORMATION – СЛОВООБРАЗОВАНИЕ

#### Analyse the word formation:

“-ly” – суффикс наречия. Наречия образуются от прилагательных и отвечают на вопрос «Как?»

happy – счастливый	happily – счастливо
honest – честный	honestly – честно
beautiful – красивый	beautifully – красиво
Safe – безопасный	Safely – безопасно

**Ex. 2. Make the words using the suffix “-ly-” and translate them into Russian:**

Sad, physical, precise, peaceful, incredible, financial.

### PREPOSITIONS - ПРЕДЛОГИ

Предлоги могут выражать как падежные отношения, которые в русском языке передаются с помощью окончаний (склонение существительных), так и иметь собственное лексическое значение.

а) выражают падежные отношения:

падеж	вопрос	Предлог	Пример
родительный	Кого? Чего?	<b>Of</b>	Types <b>of</b> aircraft – типы (чего?) самолетов

б) имеют собственное лексическое значение:

- **from 1947 to 2001** – с 1947 по 2001 год
- comes **from** passengers – приходит **от** пассажиров
- **over** 150 small airlines – **свыше** 150 маленьких авиакомпаний

### Ex. 3. Translate into Russian paying attention to the prepositions.

1. Length of the journey, 2. restricted to 900 flying hours, 3. work three to four hours, 4. volume of freight, 5. fuelling of the aircraft, 6. types of destinations, 7. cost of the aircraft, 8. comes from airlines, 9. spend three to 15 years before a promotion to captain, 10. majority of commercial airlines.

## GRAMMAR

### 1. Present Simple Active Tense – Настоящее простое время действительного залога

Обозначает обычное действие в настоящем.

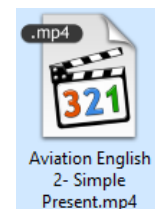
#### Образование:

а) forms of “to do”

Person	Singular	Plural
1	I	we
2	You <b>do</b>	
		you
3	He, she, it <b>does</b>	they

Person	Singular	Plural
1	I	They
2	We	
	You <b>start</b>	
	You	
3	He, she, it <b>starts</b>	

б) forms of “to start”





Statements, questions and negatives with the verb “to serve” in Present Simple Tense – утверждения, вопросы и отрицание с глаголом “to serve” в простом настоящем времени.

Terminal 2 **serves** 100 international flights a day.

	Вопросительное слово или группа слов	Вспомогательный глагол	подлежащее	Сказуемое	Дополнение	обстоятельство
Утвердительная Форма			Terminal 2	<b>serves</b>	100 international flights	a day.
Вопросительная форма (общий вопрос)		<b>Does</b>	terminal 2	<b>serve</b>	100 international flights	a day? - Yes, it does. - No, it does not (doesn't).
Специальный Вопрос	How many flights	<b>does</b>	terminal 2	<b>serve</b>		a day?
Отрицательная Форма			Terminal 1	<b>does not (doesn't) serve</b>	100 international flights	a day.

**Ex. 4. Translate the sentences into Russian, make questions and negatives – переведите предложения, образуйте вопросительную и отрицательную форму.**

1. Air France carries 150 thousand passengers a month.
2. British Airways operates different types of aircraft.
3. Most of airline revenue comes from passengers.
4. Pilots start their career as a first officer.
5. You operate aircraft of different types.
6. Pilot job demands a great deal of responsibility.

7. They fly to Paris on Mondays.
8. Pilot salaries vary according to the airline.
9. Every year Frankfurt airport handles more than 18 million passengers.
10. Crew members work a lot before the flight.

## 2. Past Participle – Причастие прошедшего времени

### Образование:

К основе правильных глаголов прибавляется окончание **-ed** (checked, discussed, received).

У неправильных глаголов берется III форма (written, taken, given).

Переводится на русский язык причастиями на -нный -тый (проверенный, взятый). Служит для образования времен группы Perfect и Passive Voice.

а) **Past Participle** в функции определения к имени существительному.

Переводится на русский язык причастиями на -нный, -тый (проверенный, взятый).

The answer **received** from the sellers surprised us. – Ответ, **полученный** от продавцов, удивил нас. (определение к существительному)

The methods **used** in protecting airports – методы, используемые для защиты аэропортов.

To use **a hijacked** plane – угнанный самолет.

To screen **the checked** baggage – просвечивать зарегистрированный багаж.

б) **Past Participle** для образования времен страдательного залога

## 3. Present Simple Passive – Простое настоящее время страдательного залога

**am**

**is**

**are**

+

**Past Participle**

The passengers **are screened** by a metal detector. – Пассажиры **осматриваются** металлодетектором.

**Statements, questions and negatives in Present Simple Passive –  
Утверждения, вопросы и отрицания в простом прошедшем времени  
страдательного залога.**

	Вопрос и- тельное слово	Вспомо- гательн ый глагол	Подлежа щее	Сказуемо е (смыслов ой глагол)	Дополнение
	0	1	2	3	4
Утвердитель ная форма			The passengers	<b>are screened</b>	by a metal detector.
Отрицатель ная форма			The passengers	<b>are not (aren't) screened</b>	by a metal detector.
Вопроситель ная форма (общий вопрос)		<b>Are</b>	the passengers	<b>screened</b>	by a metal detector.
Специальн ые вопросы	What  Where	<b>are  are</b>	the passengers  the passengers	<b>screened by?  screened?</b>	

**Ex. 5. Transform the statements into Present Simple Passive:**

1. This airline orders some TU 154s every year.
2. Airlines employ pilots in different areas.
3. The airport security screens passengers.
4. Pilots brief the cabin crew before the flight.
5. Security officers screen baggage.
6. Two pilots operate an aircraft.
7. Pilots analyze the flight plan.
8. The mechanics check the engine every week.
9. They never delay this flight.
10. Pilots supervise the loading of the aircraft.

## READING

### Ex.6. Read and learn the following words and word combinations.

a)

1. brief v. [bri:f] – инструктировать летчика перед вылетом
2. ensure v. [in 'ʃuə] – обеспечивать
3. employ v. [im 'plɔi] – нанимать
4. fly v. [flai] – летать, пилотировать самолет, зд. перевозить
5. maintain v. [men'tein] – поддерживать
6. purpose n. ['pʌ:pəs] – цель
7. responsibility n. [rispɒnsə'biliti] – ответственность
8. rewarding adj. [ri 'wɔ:diŋ] – стоящий
9. satisfaction n. [sætɪs 'fækjən] – удовлетворение

b)

10. environmental changes – изменения обстановки
11. public address system – система оповещения
12. sheduled service – рейсы по расписанию
13. training courses – обучающие курсы
14. to work shift patterns – работать посменно

### Ex.7. Match the words with the definitions:

1.	Crew	A	Fixed regular payment made by employer to employee.
2.	Route	B	Sudden state of danger.
3.	Emergency	D	Way taken in getting from starting point to destination.
4.	License	E	Body of persons manning ship, aircraft, etc.
5.	Salary	G	Leave or permission.

### Ex.8. Give the definitions of the word below using a Dictionary of English language, translate the definitions into Russian and copy them out into your copy-books.

1. Responsibility

3. Allowance

2. Altitude

4. Promot

**Ex. 9. Read and translate the text “Airline Pilot”:****AIRLINE PILOT**

Airline pilots fly passengers and cargo on a national and international basis for business, commercial and leisure purposes. The aircraft is usually operated by two, three or four pilots, depending on the type of aircraft and length of the journey. The captain has the overall responsibility for the safe and efficient operation of the aircraft, including its crew. Pilots are employed in a number of different areas: passenger scheduled services, passenger charter services, freight services and business aviation.

**Typical work activities**

A pilot can be a rewarding profession, both financially and in terms of the personal satisfaction it provides. In practice, the job demands a great deal of responsibility. A pilot has to pass training courses and will then be tested twice yearly in order to maintain the relevant licence.

A pilot's primary task is to operate the aircraft safely and economically. To achieve this, pilots carry out a range of tasks, with many shared between the captain and first officer. The tasks generally include:

- ensuring the correct information about the route, weather, passengers and aircraft;
- analysing the flight plan, including the route and flying altitudet;
- supervising the loading and fuelling of the aircraft;
- ensuring all safety systems are working properly;
- briefing the cabin crew before the flight,
- communicating with air traffic control prior to take-off and during flight and landing;
- ensuring noise regulations are followed during take off and landing;
- understanding and interpreting data from instruments and controls;
- communicating with passengers using the public address system;
- reacting quickly and appropriately to environmental changes and emergencies;

**Salary and conditions**

- Salaries vary according to the airline that you are employed with, the type of aircraft you fly and your experience. In Great Britain a pilot employed with a small regional airline may earn an annual income of £18,000 (salary data collected Jan 09).
- Benefits usually include uniform, pension scheme, various allowances and discounted travel.
- Pilots are expected to work shift patterns, meaning that they may have to work unusual hours. It is definitely not a nine to five job. The working day can vary in length, with some days up to 12 hours, while other days are only three to four hours.
- Pilots are restricted to 900 flying hours per year.
- The majority of commercial airline pilots are men, but a few women are now entering what is a very competitive profession.
- Usually, on all but the smallest aircraft, pilots work in pairs: a captain with a first officer, who is usually a less experienced pilot.

### **Career development**

Newly qualified pilots generally start their careers as a first officer. The first officer is the second in command on the aircraft. They will fly the aircraft, and generally do the same role as the captain. However, the captain will have the overall authority. A newly hired pilot may expect to spend three to 15 years as a first officer before promotion to captain.

### **Ex.10. Give Russian equivalents for the following:**

1. Fly passengers and cargo, 2. responsibility for the safe and efficient work of aircraft, 3. to maintain the relevant license, 4. fuelling of the aircraft, 5. to use the public address system, 6. environmental changes, 7. annual income, 8. flying hours, 9. competitive profession, 10. experienced pilot.

### **Ex.11. Complete the sentences using information from the:**

1. The aircraft is usually operated by ...
2. Pilots are employed ... ..
3. A pilot's primary task is ...
4. Pilots react quickly to ....
5. Pilot's salaries vary according to ....
6. Pilots benefits include ...

7. ...900 flying hours per year.
8. The majority of airline pilots are ...
9. ... before promotion to captain.
10. ... is usually a less experienced pilot.

**Ex. 12. Give English equivalents for the:**

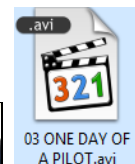
1. Безопасная эксплуатация самолета, 2. заведовать разгрузкой самолета, 3. инструктировать экипаж, 4. быстро реагировать на изменения обстановки, 5. работать в смену, 6. часы налета, 7. опытный пилот, 8. связаться с диспетчером, 9. выполнять перечень заданий, 10. годовой доход.

**Ex.13. Answer the questions:**

1. What purposes do airline pilots carry cargo and passengers for?
2. Who has the responsibility for the safe operation of the aircraft?
3. What does the pilot pass to maintain his relevant license?
4. What kind of tasks does a pilot have?
5. How does a pilot react to environmental changes?
6. How much does a pilot earn in the UK?
7. How many flying hours per year does a pilot have ?
8. How many years does a pilot spend to become a captain ?
9. What is the role of a captain?
10. How many hours do pilots work a day?

**VIDEO TASK**

**Ex.13a. You are going to watch the video about one day of a pilot. Look at the screenshots below and make a topic.**





**Imagine that now you work as a pilot. Write an email to your friend telling him/her about your responsibilities, the aircompany you work in, your passengers, what problems you have to face and if it is possible to keep work/life balance.**

### SPEAKING

#### Ex. 14. Ask your friend in English:

What purposes airline pilots carry passengers and cargo;  
 tasks a pilot has;  
 courses a pilot passes to maintain his license;  
 benefits a pilot has.

Who is responsible for the safe operation of the aircraft.

How a pilot reacts to the environmental changes;

How many flying hours per year a pilot has.

#### Ex. 15. Work as an interpreter:

Question: - Don't you think that the pilot job is very rewarding.

Answer: - Да, это очень престижная профессия, но в то же время очень ответственная, потому что пилот отвечает за жизнь многих людей.

Q: - But what do the pilot tasks consist of?

A: - Это обеспечение безопасной работы всех систем самолета, связь с диспетчером, быстрое реагирование на изменение обстановки и многое другое.

Q: - I see. That's why its a well paid job. What are the benefits of a pilot?

A: - К ним относятся форма, ранний уход на пенсию и проезд со скидкой.



**Ex.16. Speak on the following topics. Make use of the words and phrases given:**

1.The responsibility of a pilot

To operate aircraft safely, range of tasks, to react quickly to environmental changes, to communicate with air traffic control.

2. Pilot's salary and benefits

Annual income, discounted travel, according to the airline, working day, 900 flying hours per year.

## WRITING

**Ex. 17. Translate into Russian:**

1. Пилот отвечает за безопасную эксплуатацию самолета.
2. Пилотов нанимают для перевозки пассажиров и груза.
3. Пилот быстро реагирует на изменение обстановки.
4. Пилот общается с диспетчером во время взлета, полета и посадки.
5. Зарплата пилота зависит от авиакомпании.
6. Пилот инструктирует экипаж перед вылетом.
7. Пилот анализирует план полета, в том числе маршрут и высоту.
8. Льготы пилотов включают ранний уход на пенсию, скидки на поездки и форму.
9. Иногда женщины работают в качестве пилота.
10. Пилоты часто работают посменно.



## UNIT 2. ATC CONTROLLERS

### PHONETICS

Pay attention to the correct pronunciation of the combinations of letters:

**sh** [ʃ]  
**shift**  
**share**  
**short**

**au** [o:]  
**fault**  
**overhaul**  
**automatic**

**gh** [-]  
**flight**  
**height**  
**sight**

**Ex.1. Read the words and word combinations correctly:**

a) High, automatic, operation, overhaul, cause.

b) To work shift patterns, height, speed and course, reduction in aircraft weight, commercial flights, airlines operations, highest volumes of traffic, beneficial effect, international airport, around 170 destinations.

### WORDFORMATION

**Analyse the wordformation:**

“-ment “– суффикс существительного

**V. (глагол) + суффикс “- ment “= N. (имя существительное)**

V.	V.+ «-ment» = N.
to develop – развивать	a develop <b>ment</b> – развитие
to enrol – регистрировать	an enrol <b>ment</b> - регистрация
to invest – инвестировать	an invest <b>ment</b> – инвестиция
to require – требовать	a require <b>ment</b> – требование
to improve – улучшать	an improv <b>ement</b> – улучшение
to equip – оборудовать	an equip <b>ment</b> - оборудование

**Ex. 2. Make the nouns from verbs using the suffix «-ment»:**

To move, to state, to develop, to improve, to equip, to achieve, to require, to announce, to agree, to govern, to pay, to settle, to govern, to develop.

### PREPOSITIONS

Предлоги в английском языке могут быть многозначными. Один и тот же предлог может выражать как падежные отношения, которые в русском

языке передаются с помощью окончаний (склонение существительных), так и иметь собственное лексическое значение.

а) выражает падежные отношения:

падеж	вопрос	Предлог	Пример
дательный	Кому? Чему?	<b>To</b>	Pass the gains <b>to</b> the passengers – передавать доходы (кому?) пассажирам

б) имеет собственное лексическое значение:

**To** – в, к (предлог направления)

Guide aircraft **to** the terminal – вести самолет к терминалу.

### Ex. 3. Translate into Russian paying attention to the prepositions:

1. Provide information to aircraft, 2. pass the gains to the passengers, 3. guide the aircraft to its parking stand, 4. promotion to manager, 5. to make bookings for flights, 6. deny boarding to the last passenger, 7. Iberia flight 567 to Rome, 8. lower fares for passengers, 9. belong to this airline, 10. overhauls of 1500 hours for jet engines.

## GRAMMAR

### GERUND – Герундий

**Герундий** – неличная форма глагола, обладающая как свойствами существительного, так и глагола. Образуется прибавлением окончания –ing к основе глагола: V. + -ing.

Обладая свойствами существительного, герундий может сочетаться с предлогами и выполнять функцию определения (Какой?), дополнения (Кого? Что?), обстоятельства (Как? Где? Когда?). Также он может быть подлежащим (Кто? Что?).

**Becoming** an IATA agent is the single most important step. (подлежащее) – «Становление» агентом ИАТА – единственный важный шаг.

The requirements **for becoming** an IATA agent are set out in detail. (определение) – Требования (какие?), чтобы стать агентом ИАТА, разработаны детально.



1)

<https://yandex.ru/video/preview/?filmId=7165473046840386735&text=Aviation+english+-+gerand>

2)

<https://yandex.ru/video/preview/?filmId=16910977535778099907&text=Aviation+english+-+gerand>

**Ex. 4. Translate the sentences into Russian, define the function of Gerund:**

1. I think of going to the south.
2. I am fond of reading.
3. Reading is her favourite occupation.
4. Thank you for coming.
5. I am surprised at hearing this.
6. We intend shipping the goods in June.
7. Loading heavy weight requires great skill.
8. He entered the room without noticing her.
9. Swimming is a good exercise.
10. The task of controller involves keeping radio contact with aircraft.

**Ex. 5. Translate into English using the Gerund:**

1. У меня нет надежды увидеть его скоро.
2. Он привык вставать рано.
3. Я думаю поехать туда осенью.
4. Я предпочитаю жить на севере летом.
5. Одна из задач диспетчера – обеспечение экипажа метеоинформацией.
6. Мы думаем перевезти этот груз самолетом.
7. Загрузка товаров заняла много времени.
8. Он был занят переводом технической документации.
9. Обеспечение безопасности – важнейшая задача авиакомпаний.
10. Диспетчеры аэродрома занимаются управлением движения по взлетной полосе и вне ее.

**Ex.6. Read and learn the following words and word combinations:**

a)

1. climb v. [klaɪm] – подниматься
2. descend v. [dɪ 'send] – снижаться
3. direct v. [dɪ 'rekt] – направлять

4. guide v. [gaid] – вести
5. emergency n. [ i'mədʒənsi] – чрезвычайная ситуация
6. height n. [hait ] – высота
7. maintain v. [men 'tein] – поддерживать
8. screen n. [ skri:n] – экран
9. sequence v. [ 'si:kwəns] – следить

b)

1. approach controller – диспетчер подхода
2. initial training – начальная подготовка
3. pressured work – напряженная работа

**Ex. 7. Match the words with the definitions:**

1.	Radar	A	Surface on which film, televised picture is projected.
2.	Screen	B	Elevation above ground or sea level.
3.	Tower	D	System for detecting the movement of objects.
4.	Height	E	Direction taken or intended.
5.	Course	G	Tall structure housing machinery.

**Ex. 8. Give the definitions of the word below using a Dictionary of English language, translate the definitions into Russian and copy them out into your copy-books:**

- |            |            |
|------------|------------|
| 1. Airway  | 3. Traffic |
| 2. Landing | 4. Route.  |

**Ex. 9. Read and translate the text “ATC controllers”:**

**ATC CONTROLLERS**

Air traffic controllers maintain the safe and orderly movement of aircraft along major air routes and around airports by giving pilots instructions and advice as to height, speed and course. The majority of controllers work at control centres as area controllers responsible for keeping aircraft flying the airways. Others work as approach controllers dealing with aircraft movement

into and out of an airport, or aerodrome controllers guiding aircraft through landing and to the terminal.

### **Typical work activities**

Tasks typically involve:

- keeping radio and/or radar contact with aircraft;
- directing the movement of aircraft en route or at an airport;
- instructing aircraft to climb or descend and allocating final cruising level;
- providing information to aircraft about weather conditions;
- making sure that minimum distances are maintained between planes;
- handling unexpected events, emergencies and unscheduled traffic.



Approach controllers are based at a control centre or an airport tower. They guide and sequence aircraft into the most efficient order for landing. This includes dealing with instrument landing systems, which allow some planes to make automatic landings, and making sure that planes are placed in holding patterns when airports are busy.

Aerodrome controllers take over to guide the aircraft through landing and to its parking stand at the terminal. Their roles may be further sub-divided into air control and ground control at very busy airports. Their activities include:

- controlling movements onto and off runways;
- handling the ground movement of planes around the terminals

### **Salary and conditions**

- The typical salary for airport controllers in the United Kingdom with 10-15 years' experience is £60,000. Location has an effect on salary.
- Salary figures include payment for shift working and any extra responsibilities.
- Working hours include unsocial hours, bank holidays and weekends. The typical shift pattern is two days (7am - 2pm), two days (2pm - 10pm), two days of 'nights' (10pm - 7am) and then four days' leave.
- Controllers work in control towers with an overview of the airport, or in approach or area control rooms with radar. They sit in a fixed position all

the time. For safety reasons, controllers do not spend more than two hours sitting at a screen without a half-hour break.

- Major airports with the highest volumes of traffic employ only aerodrome controllers. Control centres employ approach and area controllers. Controllers at regional airports may be licensed to perform approach and aerodrome controller roles.
- Approximately 25% of controllers are women, but this is increasing as more women are applying. This is very responsible and pressured work.

### **Career development**

There are a number of opportunities for career development in air traffic control. These opportunities are available after you have completed your initial training and period of operational experience. Further promotion is to management and planning posts. There is a worldwide shortage of air traffic controllers and harmonisation of licences for air traffic controllers across Europe is due to come into force sometime in 2008.

#### **Ex.10. Give Russian equivalents for the following:**

1. Maintain the safe movement of aircraft, 2. to deal with aircraft movements, 3. emergencies and unscheduled traffic, 4. to sit at a screen, 5. pressured work, 6. to complete initial training, 7. to maintain distance between planes, 8. to direct the movement of aircraft, 9. safety reasons, 10. automatic landing.

#### **Ex.11. Give English equivalents for the following:**

1. Диспетчер подхода, 2. по соображениям безопасности, 3. направить движение самолета, 4. закончить первоначальную подготовку, 5. снижаться, 6. сидеть за монитором, 7. обеспечить метеоинформацией, 8. аварийная ситуация, 9. высота и скорость, 10. объем движения.

#### **Ex.12. Complete the sentences using the information from the text:**

1. The majority of controllers work as ...
2. ... to climb or descend.
3. ... handling unexpected events.
4. Aerodrome controllers ...

5. Approach controllers deal with ...
6. The typical salary ... .
7. Controllers work ...
8. For safety reasons ...
9. ... after you have completed the initial training.
10. ... control the movements ...

**Ex.13. Answer the questions using the information from the text :**

1. What are the controller responsibilities?
2. Where do the controllers work?
3. What kind of job is a controller?
4. What are the typical tasks of the controller?
5. What kind of activities does the aerodrome controller do? ?
6. What is the salary of a controller in the UK?
7. How much time do the controllers spend at a screen?
8. What are the working conditions of a controller?
9. What percentage of controllers are women?
10. What career opportunities does a controller have?

**VIDEO TASK**

**Ex.13a. You are going to watch the video about air traffic controller's job. Look at the screenshots below and make a topic.**







**Imagine that now you work as an air traffic controller. Write an email to your friend telling him/her about your responsibilities, the aircompany you work in, your colleagues, what problems you have to face and if it is possible to keep work/life balance.**

## SPEAKING

### Ex. 14. Ask your friend in English:

- What            typical activities of a controller you know;  
                   types of controllers you know;  
                   the salary of a controller in the UK is;  
                   has enabled aircraft to fly to much longer distances;
- How many    hours the controllers sit at a screen;
- When           the career opportunities for a controller are available;
- Why            the job of a controller is pressured;

### Ex. 15. Work as an interpreter:

Question: - Почему работа диспетчера такая напряженная и ответственная?

Answer: - It's very responsible because the controllers maintain the safe movement of aircraft along the air route .

Q: - Какие основные задачи диспетчера?

A: - It's instructing aircraft to climb or descend, providing information about weather conditions, handling unexpected events.

Q: - Каковы условия работы диспетчера?

A: - Controllers work in control towers, and sit in a fixed positions all the time. They normally work shift patterns and the salary is high.

Q: - Почему только 25 процентов диспетчеров женщины?

A: - I think it's because the work of a controller is very pressured and stressful.

**Ex.16. Speak on the following topics. Make use of the words and phrases given:**

1. Typical controller tasks

Approach controller, aerodrome controller, to guide aircraft, to maintain the distance between planes, to deal with instrument landing systems, to control movements on the runway.

2. The work conditions of a controller.

Salary, responsible and stressful, to sit in a fixed position, at a screen, to work shift patterns, career opportunities.

## WRITING

**Ex. 17. Translate into English:**

1. Диспетчер поддерживает радиосвязь с самолетом.
2. Диспетчер должен знать, как действовать в непредвиденных ситуациях.
3. Диспетчеры работают посменно.
4. Диспетчеры подхода работают на вышке.
5. Диспетчеры аэродрома ведут самолет на посадку.
6. Диспетчеры должны обеспечить минимальное расстояние между самолетами.
7. У диспетчера фиксированное рабочее место.
8. Работа диспетчера – ответственная и напряженная.
9. Обеспечение метеоинформацией – одна из задач диспетчера.
10. В некоторых аэропортах есть только диспетчеры аэродрома.



## UNIT 3. FLIGHT ATTENDANT

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### PHONETICS

Pay attention to the correct pronunciation of the combinations of letters:

<b>ie</b> [ i: ]	<b>ew</b> [u:]	<b>sion</b> [ ʒn ]
brief	crew	vision
chief	dew	illusion
grief	view	collision

**Ex.1. Read the words and word combinations correctly:**

- Crew, collision, overview, brief, vision.
- Are briefed, crew coordination activity, good vision, tower with an overview.

### WORDFORMATION

**Analyse the wordformation:**

“-ee “– суффикс существительного. Служит для обозначения лица, на которое направлено действие.

**V. (глагол) + суффикс “– ee “= N. (имя существительное)**

V.	V.+ «- ee » = N.
to address – адресовать	an addressee – адресат
to pay – платить	a payee - получатель платежа
to employ – наниматель	an employee - служащий

**Ex. 2. Make the nouns from verbs using the suffix «-ee» and translate them into Russian:**

To trust, to lease, to consign.

## PREPOSITIONS

Предлоги могут выражать как падежные отношения, которые в русском языке передаются с помощью окончаний (склонение существительных), так и иметь собственное лексическое значение.

а) выражают падежные отношения:

падеж	вопрос	Предлог	Пример
дательный	Кому? Чему?	<b>To</b>	Explain the rules <b>to</b> the passengers – объяснить правила (кому?) пассажирам
творительный	Чем?	<b>with</b>	Stocked <b>with</b> supplies – снабжены (чем?) запасами

б) имеют собственное лексическое значение:

- Некоторые случаи употребления предлога **for**:

1. Со значением “для”:

The documents **for** a manager – Документы для менеджера.

2. Со значением “за”: (цена, причина)

The y bought a ticket **for** 300 dollars. – Они купили билет за 300 долларов.

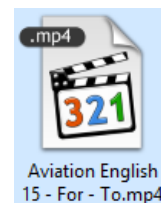
Responsible **for** safety. – Ответственный за безопасность.

3. Со значением “на”:

Operating costs **for** Boeing 747 – эксплуатационные расходы на Боинг 747

- Per – в (указывает на определенный срок, величину)

20 hours per month – 20 часов в месяц




### Ex. 3. Translate into Russian paying attention to the prepositions:

1. Responsible for safety, 2. pass the gains to the passengers, 3. \$45,000 per year, 4. required overhaul for engines installed in DC-6, 5. to make bookings for flights, 6. deny boarding to the last passenger, 7. the cost of buying aircraft for an airline, 8. equipped with engines, 9. lower staff costs for some airlines, 10. overhauls of 1500 hours for jet engines.

## GRAMMAR

### Modal verbs “can” and “must” – модальные глаголы «мочь, уметь» и «должен»

**Statements, questions and negatives with modal verbs “can”, “must” - Утверждения, вопросы и отрицания с модальными глаголами «мочь» и «долженствовать».**

	Вопросительное слово	Модальный глагол	Подлежащее	Сказуемое		Дополнение, обстоятельство
				Мод. глагол	инфинитив	
						
	0	1	2	3	4	5
Утвердительная Форма			The mechanic	can must	repair	the aircraft.
Can must			the mechanic		repair	the aircraft? - Yes, he can (must). - No, he can't (mustn't).
can must	What		the mechanic		repair?	
Отрицательная Форма			The mechanic	can't mustn't	repair	the aircraft.

**Ex. 4. Translate the sentences, give question and negative form:**

1. We can translate the text without a dictionary.
2. The officer must examine the luggage.
3. The pilots must be careful.
4. They must fly to the alternate airport.
5. The Captain must look after the flight safety.

6. We can continue our flight.
7. The aircraft can land on RW 05.
8. The passenger can take his bag on board.
9. Three dimensions must not exceed 158 cm.
10. They must delay the flight.

**Ex. 5. Make the sentences of your own:**

Подлежащее	Сказуемое		Дополнение, Обстоятельство
	Модальный Глагол	Инфинитив В	
I / You / He / She	can can't	go visit	the TU-154 aircraft. the weather service.
The pilot	must	delay	the engine.
The crew	mustn't	check	the payload.
The students		refuel	to the airport every day.
The Captain		contact	information about the flight.

**Ex. 6. Fill in the blanks with “can”, “must”:**

1. The students ... translate the text from “ICAO Bulletin” carefully.
2. You ... learn all the new words from Lesson 2.
3. The captain ... look after the flight safety.
4. Where .....the aircraft make an intermediate landing?
5. The stewardess .... help the passengers.
6. After briefing the captain ... study the flight plan.
7. The Customs officers ... examine the luggage.
8. Why ... the aircraft land on RW 05?
9. Why ... the aircraft take off from RW 28?
10. We ... continue our flight.

**Ex.7. Read and learn the following words and word combinations:**

a)

1. airborne adj. [ˈɛəbɔ:n] – находящийся в воздухе

2. greet v. [gri:t] - приветствовать
3. establish v. [is'tæbli] – устанавливать
4. health n. [helə] – здоровье
5. inflate v. [in'fleit] – надувать
6. proficient [prə'fiʃənt] – опытный, умелый
7. reassure v. [riə'ʃuə] – разубедить
8. vision n. ['viʒən] – зрение
9. stock v. [stɒk] – складировать

b)

1. to fasten the safety belts – пристегнуть ремни безопасности
2. emergency evacuation procedures – процедуры по срочной эвакуации
3. overhead bins – верхние отсеки
4. supervisory flight attendant – старший бортпроводник

**Ex. 8. Match the words with the definitions:**

1.	Evacuation	A	Necessary outfit, tools, apparatus, etc.
2.	Emergency	B	Sending people away from place of danger.
3.	Earning	D	Person employed for wages.
4.	Equipment	E	Money earned.
5.	Employee	G	Sudden state of danger, conflict.

**Ex.9. Give the definitions of the word below using a Dictionary of English language, translate the definitions into Russian and copy them out into your copy-books:**

- |            |            |
|------------|------------|
| 1. Airway  | 3. Traffic |
| 2. Landing | 4. Route.  |

**Ex. 10. Read and translate the text “Flight attendant”:**

### **FLIGHT ATTENDANT**

#### **Definition and Nature of the Work**

Flight attendants are responsible for the safety and personal comfort of airline passengers. Before flights they are briefed by the captain on emergency evacuation procedures, crew coordination activities, flying time, and weather. They

check the passenger safety equipment and make sure the cabins are stocked with adequate supplies.

Flight attendants greet passengers as they board, check their tickets, direct them to their seats, and help them with their coats and small luggage. Before takeoff attendants demonstrate safety procedures. While airborne attendants check that safety belts are fastened when



necessary; serve drinks, snacks, or precooked meals. Their most important duty is to provide assistance during emergencies, from reassuring passengers to opening doors and inflating emergency slides for evacuation. Most flights have between one and ten attendants, depending on the size of planes and the proportion of economy to first-class passengers.

### **Education and Training Requirements**

Flight attendants must be high school graduates. They must be at least nineteen years old and in excellent health. Good vision and hearing and clear speaking voices are required. Many international airlines require that their flight attendants be proficient in appropriate foreign languages. Airline flight attendants make sure that passengers are safe and comfortable. They may check passengers' safety belts, serve drinks and food.

Applicants must be tall enough to reach overhead bins, which contain emergency equipment, and their weight must be proportional to height. Most of the major airlines have established training schools for their new employees. Most airline training programs last between four and eight weeks. Training covers flight regulations and duties, aircraft terminology, company policies, first-aid techniques and emergency procedures.

Experienced flight attendants can become lead attendants, supervisory flight attendants or training inspectors. Attendants who no longer want to fly sometimes transfer to other airline departments, such as public relations or sales.

### **Working Conditions**

Flight attendants usually have about sixty-five to ninety hours of scheduled flying time and up to fifty hours of ground duty per month. Hours may be irregular, requiring attendants to work at night, on weekends, or during holidays. Flight attendants have





fifteen or more days off each month, sometimes away from their home bases.

Earnings depend on the airline, experience, and rank. In 2004 the median salary of experienced flight attendants was \$43,440 per year. Most airlines require attendants to buy their own uniforms. Benefits usually include paid sick leave, two to four weeks of paid vacation, and reduced airfare for flight attendants and their immediate families.

**Ex.11. Give Russian equivalents for the following:**

1. Responsible for the safety, 2. crew coordination activities, 3. to greet passengers, 4. to demonstrate safety procedures, 5. in excellent health, 6. good vision, 7. to be tall enough to reach overhead bins, 8. weight proportional to height, 9. first aid technique, 10. to establish training schools.

**Ex.12. Give English equivalents for the following:**

1. Проверять оборудование, 2. направить пассажиров на места, 3. предлагать еду, 4. убедить пассажира открыть дверь, 5. надеть спасательный жилет, 6. достать до верхнего отсека, 7. вес пропорционален росту, 8. старший бортпроводник, 9. обучающий центр, 10. действия в чрезвычайных ситуациях.

**Ex.13. Complete the sentences using the information from the text:**

1. Flight attendants are responsible for ...
2. Flight attendants are briefed ... .
3. ... when the passengers board the plane.
4. The attendants check ...
5. Flight attendants must be ...
6. ... proportional to height.
7. ... have established training schools ...
8. ... supervisory flight attendants.
9. ... depend on the airline.
10. Experienced flight attendants can become ...

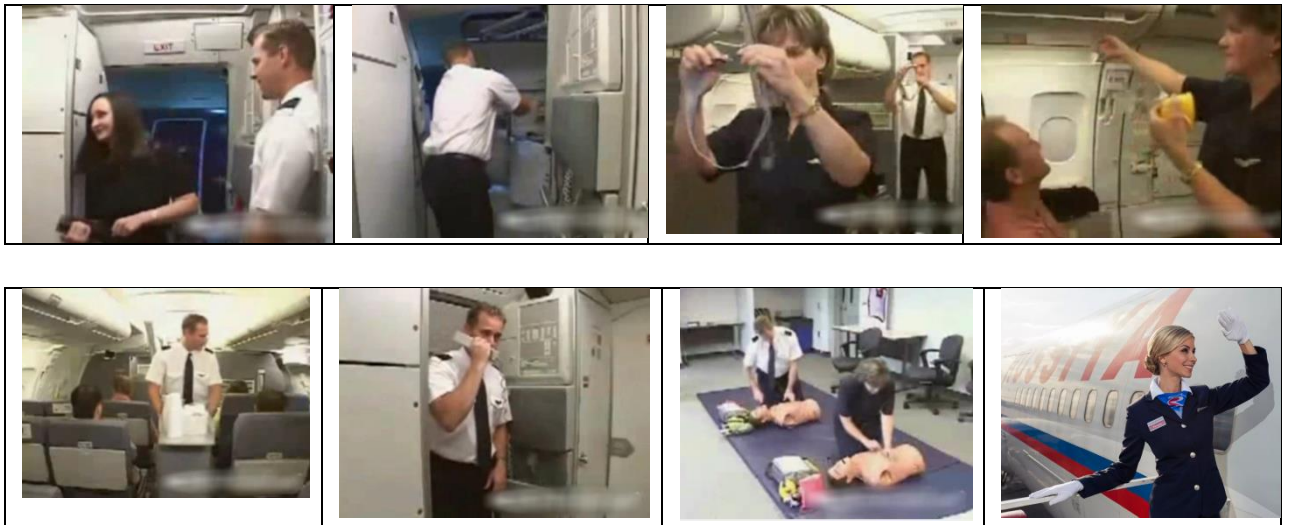
**Ex.14. Answer the questions using the information from the text :**

1. What are the flight attendant responsibilities?
2. Where do the flight attendants do when airborne?

3. What kind of job is a flight attendant?
4. What are the typical tasks of a flight attendant?
5. What qualities must flight attendants have?
6. What is the salary of a flight attendant in the USA?
7. How much time do the flight attendants have of scheduled flying?
8. What are the working conditions of a flight attendant?
9. What subjects are taught at flight attendants training centers?
10. What career opportunities does a flight attendant have?

### VIDEO TASK

**Ex.14a. You are going to watch the video about flight attendant training. Look at the screenshots below and make a topic.**



**Imagine that now you work as a flight attendant. Write an email to your friend telling him/her about your responsibilities, the aircompany you work in, your colleagues, what problems you have to face and if it is possible to keep work/life balance.**

## SPEAKING

### Ex. 15. Ask your friend in English:

- What            typical activities of a flight attendant you know;  
                   qualities flight attendants must have;  
                   the salary of a flight attendant in the USA is;  
                   subjects are taught at the flight attendants training centres;
- How many    flying hours the flight attendants have;
- When           the career opportunities for a flight attendant are available;
- Why            the job of a controller is pressured;

### Ex. 16. Work as an interpreter:

Question: - Считаете ли вы профессию бортпроводника престижной?

Answer: - I think it's a very stressful and dangerous job.

Q: - Какие требования предъявляют авиакомпании к бортпроводникам?

A: - The candidates must be high school graduates and have an excellent health.

Q: - Каковы условия работы бортпроводника?

A: - They usually have about 60 to 90 flying hours, the salaries depend on the airline.

Q: - Есть ли у бортпроводника возможность карьерного роста?

A: - Experienced flight attendants can become supervisory flight attendants or transfer to other airline departments.

### Ex.17. Speak on the following topics. Make use of the words and phrases given:

#### 1. Typical flight attendant tasks

To check passenger safety equipment, to greet passengers, to demonstrate safety procedures, to serve drinks and meals, to provide assistance, to reassure passengers from opening doors.

#### 2. The work conditions of a flight attendant.

Salary, responsible and stressful, 65 to 90 hours of scheduled flying time per month, to work shift patterns, career opportunities.

## WRITING

### Ex. 18. Translate into English:

1. Бортпроводник несет ответственность за безопасность и комфорт пассажиров.
2. Борт проводник должен знать, как действовать в непредвиденных ситуациях.
3. Бортпроводники работают посменно.
4. У бортпроводника должно быть хорошее здоровье.
5. Многие авиакомпании организовали центры подготовки бортпроводников.
6. У бортпроводника в месяц до 90 летных часов.
7. Зарплата бортпроводника зависит от авиакомпании.
8. Работа бортпроводника – ответственная и напряженная.
9. Бортпроводник должен уметь оказать первую помощь.
10. У бортпроводника вес должен быть пропорционален росту.



## UNIT 4. MECHANIC

### PHONETICS

Pay attention to the correct pronunciation of the combinations of letters:

**qu** [ kw ]  
require  
equip  
equal

**sch** [ʃ] / [ sk ]  
scheme  
schedule

**cial** [ʃəl]  
commercial  
beneficial

**Ex.1. Read the words and word combinations correctly:**

- Requirement, equipment, artificial, commercial, scheduled.
- Hydraulic equipment, commercial airlines, beneficial effect,

### WORDFORMATION

**Analyse the wordformation:**

“un- ” – отрицательная приставка

Comfortable удобный	<b>un</b> comfortable – неудобный
happy – счастливый	<b>un</b> happy – несчастный
known – известный	<b>un</b> known – неизвестный
pleasant – приятный	<b>un</b> pleasant – неприятный
profitable – прибыльный	<b>un</b> profitable – неприбыльный

**Ex.2. Form the words with the opposite meaning using the negative prefix “un-”:**

Important, official, expected, equal, limited.

### PREPOSITIONS

Некоторые случаи употребления предлога “at”:

- В, на (для обозначения организаций, учреждений)  
At the airport, **at** the factory.
- У, возле (для обозначения места)  
He stopped **at** the door.



### Ex. 3. Translate into Russian paying attention to the prepositions:

1. At an airline's overhaul base, 2. at small airports, 3. parking stand at the terminal, 4. at very busy airports, 5. to sit at a screen, 6. are based at a control center, 7. the cost of buying aircraft for an airline, 8. equipped with engines, 9. lower staff costs for some airlines, 10. overhauls of 1500 hours for jet engines.

## GRAMMAR

### Present Perfect Tense – Настоящее время совершенного вида.

Употребляется для выражения действия, совершившегося к настоящему моменту, результат которого имеется налицо в настоящем времени. Переводится на русский язык в основном прошедшим временем.

The firm **has** already **designed** a new model of aircraft. – Фирма уже **разработала** новую модель самолета.

### A) Forms of “to check” (regular verbs) – формы глагола “to check” Образование:



**Have, Has + Past Participle**

Person	Singular	plural
1	I	We
2	You <b>have checked</b>	You
3	He, she, it <b>Has checked</b>	they

### B) Forms of “to begin” (irregular verbs) – формы глагола “to begin”

Person	Singular	Plural
1	I	We

2	You ↓ <b>Have begun</b> ← You	You
3	He, she, it  <b>Has begun</b>	They

**C) Compare the two tenses – Сравните 2 времени:**

Past Simple	Present Perfect
1. He checked the engine yesterday. 2. The pilot contacted the tower <u>5 minutes ago</u> .	1. He has <u>just</u> checked the engine. The pilot has already contacted the tower.
3. He flew to Moscow last week.	3. He has flown to Moscow <u>this week</u> .

**Statements, questions and negatives in Present Perfect – Утверждения, вопросы и отрицания в настоящем времени совершенного вида**

	Вопросит. Слово	Подлежащ ее	Вспомог. Глагол	Наречие Времени	Смысловый глагол	дополнение
	0	1	2	3	4	5
Утвердительная Форма		The officer	has	already	examined	the luggage.
Вопросительная форма (общий вопрос)	Has	the officer			examined	the luggage yet?
Специальный Вопрос	What Has	the officer			examined	yet?
Отрицательная Форма		the officer	has not ( hasn't)		examined	the luggage yet?

**Words and word combinations with which we use Present Perfect – Слова и словосочетания, с которыми используется настоящее время совершенного вида:**

Just	ТОЛЬКО ЧТО
Already	Уже
Not yet	еще не
This week(month, year...)	на той неделе (в этом месяце ...)
Lately	в последнее время
Recently	Недавно
For 5 years	в течение 5 лет
Since 1998	с 1998 года

**Ex. 4. Transform the sentences into questions and negative forms:**

1. He has already read the text.
2. They have already installed the engines.
3. The air traffic controller has already contacted the aircraft.
4. The crew members have already followed all the instructions.
5. Flight 549 from London has already landed.
6. The captain has already studied the flight plan.
7. Our captain has already flown more than one thousand hours.
8. We have already established direct contact with London Radar.
9. Lufthansa flight 258 has already departed to Berlin.
10. The aircraft have become bigger.

**Compare - Сравните:**

“has” как смысловой глагол	“has” как вспомогательный глагол
The aircraft <u>has</u> a T-tail and turbofan engines.	Beriev <u>has</u> designed a large commercial aircraft.

**Ex.5. Read and learn the following words and word combinations:**

a)

1. agile adj. [ˈædʒaɪl] – проворный, живой (об уме)
2. chart n. [tʃɑ:t] – диаграмма, таблица, схема
3. obtain v. [əbˈteɪn] – получать
4. precarious adj. [preɪˈkeəriəs] – рискованный
5. pull n. [pʊl] – тащить
6. weld [weld] – сваривать



b)

1. avionics technician – авиатехник
2. industrial drafting – технический чертеж
3. landing gear – шасси
4. overhaul base – ремонтная база

**Ex. 6. Match the words with the definitions:**

1.	Tool	A	Place where repairing is done.
2.	Shop	B	Fuselage of the plane.
3.	Body	D	Reference book.
4.	Manual	E	Set of toothed wheels that work together.
5.	Gear	G	Mechanical implement held in the hand for repairing something.

**Ex. 7. Give the definitions of the word below using a Dictionary of English language, translate the definitions into Russian and copy them out into your copy-books:**

- |              |             |
|--------------|-------------|
| 1. Propeller | 3. Wing     |
| 2. Radar     | 4. License. |

**Ex. 8. Read and translate the text “Mechanic”:****MECHANIC****Definition and Nature of the Work**

Aircraft mechanics—also called avionics technicians—service, repair, and inspect airplanes for commercial airlines, private firms, and the military. Most have thorough knowledge of all parts of airplanes, including their engines, propellers, landing gear, hydraulic equipment, radio and radar instruments, and bodies.

Defects are usually discovered during the regular inspections made on all aircraft. The Federal Aviation Administration (FAA) requires that all planes be inspected and tested for safety after they have flown a certain number of hours. Mechanics must take full responsibility for any repairs

that are required. They can lose their FAA licenses if the planes are not in perfect condition.

Major repairs are handled at an airline's overhaul base, where mechanics are usually more specialized. They may work on only one part of their companies' planes, such as the engine or the landing gear. At smaller airports, airplane charter services, and general aviation repair shops, mechanics work on all parts of planes.

### **Education and Training Requirements**



Mechanics should be agile, work well with their hands and tools, and have good hearing and eyesight. Employers require that applicants have high school diplomas or the equivalent. Useful subjects include mathematics, physics, chemistry, industrial drafting, auto and aircraft mechanics, machine shop, metal and wood shop, and welding. Applicants should be able to read and interpret diagrams, electricity charts, and instructional manuals. Aircraft mechanics must know all parts of an airplane and how they work together.

All aircraft mechanics must obtain government certification. Those with A licenses can work on airplane bodies; P licenses allow them to work on engines. Some mechanics have both A and P licenses. Mechanics must pass written, oral, and practical tests to earn licenses. They must be at least eighteen years old and know how to read and write English.

Technological advances require mechanics to continue their education during their careers.

### **Working Conditions**

Most mechanics work forty hours per week, usually in eight-hour shifts. Those who have worked the longest are given their choice of shifts. Beginning mechanics usually find themselves on night or weekend shifts.

Aircraft mechanics work with heavy equipment and are often required to lift or pull objects weighing more than seventy pounds. They may also work in precarious positions, such as on the tops of wings and fuselages of large jet planes. They may work outside in unpleasant weather. Because noise and vibration are constant, mechanics must take measures to protect their hearing.

Aircraft mechanics' jobs are often stressful. They are under pressure to identify and repair mechanical problems quickly so airlines can maintain strict flight schedules. More important, they are responsible for the safety of aircraft passengers and crew.

### **Earnings and Benefits**

Salaries depend on the size of the company, the level of certification, and experience. In 2004 the median wage for all mechanics was \$21.70 per hour. Benefits included paid vacations and holidays, medical insurance, and reduced air fares.

### **Ex.9. Give Russian equivalents for the following:**

1. Knowledge of all parts of airplanes, 2. aviation repair shop, 3. work with hands and tools, 4. to be able to read and interpret charts, 5. in excellent health, 6. good vision, 7. to work with heavy equipment, 8. on the top of wings, 9. in unpleasant weather, 10. in precarious positions.

### **Ex.10. Give English equivalents for the following:**

1. Обнаружить дефект, 2. получить лицензию, 3. читать технические схемы, 4. поднимать и тащить тяжелые предметы, 5. работать в непричную погоду, 6. ремонтная база, 7. требуется ремонт, 8. продолжить обучение, 9. верхняя часть крыла, 10. знать все части самолета.

### **Ex.11. Complete the sentences using the information from the text:**

1. Aircraft mechanics repair ...
2. Defects are discovered ... .
3. ... diagrams, electricity charts, manuals.
4. At small airports mechanics ...
5. All aircraft mechanics must have ...
6. ... all part of the plane.
7. ... require mechanics to continue ...
8. ... in precarious positions.
9. ... depend on the airline.
10. ...must take measures to protect their hearing.

**Ex.12. Answer the questions using the information from the text :**

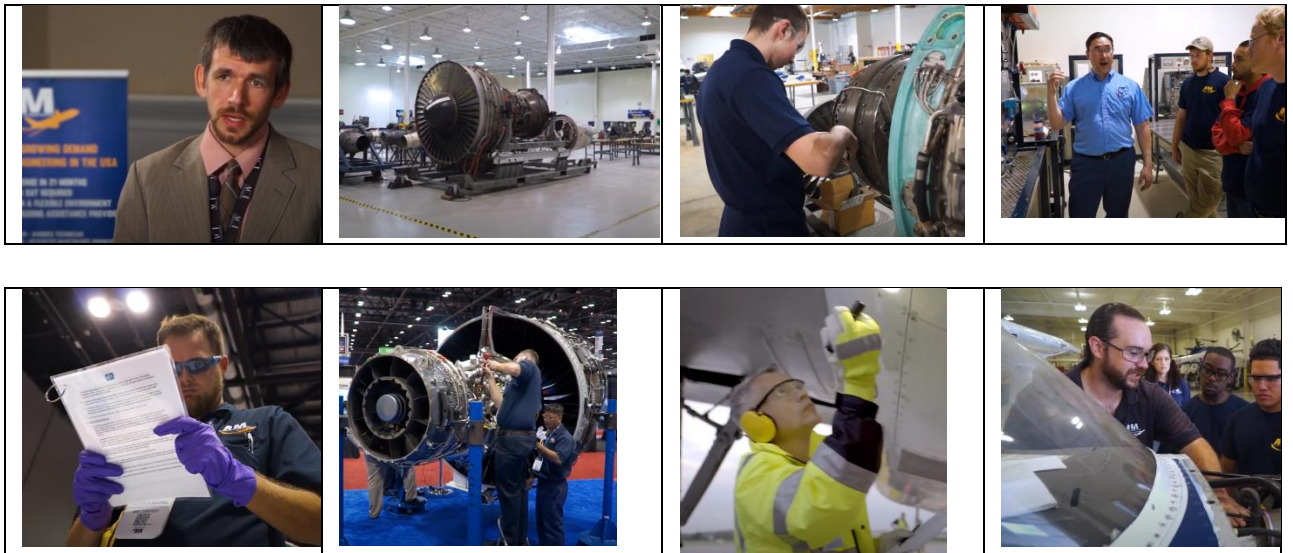
1. What are the mechanic responsibilities?
2. Where do the flight attendants do when airborne?
3. What kind of job is a mechanic?
4. What are the typical tasks of an airline mechanic?
5. What knowledge must flight mechanics have?
6. What is the salary of a mechanic in the USA?
7. How many hours a week do the mechanics work?
8. What are the working conditions of a mechanic?
9. What subjects are taught at flight attendants training centers?
10. What kind of license must a mechanic have?

**VIDEO TASK**



**Ex.12a. You are going to watch the video about **mechanic**.  
Look at the screenshots below and make a topic.**

<https://www.youtube.com/watch?v=BO2ur04ogJg>



**Imagine that now you work as a mechanic. Write an email to your friend telling him/her about your responsibilities, the aircompany you work in, your colleagues, what problems you have to face and if it is possible to keep work/life balance.**

## SPEAKING

### Ex. 13. Ask your friend in English:

- What            typical activities of a mechanic you know;  
                   qualities mechanics must have;  
                   salary of a mechanic in the USA is;  
                   subjects must a mechanic know;  
                   working conditions mechanics have;
- How many    hours per week the mechanics must have;
- Why            the job of a mechanic is stressful;

### Ex. 14. Work as an interpreter:

Question: - В чем заключается профессия авиамеханика?

Answer: - Mechanics service, inspect and re[pair planes for different purposes.

Q: - Какие требования предъявляют авиакомпании к механикам?

A: - The applicants must be high school graduates and have an excellent health.

Q: - Каковы условия работы механика?

A: - They usually have about 40 hours a week, the salaries depend on the airline.

Q: - Разве работа механика - напряженная?

A: - Certainly it is. They are under pressure to identify and repair mechanical problems very quickly.

### Ex.15. Speak on the following topics. Make use of the words and phrases given:

#### 1. Typical mechanic tasks

To know all parts of the plane, to work at repair shops, to obtain government certification, to be able to read diagrams and electricity charts, to take full responsibilities for the repairs.

## 2.The work conditions of a mechanic.

Salary, responsible and stressful, forty hours per week, to work shift patterns, to work in unpleasant weather, in precarious position.

## WRITING

### Ex. 16. Translate into English:

1. Механик должен знать все части самолета.
2. Основной ремонт производится в ремонтной мастерской.
3. Механики работают посменно.
4. У механика должно быть хорошее зрение.
5. Механики должны проходить повышение квалификации.
6. Механики работают сорок часов в неделю.
7. Зарплата механика зависит от авиакомпании.
8. Работа механика – ответственная и напряженная.
9. Механик обязан иметь сертификат.
10. Часто механики работают в плохую погоду.



## UNIT 5. FLIGHT ENGINEER

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### Ex.1. Read and learn the following words and word combinations:

a)

1. band n. [bænd ] – группа, скопление
2. capability n. [keɪpə'bɪlɪti] – способность, возможность
3. capture v. ['kæptʃə] – поймать, схватить
4. extent n. [ɪks'tent] – пространство
5. flood v. [flʌd ] – затоплять
6. installation n. [ɪnstə'leɪʃn] – установка
7. thunderstorm n. [ɪ'mædʒənsɪ] – гроза

b)

8. convection warning services – бюро по предупреждению зон температурного режима
9. enhance weather forecasting – улучшать прогнозирование погоды
10. state owned enterprise – государственное предприятие

### Ex. 2. Match the words with the definitions:

1.	Rainfall	A	Scientist studying properties of water
2.	Hydrologist	B	Quantity of rain falling within given area in given time.
3.	Forecaster	D	Storm with thunder and heavy rain.
4.	Thunderstorm	E	Scientist predicting weather.
5.	Emergency	G	Sudden state of danger requiring immediate action.

### Ex. 3. Give the definitions of the word below using a Dictionary of English language, translate the definitions into Russian and copy them out into your copy-books:

1. Capability
2. Protection
3. Investment
4. Installation.



## Ex. 4. Read and translate the text "Flight engineer":

### FLIGHT ENGINEER

#### Definition and Nature of the Work

Flight engineers play almost as important a part in flying large aircraft as do pilots and copilots. Although they rarely take the controls to fly planes, flight engineers have many other responsibilities both on the ground and onboard aircraft.



Before a flight, the flight engineer inspects the outside of the plane to make sure there are no fluid leaks and that tires are inflated properly. If any problems are found, the engineer calls in mechanics to repair the plane.

Inside the aircraft, the flight engineer helps the pilot and copilot check the operation of more than a hundred instruments, including fuel gauges, oil pressure indicators, and switches to control wing flaps and landing gear. The flight engineer must also review the flight course and weather patterns to determine how much fuel should be loaded on the plane. If a plane is going to fly with a tailwind, it will need much less fuel than if it is going to be flying into a strong head wind.

Once the plane is airborne, the engineer advises the pilot, or captain, of any problems. The engineer monitors the instruments and may make minor repairs, such as replacing fuses. The flight engineer also records fuel consumption during the flight and makes note of the performance of the engines.

After the plane has landed, the flight engineer inspects the plane again to make sure all equipment is functioning properly. If problems arose during the flight, the engineer reports them to the mechanics. The last task is to turn in the flight log of the trip.

#### Education and Training Requirements

High school diplomas are required, although most airlines prefer to hire applicants with at least two years of college education. Flight engineers must have good vision and hearing and normal color perception. Physical exams are administered before applicants are hired.



## Working Conditions

The work involves a certain amount of risk, but new procedures and technology make airplane travel safer every day.

<https://www.careerexplorer.com/careers/flight-engineer/>



Flight engineers have irregular schedules. Employment is steady, but they must fly on late-night, cross-country, and international flights quite often. They are away from home much of the time.

## Earnings and Benefits

Because most flight engineers are members of unions, their wages and benefits are set by contract. However, earnings depend on the type of flight, hours and miles flown, type of plane, and length of service. In 2004 the median salary for flight engineers in the USA was \$129,250 per year.

### Ex.6. Give Russian equivalents for the following:

1. Enhance weather forecasting, 2. new generation radar, 3. weather forecasting capability, 4. movement of rain areas, 5. to capture information, 6. flood prediction models, 7. state owned enterprise, 8. weather radar sites, 9. convection warning services, 10. radar installation.

### Ex.7. Give English equivalents for the following:

1. Улучшить прогнозирование, 2. сеть радаров нового поколения, 3. обеспечить достоверную информацию, 4. зоны интенсивных дождей, 5. гроза, 6. информация, полученная радаром, 7. установка радара, 8. государственное предприятие. 9. риск наводнения, 10. предупреждение.

### Ex.8. Complete the sentences using the information from the text:

1. A new installed radar at New Plymouth will enhance ...
2. ... represent a significant investment in weather forecasting.
3. The new radar will localize ....
4. The information received by the radar could ...
5. The data from the weather radar ...
6. The radar installation can ... .
7. The Metservice is a ...

8. In 2008 The Metservice received ...
9. The information captured by radar could be ... .
- 10.... is a key benefit of radar installation.

**Ex.9. Answer the questions using the information from the text :**

1. What will enhance weather forecasting?
2. What do the new radars represent?
3. What does Met service provide to the airports?
4. What specialist need the information captured by the radars?
5. What kind of enterprise is the Met service?
6. Where could be the data from the weather radar fed?
7. How much money did the Met service receive from the New Zealand Budget in 2008?
8. What kind of services does Met office provide?
9. What phenomena will the weather radar detect?

**VIDEO TASK**

**Ex.9a. Ex.8a. You are going to watch the video about flight engineer. Look at the screenshots below and make a topic.**

<https://www.youtube.com/watch?v=GKvfEuodrlk>



**Imagine that now you work as a flight engineer. Write an email to your friend telling him/her about your responsibilities, the aircompany you work in, your colleagues, what problems you have to face and if it is possible to keep work/life balance.**

**Ex. 10. Read and translate the text “New radar to enhance weather forecasting ”: [https://www.youtube.com/watch?v=\\_hEDvKCWREA](https://www.youtube.com/watch?v=_hEDvKCWREA)**

### **NEW RADAR TO ENHANCE WEATHER FORECASTING**

A newly installed MetService radar at New Plymouth airport will greatly enhance weather forecasting in the region, says Transport Safety Minister Harry Duynhoven. The installation is the latest addition to a national network of new generation radars already up and running near Walkworth, Wellington and Invercargill. The radars represent a significant investment in enhancing weather forecasting capability for the protection of New Zealanders.



At the opening ceremony in New Plymouth today Mr Duynhoven, himself a Taranaki resident, said the new radar would enable the MetService to provide detailed, real time information showing the extent, intensity and movement of rain areas. The weather radar will also detect and estimate snow levels, as well as indicate the location of smaller scale thunderstorms within rain bands which are likely to produce localised areas of intense rainfall.

Mr Duynhoven said analysis of information captured by the radar could be fed to forecasters, hydrologists and emergency managers who could monitor the duration and location of heavy rain. Data from the weather radar could also be fed into flood prediction models, providing much better information on areas likely to be at risk of flooding. “Being better prepared to face such weather is a key benefit of this radar installation – it will enable early action to be taken, which can potentially save millions in economic and social costs,” said Mr Duynhoven.

Mr Duynhoven announced that in addition to two further radars already planned for the Gisborne/Hawke’s Bay region and the Bay of Plenty, the recent budget

provided for yet another two radars, to be located on the West Coast and in Northland. The new radar in Gisborne/Hawke's Bay should be operating in about a year's time and in the Bay of Plenty within two years.

Metservice is a State Owned Enterprise. The Government contributes approximately \$17 million a year towards the operation of the service. As part of Budget 2008 MetService received an additional \$4.8 million in funding over the next four years to provide effective severe convection warning services for all areas within 150 kilometres of weather radar sites.



## SPEAKING

### Ex. 10. Ask your friend in English:

What meteorological phenomena detects a weather radar;  
 information a Met service provides;  
 scientists need the weather radar data;  
 the key benefit of radar installation is;

How much. money the Met office received from the New Zealand Budget in 2008;

Why the new radar enhances the weather forecasting;

### Ex. 11. Work as an interpreter:

Question: - Как установка радара улучшит прогнозирование погоды?

Answer: - The new radar will provide the real and detailed information about the intensity and movement of rain areas.

Q: - Какие погодные явления может обнаружить радар?

A: - It can detect thunderstorms, estimate snow levels and show the extent of rain areas.

Q: - Каким ученым необходима информация, полученная радаром?

A: - This information is used by forecasters, hydrologists and emergency managers.

Q: - Сколько денег вкладывает правительство Новой Зеландии в метеослужбу?

A: - The new Zealand government contributes \$17 million a year the operation of its service.

**Ex.12. Speak on the following topics. Make use of the words and phrases given:**

1.Meteo information provided by radar

To enhance weather forecasting, intensity of rain areas, to localize, thunderstorms, data from the radar , prediction models, forecasters and hydrologists.

2.The work of the Met service.

State owned enterprise, the government, convection warning services, to provide, the budget, the operation of the service.

## WRITING

**Ex. 13. Translate into English:**

1. Установка нового радара будет способствовать улучшению прогнозов погоды.
2. Радар сможет обеспечить метеослужбу детальной информацией.
3. Данные, полученные радаром, позволяют моделировать прогнозы.
4. Метеослужба является государственным предприятием.
5. Радары смогут обнаружить зоны дождя, снега и грозы.
6. Радары помогут раннему предупреждению чрезвычайных ситуаций.
7. Новые радары будут установлены через два года.
8. Правительство выделяет средства из бюджета для работы Метеобюро.
9. Обеспечение метеоинформацией – одна из задач диспетчера.
10. Радары поставляют детальную информацию о погоде в реальном времени.



## UNIT 6. PARTICIPANTS OF CARGO TRANSPORTATION \_\_\_\_\_

### PHONETICS

**Pay attention to the correct pronunciation of the combinations of letters** - обратите внимание на произношение буквосочетаний:

<b>tion [n]</b>	<b>er [ə]</b>	<b>sh [ʃ]</b>
national	carrier	shipper
international	forwarder	shipment
transportation	broker	ownership

#### Ex.1. Read the words and word combinations correctly

- a) International, shipper, forwarder, description, consolidation, transportation, communication, authority, promotion, partner.
- b) Description of the roles, between the shipper and the carrier, in contact with transport organization, different aspects of transportation.

### WORDFORMATION

#### Analyse the word formation:

“-ee “– суффикс существительного. Служит для обозначения лица, на которое направлено действие.

**V. (глагол) + суффикс “– ee “= N. (имя существительное)**

V.	V.+ «- ee » = N.
to address – адресовать	an addressee – адресат
to pay – платить	a payee - получатель платежа
to employ – наниматель	an employee

**V. (основа глагола) +суффикс “-or” = N. (имя существительное, обозначающее лицо**

**” -er ”**                    или предмет, выполняющий

действие)

a)

V.	V. + ”-or ”= N.
to visit – посещать	a visitor – посетитель
to operate – эксплуатировать	an operator – оператор
to detect – обнаруживать	a detector – детектор
to inspect –инспектировать	an inspector – инспектор

b)

V.	V. + "-er" = N.
to read – читать	a <b>reader</b> – читатель
to build – строить	a <b>builder</b> – строитель
to think – думать, мыслить	a <b>thinker</b> – мыслитель
to sell - продавать	a <b>seller</b> – продавец
to work – работать	a <b>worker</b> – рабочий

**Ex. 2. Make the nouns from the verbs using the suffixes “-er”, “-or”, “-ee”– Образуйте существительные от глаголов при помощи суффиксов ”-er”, ”-or”:**

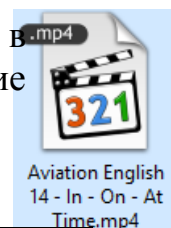
To buy, to carry, to consign, to trust, to direct, to inspect, to visit, to produce, to sell, to teach, to translate, to supply, to invent, to govern, to train, to begin, to control, to hijack, to navigate, to instruct, to trust’.

## PREPOSITIONS

Предлоги могут выражать как падежные отношения, которые в русском языке передаются с помощью окончаний (склонение существительных), так и иметь собственное лексическое значение.

а) выражают падежные отношения:

падеж	вопрос	Предлог	Пример
родительный	Кого? Чего?	<b>of</b>	Types <b>of</b> cargo – типы (чего?) груза



б) имеют собственное лексическое значение:

- **In** the cargo industry – в грузовой индустрии
- Deal **with** a forwarder – иметь дело с отправителем груза

**Ex.3. Translate into Russian paying attention to the prepositions – переведите на русский язык, обращая внимание на предлоги:**

1. Degree of flexibility, 2. carriage of the goods, 3. do this directly with an airline, 4. method of dispatch, 5. description of the roles, 6. cargo of several shippers, 7. agent of one or more carriers, 8. flexibility in their activity, 9. move cargo in bulk, 10. method of dispatch.

## GRAMMAR

### 1. Present Simple Active Tense – Настоящее простое время действительного залога

Обозначает обычное действие в настоящем.

#### Образование:

- forms of “to do”

Person	Singular	Plural
1	I	we
2	You <b>do</b>	
3	He, she, it	they
	<b>does</b>	

- forms of “to start”

Person	Singular	Plural
1	I	We
2	You <b>start</b>	
3	He, she, it	They
	<b>starts</b>	

Statements, questions and negatives with the verb “to serve” in Present Simple Tense – утверждения, вопросы и отрицание с глаголом “to serve” в простом настоящем времени.

Terminal 2 **serves** 100 international flights a day.

	Вопросительное слово или группа слов	Вспомогательный глагол	подлежащее	Сказуемое	Дополнение	обстоятельство
Утвердит.			Terminal 2	<b>serves</b>	100	a day.





Форма					international flights	
Вопросит. форма (общий вопрос)		<b>Does</b>	terminal 2	<b>serve</b>	100 international flights	a day? <ul style="list-style-type: none"> <li>• Yes, it does.</li> <li>• No, it does not (doesn't).</li> </ul>
Специальный Вопрос	How many flights	<b>does</b>	terminal 2	<b>serve</b>		a day?
Отрицательная Форма			Terminal 1	<b>does not (doesn't) serve</b>	100 international flights	a day.

**Ex. 4. Translate the sentences into Russian, make questions and negatives.**

1. The forwarder arranges the movement of goods.
2. The shipper deals with a freight forwarder.
3. Most of airline revenue comes from passengers.
4. The broker arranges customs import clearance.
5. You operate aircraft of different types.
6. The forwarder consolidates the cargo of different shippers.
7. They fly to Paris on Mondays.
8. The shipper enters in contact with a transport organisation.
9. The forwarder often acts as an agent of one or more carriers.
10. The forwarder performs a service both to shippers and carriers.

## READING

**Ex.6. Read and learn the following words and word combinations:**

- a)
  1. arrange v. /ə'reɪndʒ/ - устраивать, организовывать
  2. carriage n. /'kærɪdʒ/ - перевозка

3. flexibility n. /fleksɪ'bɪlɪti / – гибкость
  4. forwarder n. /'fɔwədə / - посредник отправителя, агент
  5. participant n. /pɑ:'tɪsɪpənt / – участник
  6. shipper n. /'ʃɪpə / - отправитель
- b)
6. customs import clearance – таможенная очистка при ввозе
  7. movement of goods – движение товаров
  8. on behalf of the consignee – от имени получателя
  9. perform a service – выполнять услугу

**Ex.7. Match the words with the:**

1.	Forwarder	A	Who ships goods in import or export.
2.	Consignee	B	The person who arranges the movement of goods.
3.	Cargo	D	An agent who arranges customs clearance.
4.	Shipper	E	The organization to whom the goods are to be delivered.
5.	Broker	G	Goods carried on the ship or aircraft.

**Ex.8. Give the definitions of the word below using a Dictionary of English language, translate the definitions into Russian and copy them out into your copy-books.**

Carrier, clearance, transportation.

**Ex.9. Read and translate the text “Participants of Cargo Transportation”**

### **PARTICIPANTS OF CARGO TRANSPORTATION**

Each participant in the cargo industry plays an important role and each is dependent on the others. Some works within clearly defined limits and others have a higher degree of flexibility in their activities. Traditionally, the forwarder-broker and the airline-handling agent played dual roles. A brief description of the roles of the major partners in the air cargo industry is presented below.

#### **Shipper**

The shipper is the party who enters into contract with a transport organisation for carriage of the goods. He does this directly with an airline or through a cargo agent. He deals with a freight forwarder, who also may

be a cargo agent, or he may approach an “integrated carrier” who coordinates the different aspects of transportation.

### **Forwarder**

The forwarder arranges the movement of goods on behalf of a shipper, acting as an intermediary between the shipper and the carrier. He may consolidate the cargo of several shippers and



move it in bulk as a consolidation. The forwarder is often an accredited IATA Cargo Agent and also acts as an agent of one or more carriers. The forwarder performs a service both to shippers and carriers.

### **Broker**

The broker, or customs agent, is a licensed professional who arranges customs import clearance on behalf of the consignee and may also arrange export clearance on behalf of the shipper.

### **Consignee**

The consignee is the party to whom the goods are to be delivered. He arranges for their clearance through customs and often makes or influences the decision on the method of dispatch. The consignee is at the critical “receiving end” of the whole transportation chain.

## **Ex.10. Give Russian equivalents for the following**

1. Participants in the cargo industry, 2. degree of flexibility, 3. partners in air cargo industry, 4. to enter in contact with a transport organization, 5. an accredited IATA cargo agent, 6. cargo of several shippers, 7. to arrange customs clearance 8. to deliver the goods, 9. method of dispatch, 10. customs agent.

## **Ex.11. Complete the sentences using information from the text**

The main participants of the cargo transportation are ...

- The shipper deals ... ..
- ... on behalf of a shipper.
- The forwarder consolidates ....
- ....acts as an agent of one or more carriers.
- Broker arranges...
- ... to whom the goods are to be delivered.
- The consignee arranges ...
- ... coordinates different aspects of transportation.
- The forwarder is often an accredited....

## Ex. 12. Give English equivalents for the following

1. играть важную роль, 2. грузоотправитель, 3. перевозка товаров, 4. грузовой агент, 5. сопровождающий, 6. посредник между отправителем и перевозчиком, 7. аккредитованный агент по отправке груза, 8. грузополучатель, 9. таможенная очистка, 10. способ отправки.

## Ex.13. Answer the questions

- What are the main participants of cargo transportation?
- Who enters in contact with a transport organization?
- What are the shipper's responsibilities?
- What does a forwarder do?
- Is it necessary for a forwarder to be an accredited IATA agent?
- What does a broker arrange?
- What does a consignee do?
- Who is the end of a transportation chain?

### VIDEO TASK



**Ex.13a. You are going to watch the video about air cargo. Look at the screenshots below and make a topic.**

[https://www.youtube.com/watch?v=\\_fyIQDAnwZg](https://www.youtube.com/watch?v=_fyIQDAnwZg)



**Imagine that now you work as a cargo manager. Write an email to your friend telling him/her about your responsibilities, the aircompany you work in, your colleagues, what problems you have to face and if it is possible to keep work/life balance.**

### **SPEAKING**

#### **Ex. 14. Ask your friend in English**

What participants of cargo transportation you know;  
tasks a shipper has;  
responsibilities a forwarder has;  
duties a consignee has.

Who is responsible for customs clearance.  
enters in contact with a transport organization

#### **Ex. 15. Work as an interpreter**

Question: - Do you know the main participants of cargo transportation?

Answer: - Конечно, это отправитель, перевозчик, получатель и таможенный служащий.

Q: - Who is an intermediary between the shipper and the carrier?

A: - Это грузовой агент.

Q: - I see. Who arranges the customs clearance of the cargo?

A: - Это входит в обязанности таможенного служащего.

Q: - Who is the receiving end of the whole transportation chain?

A: - Это получатель груза.

#### **Ex.16. Speak on the following topics. Make use of the words and phrases given**

##### 1.The responsibility of a shipper

To enter in contact with transport organization, airline or cargo agent, to deal with a freight forwarder.

##### 2. Participants of cargo transportation

To play an important role, degree of flexibility, discounted travel, according to the airline, working day, 900 flying hours per year.

## UNIT 7. ACCEPTANCE OF CARGO

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### PHONETICS

Pay attention to the correct pronunciation of the combinations of letters:

sh [ʃ ] ship share perish	ture [tʃə] nature feature creature	gh [ - ] flight weight sight
------------------------------------	---	---------------------------------------

**Ex.1. Read the words and word combinations correctly:**

- High, shipment, operation, nature, perish, feature, weight, ship, freight.
- Cargo shipments, total weight, destination of the flight, perishable goods, destination of the shipment, nature of goods.

### WORDFORMATION

**Analyse the wordformation:**

“-ment “– суффикс существительного

V. (глагол) + суффикс “– ment “= N. (имя существительное)

V. V.+ «-ment» = N.

to develop – развивать

to enrol – регистрировать

to invest – инвестировать

to require – требовать

to improve – улучшать

to equip – оборудовать

a development – развитие

an enrolment - регистрация

an investment – инвестиция

a requirement – требование

an improvement – улучшение

an equipment - оборудование

**Ex. 2. Make the nouns from verbs using the suffix «-ment»:**

To move, to state, to develop, to improve, to equip, to achieve, to require, to announce, to agree, to govern, to pay, to settle, to govern, to develop.

**PREPOSITIONS**

Предлоги в английском языке могут быть многозначными. Один и тот же предлог может выражать как падежные отношения, которые в русском языке передаются с помощью окончаний (склонение существительных), так и иметь собственное лексическое значение.

а) выражает падежные отношения:

падеж	вопрос	Предлог	Пример
творительный	Кем? Чем?	<b>by</b>	To book a shipment <b>by</b> e-mail – заказывать посылку (чем?) электронной почтой

б) имеет собственное лексическое значение:

**for** – для

Accepted **for** transportation - принят для перевозки

**Ex. 3. Translate into Russian paying attention to the prepositions:**

1. To accept a shipment for transportation, 2. to place the booking by telephone, 3. weight of pieces covered by the airway bill, 4. to book a shipment by e-mail, 5. to make bookings for flights, 6. deny boarding to the last passenger, 7. to place booking by fax, 8. lower fares for passengers, 9. belong to this airline, 10. arrange the shipment for clearance.

**GRAMMAR**

**Modal verbs “can” and “must”**

– модальные глаголы «мочь, уметь» и «должен»

**Statements, questions and negatives with modal verbs “can”, “must” - Утверждения, вопросы и отрицания с модальными глаголами «мочь» и «долженствовать».**



			Сказуемое			
	Вопросительный	Модальный	Подлежащее	Мод. глаго	инфинитив	Дополнение,

	- ное слово	ый гл аг ол		л		Обстоя- тельство
	0	1	2	3	4	5
Утверди- тельная Форма			The mechani- c	can must	repair	the aircraft.
Can/ must			the mechani- c		repair	the aircraft? - Yes, he can (must). - No, he can't (mustn't)
can must	What		the mechani- c		repair?	
Отрицат- ельная Форма			The mechani- c	can't mustn' t	repair	the aircraft.

**Ex. 4. Translate the sentences, give question and negative form:**

- We can translate the text without a dictionary.
- The officer must examine the luggage.
- They must weigh the package before sending.
- The shipper can place his booking by email.
- Packages must bear labels or marks.
- Packaging must be of a standard size.
- Valuable cargo must be carefully examined at the time of acceptance.
- The passenger can take his bag on board.
- Three dimensions must not exceed 158 cm.
- All containers must be of waterproof materials.



**Ex. 5. Make the sentences of your own:**

	Сказуемое		
Подлежащее	Модальный ый Глагол	Ин фи ни ти в	Дополнение, Обстоятельство
I / You /He / She The shipper The shipment The package	can / can't must / mustn't must be	vis it ch ec k be ar	checked before acceptance. place the booking by e- mail. the package. labels or marks about its contents.

**Ex. 6. Fill in the blanks with “can”, “must”:**

- The authorities ... accept the shipment for transportation.
- You ... learn all the new words from Lesson 2.
- The agent ... place the booking by e-mail.
- Special cargo .... comply with the requirements.
- Accidental damage ...be caused during the process of handling.
- The shipper ... provide all the necessary information.
- The Customs officers ... examine the luggage.
- Packaging ... be of a standard size.
- The shipment ... be booked with a cargo office.
- The cargo agent ... sign the airway bill.

**Ex.7. Read and learn the following words and word combinations:**

a)

- dimension n. /dai'menʃn/ – размер
- direct v. /di'rekt/ – направлять
- origin n. /'oridʒin/ – происхождение
- provide n. /pro'vaɪd/ – обеспечивать
- requirement n. /ri'kwaɪəmənt/ – требование

- shipment n. /'ʃɪpmənt/ – отправка; грузы, товары
- volume n. /'vɒljum/ – объем

b)

- accepted for transportation – приняты к транспортировке
- comply with the requirements – соответствовать требованиям
- protect from damage – защищать от вреда
- waterproof materials – непромокаемые материалы

**Ex. 7. Match the words with the definitions:**

1	Shipment	A	Slip of paper attached to object to give some information about it.
2	Requirement	B	Amount shipped.
3	Waterproof	D	Thing required, regulation.
4	Perishable	E	Impervious to water.
5	Label	G	Subject to speedy decay.

**Ex. 8. Give the definitions of the word below using a Dictionary of English language, translate the definitions into Russian and copy them out into your copy-books:**

1. Handling
2. Package
3. Destination
4. Damage.

**Ex. 9. Read and translate the text “Acceptance of cargo”:****ACCEPTANCE OF CARGO**

All cargo – including special cargo shipments such as Human Remains, Valuable Cargo, Live Animals, Perishables, Dangerous Goods, Heavy Cargo accepted for transportation has to comply with the requirements of the applicable authorities.

**Cargo Booking**

Before uplift each shipment has to be booked with a Cargo office or the office of a named General Sales Agent. The forwarding agent or shipper can place his booking in different ways: by telephone, by telefax, by email.

Therefore the forwarding agent/shipper has to provide the following information:

- 1) Number, date and destination of the flight
- 2) Name of the company booking the cargo
- 3) Origin of the shipment (IATA three-letter-code)
- 4) Final destination of the shipment (IATA three-letter-code)
- 5) Air Waybill number
- 6) Number of pieces
- 7) Total weight of pieces in kg covered by the Air Waybill/single weight of pieces in kg
- 8) Dimensions of the pieces in centimetres
- 9) Volume of the shipment in m<sup>3</sup>
- 10) Nature of goods

### **Packaging**

Packaging must be of a standard suited to the contents and capable of protecting the foods from any accidental damage which could be caused during the normal process of handling and transportation. Special packaging requirements apply to the following shipments:

- Dangerous Goods (see 5.6 and IATA Dangerous Goods Regulations)
- Live animals (see 5.9 and IATA Live Animals Regulations)
- Valuable and vulnerable cargo must be carefully examined at the time of acceptance.
- Each package must be checked and weighed.
- Packages must not bear labels or marks calling attention to its contents.
- Perishables (see also 5.11 and IATA Perishable Cargo Handling Guide)
- All containers must be of waterproof materials and rigid.

### **Delivery of Outbound Cargo by Shippers or Agents**



Before accepting a shipment for transportation it shall be checked in what condition they are, and whether they are loadable on the aircraft.

A special "Acceptance Check List" is not required as per IATA, but there are detailed instructions for the acceptance check of documents and packages.

The load is acceptable, the Shipper's or Agent's copy of the Air Waybill is signed and stamped with a date and time stamp when received.

**Ex.10. Give Russian equivalents for the following:**

1. Cargo shipments, 2. to comply with the requirements, 3. To provide the information, 4. origin of the shipment, 5. dimensions, 6. to protect from accidental damage, 7. valuable cargo, 8. to bear labels, 9. to accept a shipment, 10. air waybill.

**Ex.11. Give English equivalents for the following:**

1. Ценный груз, 2. принят для транспортировки, 3. номер накладной, 4. пункт отправки посылки, 5. случайный ущерб, 6. специальные требования, 7. нести ярлыки, 8. принять посылку, 9. обеспечить информацией, 10. взвешивать.

**Ex.12. Complete the sentences using the information from the text:**

- All cargo ...has to comply with special requirements.
- The cargo agent has to provide the following information....
- The shipment can be booked by....
- ... protect the foods from any accidental damage.
- Approach controllers deal with ...
- The typical salary ... .
- Controllers work ...
- For safety reasons ...
- ... after you have completed the initial training.
- ... control the movements ...

**Ex.13. Answer the questions using the information from the text:**

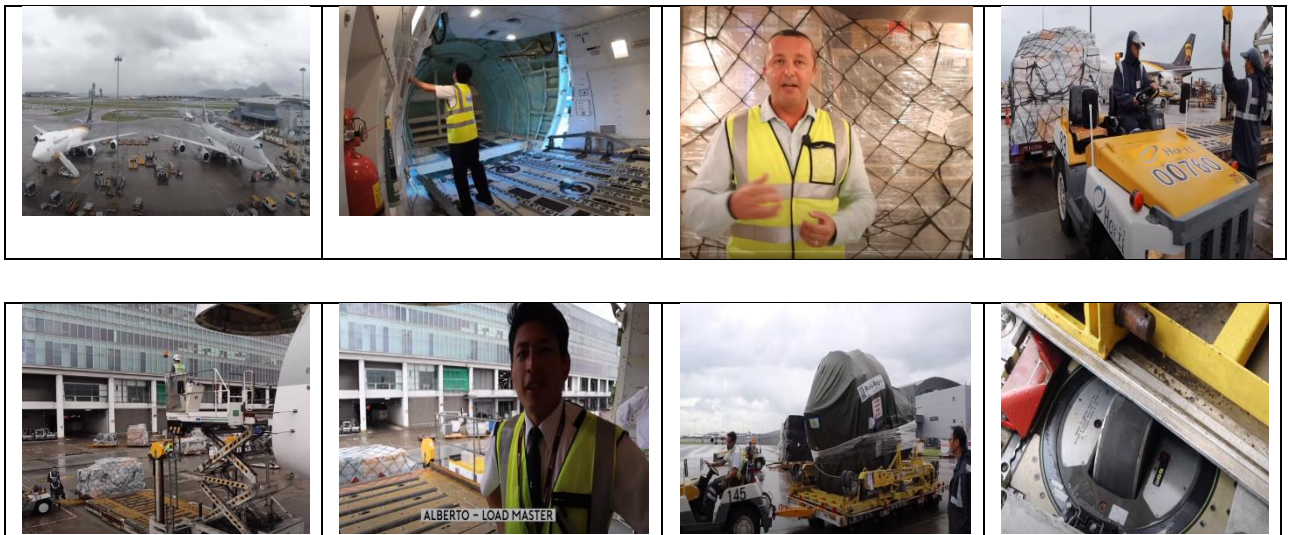
- What are the special cargo shipments?
- How can a shipper place the booking?
- What kind of information must the shipper provide?
- What must a packaging protect from?

- What kind of materials must be a package of?
- What must be done with a shipment before transportation?
- What is signed if the load is acceptable?
- Must a package bear labels calling attention to its contents?
- What shipments are the special requirements applied to?
- Are there any instructions for cargo acceptance?

### VIDEO TASK

**Ex.13a. You are going to watch the video about air cargo. Look at the screenshots below and make a topic.**

<https://www.youtube.com/watch?v=Z917aWpqqko>



**Imagine that now you work as a cargo agent. Write an email to your friend telling him/her about your responsibilities, the aircompany you work in, your colleagues, what problems you have to face and if it is possible to keep work/life balance.**

**Ex. 14. Ask your friend in English:**

What regulations has to comply special cargo;  
types of special cargo you know;  
information has to provide a cargo agent;

special packaging requirements you know;

When the shipment is checked;

**Ex. 15. Work as an interpreter:**

Question: - Какие типы специальных грузов вы знаете?

Answer: - They are valuable cargo, live animals, perishables and dangerous goods.

Q: - Каким образом можно оформить отправку груза?

A: - It can be done by e-mail, by telephone or by telefax.

Q: - Какую информацию должен предоставить грузовой агент?

A: - Number, date, destination of the flight, origin of shipment, its weight, air way bill number and dimensions.

Q: - Какие существуют требования к контейнерам?

A: - They must be made of waterproof materials and rigid.

**Ex.16. Speak on the following topics. Make use of the words and phrases given:**

1.Special cargo

Valuable cargo, human remains, dangerous goods, heavy cargo, live animals, special containers, to comply with special requirements.

2.Cargo booking.

General sales agent, to be booked by e-mail, provide the following information, destination, origin, weight, dimensions, airway bill number.

## UNIT 8. CARGO DOCUMENTS

### PHONETICS

Pay attention to the correct pronunciation of the combinations of letters:

<b>au [ o ]</b> authority automated because	<b>qu /kw/</b> equip require requirement	<b>oo [ u ]</b> goods book look
--	---	--

**Ex.1. Read the words and word combinations correctly:**

- Authority, requirement, authorization, equipment, because, goods.
- Information relating to the goods, customs authorities, required by the Warsaw Convention, dangerous goods, automated system.

### WORDFORMATION

“-able” – суффикс прилагательного

V. (глагол) + суффикс «-able» = Adj.(прилагательное)

V.	V. + -able = Adj.
to negotiate - договариваться	<b>negotiable</b> – могущий стать предметом сделки
to change – изменять	<b>changeable</b> – изменчивый
to eat – есть	<b>eatable</b> – съедобный
to compare – сравнить	<b>comparable</b> – сравнимый
to reason – убеждать	<b>reasonable</b> – убедительный

**Ex.2. Make the adjectives from the verbs.**

To translate, to read, to understand, to change, to control, to repair, to check, to eat, to forget, to compare.

### PREPOSITIONS

Данные предлоги имеют собственное лексическое значение:

**from** – от

received **from** the shipper - полученный от отправителя

**between** - между

**Between** the shipper and the carrier - между отправителем и перевозчиком

**To** – к (предлог направления)

Information relating **to** the goods - информация, относящаяся к товарам

**Ex. 3. Translate into Russian paying attention to the prepositions:**

1. In addition to its use,
2. to give attention to dangerous goods,
3. the contract between the shipper and the carrier,
4. the cargo received from the shipper,
5. to perform a service to shippers,
6. special requirements apply to the following shipments,
7. to call attention to its contents, 8. consists of between 9-14 parts,
9. belong to this airline,
10. report the entry and departure of goods to customs authorities.

## GRAMMAR

### Modal verbs + Passive Indefinite Infinitive

**Модальные глаголы + инфинитив страдательного залога**

Must (должен)

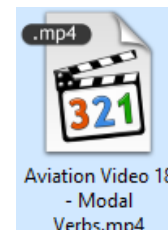
Can (может)

May (можно)

Should (следует)

*Be + Past Participle*

(инфинитив страдательного залога)



+

Must be transported – должен быть перевезен

Can be transported – может быть перевезен

Should be transported – следует перевезти

May be transported – можно перевезти.

### **Statements, negatives and questions with modal verbs and Passive Infinitive**

The baggage **must be checked** at the check-in desk.

				Сказуемое		
	Вопроси Слово	Модаль глагол	подлежащее	Модаль глагол	Инфинитив	Дополнение, Обстоятельс



	0	1	2	3	4	5
Утвердительная Форма			The baggage	<b>must</b>	<b>be checked</b>	at the check-in desk.
Вопросительная Форма		Must	the baggage		<b>be checked</b>	at the check-in desk?
Отрицательная Форма			The baggage	<b>must not</b> <b>(mustn't)</b>	<b>be checked</b>	at the check-in desk.

**Ex. 4. Translate the sentences into Russian:**

1. The airway bill must not be signed until the shipment is received from the shipper.
2. Airway bills must be typewritten or computer generated.
3. Airway bill must be used in an automated system.
4. The cargo manifest must be accurately completed.
5. Miss declaration of weights can cause serious problems.
6. Packaging must be of a standard size.
7. The entry "Nature of goods" must be explicit.
8. Broad descriptions of cargo must be avoided.
9. Operational and customs requirements must be met.
10. All containers must be of waterproof materials.

**Ex. 5. Make up the sentences of your own:**

Подлежащее	Модальный глагол	Инфинитив страдательного залога + обстоятельство	
The checked luggage	can	be	checked carefully.
The documents	must		translated quickly.
The tag	may		taken on board.
The text	should		obtained at the check-in desk.
The bag			screened.
The engine			

**Ex. 6. Fill in the blanks with "can", "must":**

- The authorities ... accept the shipment for transportation.
- You ... learn all the new words from Lesson 2.
- The agent ... place the booking by e-mail.

- Special cargo .... comply with the requirements.
- Accidental damage ... be caused during the process of handling.
- The shipper ... provide all the necessary information.
- The Customs officers ... examine the luggage.
- Packaging ... be of a standard size.
- The shipment ... be booked with a cargo office.
- The cargo agent ... sign the airway bill.

**Ex.7. Read and learn the following words and word combinations:**

a)

- Authority /ə'θɔ:ri'ti/ - власти, начальство
- entry /'entri/ - запись
- carrier n. /'kæriə/ – перевозчик
- issue v. /'iʃju/ – выписывать
- require v. /ri'kwaɪə/ – требовать
- receipt v. /ri'si:t/ - давать расписку в получении
- waybill n. /'weɪbɪl/ – накладная

b)

- evidence the receipt – подтверждать получение
- responsible for the accuracy of information – ответственный за точность информации
- data for aircraft loading purposes – данные по загрузке самолета
- to meet customs requirements – соответствовать таможенным правилам

**Ex. 7. Match the words with the definitions:**

1	Authority	A	Bodies having power.
2	Waybill	B	Item entered in the list.
3	Manifest	D	Acknowledgement of possession of goods.
4	Entry	E	Cargo list.
5	Declaratin	G	Key cargo document.

**Ex. 8. Give the definitions of the word below using a Dictionary of English language, translate the definitions into Russian and copy them out into your copy-books:**

1. Sample
2. Description
3. Standard
4. Carrier.

**Ex. 9. Read and translate the text “Air Waybill”:**

## CARGO DOCUMENTS

### The air waybill

is the key document used in the carriage of cargo. It is not negotiable and it evidences the contract between the shipper and the carrier. The air waybill evidences the receipt of the goods for shipment and is used by customs authorities for export and import screening and processing.



An air waybill is required for each and every shipment. The air waybill consists of between 9-14 parts whereof 3 are “Originals” as required by the Warsaw Conventions.

The air waybill shall be issued at the time the shipment is received from the shipper. The air waybill must not be signed and receipted until the complete shipment has been received and accepted.

In all cases the shipper is solely responsible for the accuracy of information relating to the goods.

Air waybills must be typewritten or computer generated. A neutral air waybill is an air waybill without any pre-printed identification of the issuing airline. Except in a CASS (Cargo Accounts Settlements System) a neutral air waybill must only be used in an automated system.

### Cargo Manifest

The cargo manifest is a list of all cargo and other goods carried. Its format and use is covered in the Standards and Recommended Practices of ICAO Annex 9.

In addition to its use for reporting the entry and departure of goods to customs authorities it also contains data for aircraft loading purposes.

The cargo manifest must be accurately completed. Failure to do so (i.e. including all items) may lead to punitive action by customs. Miss-declaration of weights can cause serious problems with aircraft safety and loading requirements.

Entries in the “Nature of Goods” column must be explicit if operational and customs requirements are to be met. Broad descriptions such as “unknown”, “general cargo”, “mixed”, “samples” etc. must be avoided. Particular attention should be given to hidden dangerous goods.

**Ex.10. Give Russian equivalents for the following:**

1. Cargo manifest, 2. carriage of cargo, 3. contract between the shipper and the carrier, 4. customs authorities, 5. to be signed and receipted, 6. responsible for the accuracy of information, 7. data for aircraft loading purposes, 8. miss-declaration of weights, 9. customs requirements, 10. unknown cargo.

**Ex.11. Give English equivalents for the following:**

1. Перевозка груза, 2. таможенные службы, 3. требуется для отправки, 4. должен быть подписан, 5. ответственный за точность информации, 6. грузовая декларация, 7. данные, необходимые для погрузки, 8. неизвестный груз, 9. вызвать серьезные проблемы, 10. опасный груз.

**Ex.12. Complete the sentences using the information from the text:**

1. ... is a key document used in the carriage of cargo.
2. The air waybill evidences...for shipment.
3. The air waybill is required for ...
4. The air waybill consists of... required by....
5. ... until the shipment has been received and accepted.
6. .... must be typewritten or ... .
7. The cargo manifest is...
8. .... contains data for aircraft loading purposes.
9. Entries ... must be explicit if operational requirements are to be met.
10. Particular attention must be given to... .

**Ex.13. Answer the questions using the information from the text :**

1. What kind of document is airway bill?
2. Who uses an airway bill during screening and processing?
3. What does an airway bill consist of?
4. When must an airway bill be signed and receipted?
5. When should the airway bill be issued?
6. How must the airway bill be written?
7. What is signed if the load is acceptable?
8. What kind of document is the cargo manifest?
9. What entries of the cargo manifest must be explicit?
10. What should be given particular attention to when filling in the cargo manifest?



**VIDEO TASK**



**Ex.13a. You are going to watch the video about air cargo. Look at the screenshots below and make a topic.**

[https://www.youtube.com/watch?v=FYwUTUSj\\_OE](https://www.youtube.com/watch?v=FYwUTUSj_OE)

<https://www.youtube.com/watch?v=S6wJEIOPrIE>



<https://www.youtube.com/watch?v=r2oPk20OHBE>

**Imagine that now you work as a cargo supervisor. Write an email to your friend telling him/her about your responsibilities, the aircompany you work in, your colleagues, what problems you have to face and if it is possible to keep work/life balance.**

[https://www.youtube.com/watch?v=3uUeHeoM\\_gE](https://www.youtube.com/watch?v=3uUeHeoM_gE)

## SPEAKING

### Ex. 14. Ask your friend in English:

What cargo documents you know;  
 information you find in an airway bill;  
 authorities use the airway bill;  
 kind of document a cargo manifest is;  
 kind of data a cargo manifest contains;  
 How an airway bill must be written;  
 When an airway bill is issued;  
 How many chapters an airway bill consists of.

### Ex. 15. Work as an interpreter:

Question: - Какие вам известны грузовые документы?

Answer: - They are an airway bill and cargo manifest.

Q: - Кем используется накладная?

A: - It is used by customs authorities.

Q: - Когда выписывается накладная?

A: - It must be issued at the time of shipment.

Q: - Что представляет собой грузовой манифест?

A: - It's a list of cargo and all the goods carried.

### Ex.16. Speak on the following topics. Make use of the words and phrases given:

#### 1. Air waybill

Carriage of cargo, receipt of goods, to be used by customs authorities, to be issued, to be computer generated, to consist of 9 - 14 parts.

#### 2. Cargo manifest.

A list of cargo, data for aircraft loading purposes, to be accurately completed, to be explicit, dangerous goods, to pay attention.

## UNIT 9. DANGEROUS GOODS

### PHONETICS

Pay attention to the correct pronunciation of the combinations of letters:

<b>ew / u /</b> crew few dew	<b>ew / u /</b> crew few dew	<b>age /idʒ/</b> carriage baggage usage	<b>ous /əs /</b> dangerous previous voluminous
---------------------------------------	---------------------------------------	--	---

**Ex.1. Read the words and word combinations correctly:**

- a) Carriage, luggage, voluminous, previous, dangerous, few, crew.  
b) Dangerous goods, unchecked baggage, carriage of goods, health of passengers and crew, voluminous baggage.

### WORDFORMATION

“-ly” – суффикс наречия. Наречия образуются от прилагательных и отвечают на вопрос «Как?»

happy – счастливый	happily – счастливо
honest – честный	honestly – честно
beautiful – красивый	beautifully – красиво
safe – безопасный	safely – безопасно
direct – прямой, непосредственный	directly – прямо, непосредственно

**Ex. 2. Make the words using the suffix “-ly-” and translate them into Russian:**

Sad, physical, precise, peaceful, incredible, financial, direct.

### PREPOSITIONS

Данные предлоги имеют собственное лексическое значение:

**On** – на

Based **on** technical instructions - основанный на технических инструкциях

Insist **on** carrying - настаивать на провозе (управление глагола “insist”)

### Ex. 3. Translate into Russian paying attention to the prepositions:

1. Based on ICAO documents, 2. on behalf of a shipper, 3. to make a decision on the method of dispatch, 4. loadable on the aircraft, 5. on board of the aircraft, 6. carriage of dangerous goods on board, 7. to insist on carrying dangerous goods, 8. to spend money on books, 9. to depend on the amount of goods, 10. On the average.

## GRAMMAR

### 1. Past Participle – Причастие прошедшего времени

#### Образование:

К основе правильных глаголов прибавляется окончание **-ed** (checked, discussed, received).

У неправильных глаголов берется III форма (written, taken, given).

Переводится на русский язык причастиями на -нный -тый (проверенный, взятый). Служит для образования времен группы Perfect и Passive Voice.

a) **Past Participle** в функции определения к имени существительному. Переводится на русский язык причастиями на -нный, -тый (проверенный, взятый).

The answer **received** from the sellers surprised us. – Ответ, **полученный** от продавцов, удивил нас. (определение к существительному)

The methods **used** in protecting airports – методы, используемые для защиты аэропортов.

To use a **hijacked** plane – угнанный самолет.

To screen **the checked** baggage – просвечивать зарегистрированный багаж.

b) **Past Participle** для образования времен страдательного залога

### 2. Present Simple Passive – Простое настоящее время страдательного залога

**am**

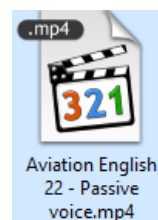
**is**

**are**

+

**Past Participle**

The passengers **are screened** by a metal detector. – Пассажиры **осматриваются** металлодетектором.





**Statements, questions and negatives in Present Simple Passive –  
Утверждения, вопросы и отрицания в простом настоящем времени  
страдательного залога.**

	Вопроси- тельное слово	Вспомо- гательны й глагол	Подлежащ ее	Сказуемое (смыслово й глагол)	Дополнение
	0	1	2	3	4
Утвердитель- ная форма			The passengers	<b>are screened</b>	by a metal detector.
Отрицательн- ая форма			The passengers	<b>are not (aren't) screened</b>	by a metal detector.
Вопроситель- ная форма (общий вопрос)		<b>Are</b>	the passengers	<b>screened</b>	by a metal detector.
Специальные вопросы	What	<b>are</b>	the passengers	<b>screened by?</b>	
	Where	<b>are</b>	the passengers	<b>screened?</b>	

**Ex. 4. Transform the statements into Present Simple Passive:**

- They consider North Atlantic route the world's premium route.
- Airlines offer the cheapest fares on the internet.
- The airport security screens passengers.
- The number of tickets that they sell is the basic component that determine airline's revenue.
- Security officers screen baggage.
- The airport security provides a first line of defense.
- The police uses dogs for explosive detection.
- Various groups of people purchase cheaper seats.
- They never delay this flight.
- The security prevents carrying weapons on board.

**Ex.5. Read and learn the following words and word combinations:**

a)

- article n. /'a:tɪkl/ – предмет
- appliance n. /ə'plaiəns / - прибор
- health n. /helθ / – здоровье
- exceptional adj. / ɪk'sepʃnəl / – исключительный
- option n. / ɒpʃn / – выбор
- prosecution n. /prə'sekjuʃn / – преследование
- substance n. /'sʌbstəns/ – вещество

b)

- apply for approval – обратиться за одобрением
- grant by the authorities – предоставляться властями
- criminal offence – уголовное преступление
- comply with the rules – подчиняться правилам

**Ex. 6. Match the words with the definitions:**

1.	Approval	A	Things to be transported.
2.	Goods	B	Equipment for specific task.
3.	Legislation	D	Consent, favorable opinion.
4.	Appliance	E	Providing of what is needed.
5.	Supply	G	Law making.

**Ex. 7. Give the definitions of the word below using a Dictionary of English language, translate the definitions into Russian and copy them out into your copy-books:**

- Offence
- Item
- Acceptance
- Substance

**Ex. 8. Read and translate the text “Dangerous goods”:****DANGEROUS GOODS**

Dangerous goods are articles and substances which may be a risk to health, safety and property when transported by air.

However the company have the option to apply for approval from the authority to transport Dangerous Goods from time to time, thus some of the instruction in this chapter may seem to cover more than the “NON PERMANENT APPROVAL” requires.

General Dangerous goods must never be carried as checked nor unchecked baggage by passenger or crew.

Passengers failing to comply with these rules not only put themselves and everyone else in danger but are committing a criminal offence which may result in prosecution.



Sometimes passengers insist on carrying dangerous goods as unchecked or checked baggage because the goods is the reason for their travel. Such passengers may even try to approach the Commander directly or through station supervisors to obtain exceptional acceptance. The

Commander has, however no authority to accept such dangerous goods at all.

Carriage of dangerous goods onboard aircraft is regulated by national legislation based on International Civil Aviation Organization’s Technical Instructions for the Safe Transport of Dangerous Goods by Air “ - ICAO / Doc 9284-AN/905.

General Dangerous goods can only be carried according to the IATA Dangerous Goods Regulations (DGR) which is based on ICAO / Doc 9284-AN/905, irrespective of whether the flight is wholly or partly within or wholly outside the territory of State. An approval must be granted by the Authority before dangerous goods can be carried on an aeroplane. An approval is not required for dangerous goods which are required to be aboard the aeroplane as:

1. Items for airworthiness or operating reasons or for the health of passengers or crew, such as batteries, fire extinguishers, first aid kits, insecticides, air fresheners, life saving appliances and portable oxygen supplies; and

2. Catering or cabin service supplies.

**Ex.10. Give Russian equivalents for the following:**

1. A risk to health, 2. unchecked baggage, 3. to comply with the rules, 4. criminal offense, 6. to accept dangerous goods, 7.to be

regulated by national legislation, 8. Fire extinguisher, 9. life saving appliances, 10. to be granted by the authority.

**Ex.11. Give English equivalents for the following:**

1. Риск для безопасности, 2. обратиться за одобрением к властям, 3. непроверенный багаж, 4. совершить уголовное преступление, 5. непосредственно, 6. регулироваться национальным законодательством, 7. перевозить на самолете, 8. средства спасения, 9. здоровье пассажиров, 10. предметы.

**Ex.12. Complete the sentences using the information from the text:**

- ... which may be a risk to health.
- Dangerous goods must never be carried...
- Sometimes.... carry dangerous goods as....
- ....has no authority to accept dangerous goods.
- Carriage of ... is regulated by...
- .... according to IATA Dangerous Goods Regulation.
- An approval for ...is not required.
- ...try to approach ... directly to obtain...
- Passengers... are committing criminal offence.

**Ex.13. Answer the questions using the information from the text :**

- What kind of articles are dangerous goods?
- What option does a company have to transport dangerous goods?
- What legislation is the carriage of dangerous goods regulated by?
- Why do some passengers insist on carrying dangerous goods?
- In what case do the passengers obtain an exceptional acceptance?
- What are the passengers committing if they fail to comply the rules of dangerous goods carriage?
- What must be granted before carrying dangerous goods on a plane?
- What items are not required an approval?
- What are the items for operating reasons?

## VIDEO TASK

**Ex.13.a.** You are going to watch the video about dangerous goods. Look at the screenshots below and make a topic.



<https://www.youtube.com/watch?v=FhTouLASve8>

	<p><b>Definition</b></p> <p>Articles or substances Which Are Capable Of Posing A Significant Risk To Health, Safety Or Property When Transported By Air.</p>	<p><b>Examples for Dangerous Goods</b></p> <table style="width: 100%; text-align: center;"> <tr> <td style="background-color: #e91e63; color: white; padding: 5px;">Pesticides</td> <td style="background-color: #8bc34a; color: white; padding: 5px;">Gas Cylinders</td> <td style="background-color: #9c27b0; color: white; padding: 5px;">Aerosol</td> </tr> <tr> <td style="background-color: #e91e63; color: white; padding: 5px;">Phenol</td> <td style="background-color: #8bc34a; color: white; padding: 5px;">Bleach</td> <td style="background-color: #9c27b0; color: white; padding: 5px;">Thinner</td> </tr> <tr> <td style="background-color: #8bc34a; color: white; padding: 5px;">Paint</td> <td style="background-color: #9c27b0; color: white; padding: 5px;">Lighter</td> <td style="background-color: #e91e63; color: white; padding: 5px;">Matchstick</td> </tr> </table>	Pesticides	Gas Cylinders	Aerosol	Phenol	Bleach	Thinner	Paint	Lighter	Matchstick	<p><b>Classification of DGR</b></p>
Pesticides	Gas Cylinders	Aerosol										
Phenol	Bleach	Thinner										
Paint	Lighter	Matchstick										
<p><b>Explosives Substances</b></p> <p>A solid or liquid substance (or a mixture) which is in itself capable by chemical reaction of producing gas at a temperature and pressure and at such a speed as to cause damage to the surrounding.</p>	<p><b>Flammable Gas</b></p> <ul style="list-style-type: none"> <li>• A gas is a substance which at 50°C has a vapour pressure greater than 300 kPa</li> <li>• is completely gaseous at 20°C at a standard pressure of 101.3 kPa.</li> </ul>	<p><b>Packaging</b></p>	<p><b>Marks and Labels</b></p>									

**Imagine that now you work as a captain. Write an email to your friend telling him/her about your responsibilities, the aircompany you work in, your co-pilot, what problems you have to face and if it is possible to keep work/life balance.**

## SPEAKING

**Ex. 14. Ask your friend in English:**

- |      |   |
|------|---|
| What | <p>kind of articles dangerous goods are;</p> <p>regulations the passengers must comply with;</p> <p>documents the carriage of dangerous goods is regulated;</p> |
| When | <p>the approval for dangerous goods is not required.</p>  |
| Why  | <p>some passengers insist on carrying dangerous goods.</p>  |

**Ex. 15. Work as an interpreter:**

Question: - Что такое опасные грузы?

Answer: - Dangerous goods represent the articles which may be a risk to safety and health.

Q: - Почему некоторые пассажиры настаивают на провозе опасных грузов?

A: - They insist on it because these goods is the reason for their travel.

Q: - Кем регулируется провоз опасных грузов?

A: - The carriage of dangerous goods onboard is regulated by national legislation based on ICAO technical instructions.

Q: - Для каких грузов не требуется специальное разрешение?

A: - They are items for operating reason of aircraft such as fire extinguishers, first aid kits, insecticides and life saving appliances.

**Ex.16. Speak on the following topics. Make use of the words and phrases given:**1.Dangerous goods carriage

To be regulated, technical instructions, approval, to be granted, to be required, items for operating reasons, life saving appliances, first aid kits.

2.Dangerous goods.

Articles and substances, to be a risk to health, safety, to be carried in unchecked baggage, to commit a criminal offence, exceptional acceptance.

## UNIT 10. AVIATION SECURITY

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### PHONETICS

Pay attention to the correct pronunciation of the combinations of letters.

**tion** /ʃn/  
avi**ation**  
intern**ational**  
transport**ation**

**au** /ɔ/  
**fault**  
ass**ault**  
**cause**

**ou** /au/  
**ground**  
**thousand**  
**around**

**Ex.1. Read the words and word combinations correctly – Прочтите правильно слова и словосочетания:**

a) Assault, destination, international, ground, nation, inspection, attention, cause.

b) Death of thousands, assaulting passengers, ground services, international airport, sentenced to death, to focus attention, around 170 destinations.

### REMEMBER THE PARTS OF SPEECH

N. (Noun) – имя существительное (Кто? Что?)

Adj. (Adjective) – имя прилагательное (Какой?)

V. (verb) – глагол (Что делать? Что сделать?)

Adv. (Adverb) – наречие (Как? Каким образом?)

Prep. (Preposition) – предлог

### WORDFORMATION

**Analyse the wordformation:**

“-ty” – суффикс существительного

Adj. (имя прилагательное) + суффикс “-ty” = N. (имя существительное)

Adj.	Adj. + “-ty” = N.
safe – безопасный,	a safety – безопасность,

надежный	надежность
dense – плотный	a density – плотность
secure – безопасный	a security – безопасность

Обратите внимание на разницу в значении слов “**safety**” (безопасность, надежность) и “**security**” (безопасность, служба безопасности). Сравните : flight safety / security officer.

### PREPOSITIONS - ПРЕДЛОГИ

Предлоги могут выражать как падежные отношения, которые в русском языке передаются с помощью окончаний (склонение существительных), так и иметь собственное лексическое значение.

а) выражают падежные отношения:

падеж	вопрос	Предлог	Пример
родительный	Кого? Чего?	<b>Of</b>	Hijacking <b>of</b> airliners - угон (чего?) самолетов
дательный	Кому? Чему?	<b>To</b>	Sentenced <b>to</b> death – приговорен (к чему?) к смерти

б) имеют собственное лексическое значение:

**In / at** the airport – в аэропорту

**In** May – в мае

**On** aircraft – на самолете

**Ex. 2. Translate into Russian paying attention to the prepositions – переведите на русский язык, обращая внимание на предлоги:**

1. Criminal activity on aircraft and in airports, 2. in the earliest days of aviation, 3. in the world, 4. in September 1930, 5. on board a plane, 6.



hijacking of eight airliners, 7. danger of explosions, 8. at the airport, 9. death of thousands, 10. act of criminal activity.

## GRAMMAR

### 1. Present Simple Tense – Настоящее простое время действительного залога

Обозначает обычное действие в настоящем.

#### Образование:

c) forms of “to do”

Person	Singular	Plural
1	I	we
2	You <b>do</b>	
3	He, she, it <b>does</b>	you they

d) forms of “to start”

Person	Singular	Plural
1	I	We
2	You <b>start</b>	You
3	He, she, it <b>starts</b>	They

**Statements, questions and negatives with the verb “to serve” in Present Simple Tense – утверждения, вопросы и отрицание с глаголом “to serve” в простом настоящем времени.**

Terminal 2 serves 100 international flights a day.

	Вопросительное слово или группа слов	Вспомогательный глагол	подлежащее	Сказуемое	Дополнение	обстоятельство
Утвердит. Форма			Terminal 1 2	<b>serves</b>	100 international flights	a day.
Вопросит. форма (общий вопрос)		<b>Does</b>	terminal 2	<b>serve</b>	100 international flights	a day? - Yes, it does. No, it does not (doesn't).
Специальный Вопрос	How many flights	<b>does</b>	terminal 2	<b>serve</b>		a day?
Отрицательная Форма			Terminal 1 1	<b>does not (doesn't) serve</b>	100 international flights	a day.

**Ex. 3. Translate the sentences into Russian, make questions and negatives – переведите предложения, образуйте вопросительную и отрицательную форму.**

1. The instructors work at the University.
2. His friends go to the stadium every Sunday.
3. We work at English every day.
4. They fly to Paris on Mondays.
5. The plane always lands at 9.30.
6. Their airport operates aircraft of different types.
7. Every year Frankfurt airport handles more than 18 million passengers.
8. Crew members work a lot before the flight.

9. You operate aircraft of different types.

10. Terminal 1 serves domestic flights.

**2. The Past Simple Tense Active – Простое прошедшее время действительного залога.** Употребляется для выражения действия, совершившегося в прошлом. Этот момент в прошлом выражен словами и словосочетаниями:

**Yesterday – вчера;**

**the day before yesterday – позавчера;**

**last (week, year, month) – на прошлой неделе (в прошлом году, месяце);**

**in 1976 – в 1976 году;**

**5 years ago – 5 лет назад.**

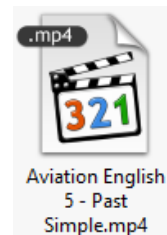
a) forms of “to produce” (правильный глагол) – формы глагола “to produce”

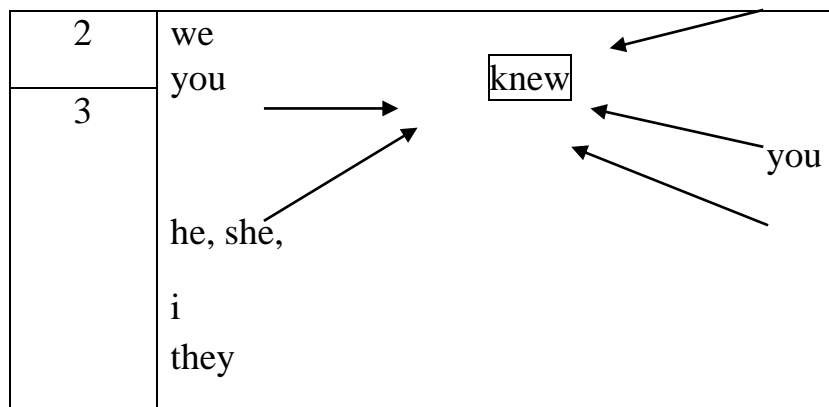
Person	Singular	Plural
1	I	we
2	you	you
3	he, she, it	they

produced

b) forms of “to know” (неправильный глагол) – формы глагола “to know”

Person	Singular	Plural
1	I	





**Statements, questions and negatives in Past Simple – Утверждения, вопросы и отрицания в простом прошедшем времени.**

The airport **handled** 5 million passengers in 1990.

	Вопросительное слово или группа слов	Вспомогательный глагол	Подлежащее	Сказуемое (смысловый глагол)	Прямое дополнение	обстоятельство
	1	2	3	4	5	6
утвердительная форма			The airport	<b>handled</b>	5 mln. passengers	in 1990.
отрицательная форма			The airport	<b>did not (didn't)</b> <b>handle</b>	5 mln. passengers	in 1990.
Вопросительная форма (общий вопрос)		<b>Did</b>	the airport	<b>handle</b>	5 mln. passengers	in 1990?  -Yes, it did.  -No, it did not  (didn't)

специальные вопросы	When	<u>did</u>	the airport	<b>handle</b>	5mln. passengers?	
	How many passengers	<u>did</u>	the airport	<b>handle</b>		in 1990?

**Ex.4. Transform the sentences into Past Simple, make questions and negatives in Past Simple – преобразуйте предложения в Past Simple, дайте вопросительную и отрицательную форму в Past Simple.**

1. The instructors work at the Academy.
2. His friends go to the stadium every Sunday.
3. We work at English every day.
4. They fly to Paris on Mondays.
5. The plane always lands at 9.30.
6. Their airport operates aircraft of different types.
7. Every year Frankfurt airport handles more than 18 million passengers.
8. Crew members work a lot before the flight.
9. You operate aircraft of different types.
10. Terminal 1 serves domestic flights.

## READING

**Ex.5. Read and learn the following words and word combinations – прочитайте и запомните следующие слова и словосочетания:**

a)

1. assault v. /ə'so:lt/ – брать штурмом, нападать
2. cause v. /ko:z/ – быть причиной
3. concern n. /kən'sɛ:n/ – значение, важность
4. crash n. /kræʃ/ – авария, крушение
5. damage v. /'dæmɪdʒ/ – причинять вред
6. destroy v. /dɪ'stroɪ/ – разрушать
7. deterrence n. /dɪ'terɪns/ – сдерживание
8. equipment n. /ɪk'wɪpmənt/ – оборудование

9. explosion n. /iks'ploʒn/ – взрыв  
 10. hijack v. /hai'dʒæk/ – угонять самолет  
 11. occur v. /ə'ke:/ – происходить  
 12. prevent v. /pri'vent/ – предотвратить  
 13. research n. /ri'se:tʃ/ – исследование  
 14. security /se'kju:riti/ — безопасность  
 15. shatter v. /'ʃætə/ – разбивать  
 16. upgrade /ʌp'greɪd/ – повышать  
 17. weapon n. /'wepən/ – оружие
- b)

1. criminal activity – преступная деятельность
2. hazardous cargo – опасный груз
3. heightening of air transportation security – повышение уровня безопасности авиаперевозок
4. screening personnel – персонал, проводящий досмотр

**Ex. 6. Match the words with the definitions – Сопоставьте слова и их определения:**

1.	Safety	A	Secure condition; safety of state, company etc. against theft or other danger; organization for ensuring this.
2.	Security	B	Being safe, freedom from danger
3.	Luggage	D	Fall or impact accompanied by this.
4.	Hijack	E	A plane or any vehicle that can fly.
5.	Equipment	G	Force aircraft to new destination.
6.	Crash	H	Suitcases, bags for containing travelers' belongings.
7.	Aircraft	I	The things that you use for particular activity.

**Ex. 7. Give the definitions of the word below using a Dictionary of English language, translate the definitions into Russian and copy them out into your copy-books. - Найдите определения следующих слов в Толковом словаре английского языка, переведите их на русский язык и запишите в тетрадь:**

1. Transportation

2. Detector

3. Screening

**Ex. 8. Read and translate the text “Aviation security” “Aviation Security” – прочтите и переведите текст :**

### **AVIATION SECURITY**

Civil aviation security exists to prevent criminal activity on aircraft and in airports. Criminal activity includes acts such as hijacking, damaging or destroying aircraft and nearby areas with bombs, and assaulting passengers and aviation officers. Today, aviation security is high on the list of priorities of air travellers, the Federal Government, and the international air community. In the earliest days of aviation, however, aviation security was only a minor concern.



The first recorded hijacking occurred in May 1930, when Peruvian revolutionaries seized a Pan American mail plane with the aim of dropping propaganda leaflets over Lima. The first major act of criminal violence against a U.S. airliner occurred on November 1, 1955, when Jack Graham placed a bomb in luggage belonging to his mother and killed all 44 people on board a Denver-bound plane. Graham hoped to cash in his mother's life insurance policy; instead, he was sentenced to death.

Following the hijacking of eight airliners to Cuba in January 1969, the Federal Aviation Administration (FAA) created the Task Force on the Deterrence of Air Piracy.

During and after the 1990s, the FAA sponsored research on new equipment to detect bombs and weapons and made improvements to aviation security that included efforts to upgrade the effectiveness of screening personnel at airports. In 1996, two accidental airline crashes focused attention on the danger of explosions aboard aircraft, including those caused by hazardous cargo. The FAA's response included banning certain hazardous materials from passenger airplanes. The 1997 Federal

appropriation to the FAA provided funds for more airport security personnel and for new security equipment.

This lull was shattered on September 11, 2001, when terrorists hijacked four U.S. airliners and crashed three of them into buildings and one into the ground, causing the death of thousands. This unprecedented attack resulted in an immediate and drastic heightening of air transportation security. In November, the Aviation and Transportation Security Act gave the Federal Government direct responsibility for airport screening.

### **Ex.9. Give Russian equivalents for the**

1. Aviation security, 2.criminal activity, 3.destroying aircraft, 4.the first recorded hijacking, 5. to detect bombs, 6. effectiveness of screening personnel, 7. new security equipment, 8. hazardous cargo, 9. crash 3 airliners into buildings, 10. heightening of air transportation security.

### **Ex.10. Give English equivalents for the following**

1.Авиационная безопасность, 2.предотвратить преступную деятельность, 3. угон или разрушение самолета, 4. нападение на пассажиров, 5. новое оборудование, 6. крушение самолета, 7. опасность взрыва на борту самолета, 8. опасный груз, 9. повышение безопасности авиаперевозок, 10. смерть тысяч людей.

### **Ex.11. Answer the questions**

1. What acts does criminal activity include?
2. What does civil aviation security exist for?
3. When did the first hijacking take place?
4. What did J. Graham do in November 1, 1955?
5. What did the American government do to prevent hijacking?
6. Why did Federal government sponsor new equipment in 1990s?
7. What did Federal government do in 1997 to improve security measures?
8. What did FAA ban from passenger airplanes?
9. What happened on September 11, 2001?
10. What did that attack result in?



## VIDEO TASK

**Ex.11.a. You are going to watch the videos about aviation security. Look at the screenshots below and make a topics.**

<p><b>Video 1</b></p>  <p>15 TERRORISTS' ATTACK.mpeg</p>	<p><b>- Video 2</b></p>  <p>16 AIRCRAFT IS HIJACKED.avi</p>	<p><b>- Video 3 -</b></p>  <p>18 BOMB ON BOARD.avi</p>	
			
			
			

**Imagine that now you work as a security guard. Write an email to your friend telling him/her about your responsibilities, the aircompany you work in, your colleagues, what problems you have to face and if it is possible to keep work/life balance.**

## SPEAKING

**Ex. 12. Ask your friend in English**

What civil aviation security exists for;

When	criminal activity in aviation includes; the first recorded hijacking occurred;
Why	Federal government sponsored research on new equipment; civil aviation security is one of the priorities of air travellers;
Where	the terrorists hijacked 4 airliners and crashed 3 of them into buildings;

### **Ex. 13. Work as an interpreter:**

Question: - What does civil aviation security exist for?

Answer: - Авиационная безопасность предотвращает преступную деятельность на воздушных судах и в аэропортах.

Q: - What does “criminal activity” mean?

A: - Под преступной деятельностью понимается угон самолета, его разрушение или причинение вреда оборудованию и служащим авиакомпаний.

Q: - When did the first hijacking occur?

A: - Первый угон самолета произошел в 1930 году в США.

Q: - What did the Federal Government do to prevent terrorism?

A: - Федеральное правительство усилило меры безопасности и разработало специальное оборудование для досмотра пассажиров.

Q: - When did an unprecedented terrorist attack occur?

A: - Беспрецедентная террористическая атака произошла 11 сентября 2001 года в США, когда были захвачены 4 самолета, 3 из которых обрушились на здания, вызвав смерть тысяч людей.

## **WRITING**

### **Ex. 14. Translate into Russian – переведите на русский язык:**

1. Угон самолета – большая опасность для авиакомпании.
2. Нападение на пассажиров является преступной деятельностью.
3. Для чего существует авиационная безопасность?
4. В 1947 году произошел первый угон самолета, когда преступники убили члена экипажа.
5. Стать агентом ИАТА – важный шаг для авиакомпании.

6. Мы думаем перевезти этот груз самолетом.
7. 11 сентября 2001 года террористы захватили 4 самолета и направили их на здания.
8. Преступная деятельность включает разрушение или угон самолета.
9. Обеспечение безопасности – важнейшая задача авиакомпаний.
10. Повышение уровня авиационной безопасности очень важно.

## UNIT 11. AIRPORT SECURITY

### PHONETICS

Pay attention to the correct pronunciation of the combinations of letters:

**sion** /zn/  
extension  
version  
pension

**th** /θ /  
method  
lethal  
thousand

**gh** /- /  
flight  
through  
sight

**Ex.1. Read the words and word combinations correctly:**

- a) Method, extension, sight, lethality, flight, through, authority.
- b) Domestic flight, high lethality rate, through airport security, lethal weapon, airport enforcement authority, by extension aircraft from crime and terrorism.

### WORDFORMATION

**Analyse the word formation :**

**V.** (основа глагола) +суффикс “-or” = **N.** (имя существительное, обозначающее лицо

” -er ” или предмет,

выполняющий действие)

a)

V.	V. + ”-or ”= N.
to visit – посещать	a <b>visitor</b> – посетитель
to operate – эксплуатировать	an <b>operator</b> – оператор
to detect – обнаруживать	a <b>detector</b> – детектор
to inspect –инспектировать	an <b>inspector</b> – инспектор

b)

V.	V. + ”-er” = N.
to read – читать	a <b>reader</b> – читатель
to build – строить	a <b>builder</b> – строитель
to think – думать, мыслить	a <b>thinker</b> – мыслитель
to sell - продавать	a <b>seller</b> – продавец
to work – работать	a <b>worker</b> – рабочий

**Ex. 2. Make the nouns from the verbs using the suffixes “-er”, “-or” –  
Образуйте существительные от глаголов при помощи суффиксов  
”-er”, ”-or”:**

To buy, to direct, to inspect, to visit, to produce, to sell, to teach, to translate, to supply, to invent, to govern, to train, to begin, to control, to hijack, to navigate, to instruct.

## PREPOSITIONS - ПРЕДЛОГИ

а) выражают падежные отношения:

падеж	вопрос	Предлог	Пример
творительный	Кем ? Чем?	<b>by</b>	Screened <b>by</b> a metal detector - осмотрен (чем?) металлодетектором

б) имеют собственное лексическое значение:

Protect **from** attacks – защищать от атак

Use **for** checked luggage - использовать для зарегистрированного багажа

**Ex. 3. Translate into Russian paying attention to the prepositions:**

1.To protect aircraft from terrorism, 2.target for terrorism, 3.to protect the airport from crime, 4. travelers screened by a metal detector, 5.machines used for carry-on luggage, 6.passengers searched by security officers, 7.passengers discharged from airliners, 8.to stop attackers from bringing weapons on board, 9.to use police dog services for explosive detection, 10.officers from the agency.

## GRAMMAR

**1. Past Participle** – Причастие прошедшего времени

**Образование:**

К основе правильных глаголов прибавляется окончание **-ed** (checked, discussed, received).

У неправильных глаголов берется III форма (written, taken, given).

А) В функции определения к существительному переводится на русский язык причастиями страдательного залога на –нный/ -тый (To

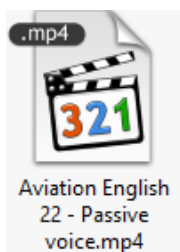
screen **the checked** baggage – просвечивать зарегистрированный багаж.)

В) Служит для образования времен группы Perfect и Passive Voice.( времен страдательного залога)

## 2. Present Simple Passive – Простое настоящее время страдательного залога

<b>am</b> <b>is</b> <b>are</b>	+	<b>Past Participle</b>
--------------------------------------	---	------------------------

The passengers **are screened** by a metal detector. – Пассажиры осматриваются металлодетектором.



### Statements, questions and negatives in Present Simple Passive – Утверждения, вопросы и отрицания в простом прошедшем времени страдательного залога.

	Вопрос и-тельное слово	Вспомогательный глагол	Подлежащее	Сказуемое (Смысловой глагол)	Дополнение
	0	1	2	3	4
Утвердительная форма			The passengers	<b>are screened</b>	by a metal detector.
Отрицательная форма			The passengers	<b>are not (aren't) screened</b>	by a metal detector.
Вопросительная форма (общий вопрос)		<b>Are</b>	the passengers	<b>screened</b>	by a metal detector.

Специальные вопросы	What	<b>are</b>	the passengers	<b>screened by?</b>	
	Where	<b>are</b>	the passengers	<b>screened?</b>	

**Ex. 4. Transform the statements into Present Simple Passive:**

11. Pulkovo orders some TU 154s every year.
12. Security officers use metal detectors.
13. The airport security screens passengers.
14. They discharge passengers from airliners to the sterile area.
15. Security officers screen baggage.
16. The airport security provides a first line of defense.
17. The police uses dogs for explosive detection.
18. The mechanics check the engine every week.
19. They never delay this flight.
20. The security prevents carrying weapons on board.

**3. Active Indefinite infinitive – Инфинитив неопределенного вида действительного залога.**

Неличная форма глагола, отвечающая на вопрос «Что делать?»

(I форма): to carry – перевозить; to go – идти, ехать.

Показатель инфинитива – частица “to”, которая в ряде случаев переводится как «чтобы» (инфинитив цели).

Ex. It's your responsibility to obtain appropriate documents. Ваша обязанность – получить соответствующие документы.

**READING**

**Ex.5. Read and learn the following words and word combinations:**

a)

1. allow v. /ə'laʊ/ – позволять, разрешать

2. **concourse** n. /kən'ko:s/ – скопление народа
3. **defense** n. /di'fens/ – защита
4. **detect** v. /di'tekt/ – обнаруживать
5. **device** n. /di'vais/ – прибор
6. **discharge** v. /dis'tʃa:dʒ/ – выпускать
7. **gate** n. /geit/ – выход на посадку
8. **prevent** v. /pri'vent/ – предотвращать
9. **protect** v. /prə'tekt/ – защищать
10. **purpose** n. /'pɜ:pəs/ – цель
11. **search** v. /'sɜ:tʃ/ – обыскивать, досматривать
12. **target** n. /'tɑ:dʒit/ – мишень

b)

13. **explosive detection** – обнаружение взрывчатки
14. **gathering of people** – скопление народа
15. **lethality rate** – показатель смертности
16. **metal detector** – металлодетектор

**Ex. 6. Match the words with the definitions:**

1.	Defense	A	Mark or person or object fired at.
2.	Device	B	Thing used for making harm to a body.
3.	Gate	D	Defending, protection.
4.	Weapon	E	Thing made or adapted for a particular purpose.
5.	X –ray	G	Electromagnetic radiation of short wavelength
6.	Target	H	Numbered place of access to aircraft in an airport.

**Ex. 7. Give the definitions of the word below using a Dictionary of English language, translate the definitions into Russian and copy them out into your copy-books.**

1. Attack
2. Terrorism
3. Lethality



**Ex. 8. Read and translate the text “Airport security” :**

**AIRPORT SECURITY**

Airport security refers to the techniques and methods used in protecting airport and by extension aircraft from crime or terrorism. Large numbers of people pass through airports every day. Such a large gathering of people presents a natural target for terrorism and other forms of crime due to the number of people located in a small area. The high concentration of people on large airliner, the potential high lethality rate of attacks on aircraft, and the ability to use a hijacked airplane as a lethal weapon provide an alluring target for terrorism.

Airport security provides a first line of defense by attempting to stop would-be attackers from bringing weapons or bombs into the airport. If



they succeed in this, then the chances of these devices getting on to aircraft are greatly reduced. As such, airport security serves two purposes: to protect the airport from attacks and crime and to protect the aircraft from attack.

Many past tragedies were the result of travelers allowed to carry either weapon or items that could be used as weapons on board of aircraft so that they can hijack the plane. Travelers are quickly but efficiently screened by a metal detector. More advanced explosive detection machines are used in screening passengers. Baggage is screened to prevent the carrying of bomb aboard an aircraft. X-ray machines are often used to speed this process. Explosive detection machines are also used for both carry on and checked baggage.

Generally people are screened through airport security into the concourses, where the gates are all located. This area is often called a secure or sterile area. Passengers are discharged from airliners into the sterile area so that they usually will not have to be rescreened if boarding a domestic flight; however they are still subject to search at any time.

**Ex.9. Give Russian equivalents for the following:**

1. Techniques and methods in protecting airports, 2. large gathering of people, 3. target for terrorism, 4. high lethality rate, 5. bringing weapons or

bombs into the airport, 6. to carry weapons on board, 7. to hijack the plane, 8. metal detectors, 9. to screen passengers, 10. sterile area.

**Ex.10. Give English equivalents for the following:**

1. Методы защиты аэропортов, 2. мишень для террористов, 3. угнанный самолет, 4. проносить оружие на борт, 5. защитить самолет от атак террористов, 6. осмотреть с помощью металлодетектора, 7. стерильная зона, 8. обнаружение взрывчатки, 9. досмотр, 10. посадка на внутренний рейс.

**Ex.11. Answer the questions:**

1. What does the “airport security” mean?
2. Why does an airport represent a target for terrorists?
3. What does airport security provide?
4. What does the security protect airports and aircraft from?
5. Why are the travellers screened by metal detector?
6. What kind of devices are used in passenger screening?
7. Where are the passengers screened?
8. Is the baggage screened?
9. What are the passengers discharged from airliners to sterile areas for?
10. Are the travellers subject to search?

**VIDEO TASK**

**Ex.11.a. You are going to watch the videos about aviation security. Look at the screenshots below and make a topics.**

**Video-1**

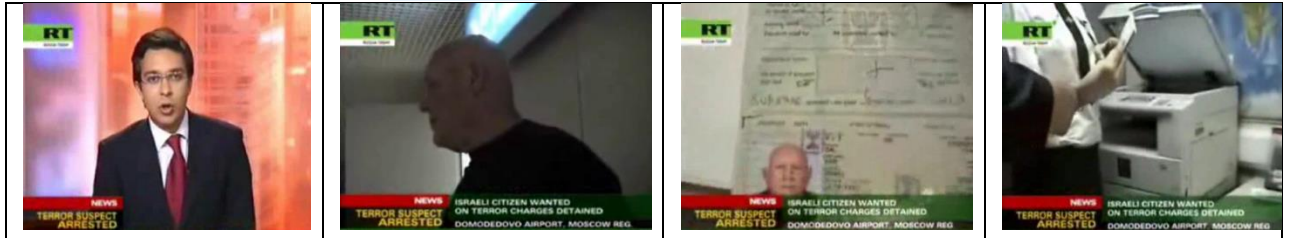




**Video-2**



**Video-3**



Imagine that now you work as an agent of airport security. Write an email to your friend telling him/her about your responsibilities, the aircompany you work in, your colleagues, what problems you have to face and if it is possible to keep work/life balance.

**SPEAKING**

**Ex. 12. Ask your friend in English:**

What airport security exists for;  
 usually represents a target for terrorists;  
 airport security provides;

	procedures are used by security officers;
	devices are used in passenger screening;
Where	the passengers are screened; the passengers are discharged from airliners;
Why	the baggage is screened;  x-ray machines are used at the airport.

**Ex.13. Speak on the following topics. Make use of the words and phrases given below.**

1. Methods and techniques used in airport security

To protect aircraft from crime and terrorism, gathering of people, to represent a target for terrorism, to use a hijacked plane, to stop attackers from bringing weapons on board.

2. Passenger screening

To screen by a metal detector, airport security, x-ray machine, explosive detection machines, carry-on luggage, gates, sterile area, to discharge from airliners.

## WRITING

**EX. 14. Translate into English:**

1. Пассажиры просвечиваются металлодетектором.
2. Основные задачи авиационной безопасности – защитить аэропорт и самолет от атак террористов .
3. Скопление людей представляет собой мишень для террористов.
4. Собаки используются для поиска взрывчатки в багаже.
5. Пассажиров направляют в специальную стерильную зону перед посадкой в самолет.
6. Рентгеновские лучи используют при просвечивании багажа.
7. Приборы для поиска взрывчатки используются при осмотре пассажиров и багажа.
8. На внутренних рейсах пассажиров просвечивают только один раз.
9. Служба безопасности существует, чтобы предотвратить пронос оружия на борт самолета.
10. Зачем в аэропортах используются металлодетекторы?

## UNIT 12. PASSENGER SCREENING

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### PHONETICS

Pay attention to the correct pronunciation of the combinations of letters:

<b>er</b> [ ə ]	<b>qu</b> [ kw ]	<b>ious</b> [ ]
proper	frequency	suspicious
longer	frequent	conscious
fewer	subsequent	

**Ex.1. Read the words and word combinations correctly:**

- a) Proper, ever, fewer, rather, frequent, consequent, suspicious, equipment, passenger.
- b) Fewer passengers, without proper documentation, radio frequency identification, subsequent re-use of biometric data, suspicious behavior, new security equipment.

### WORDFORMATION

**Analyse the wordformation:**

“-ment “– суффикс существительного

**V. (глагол) + суффикс “- ment “= N. (имя существительное)**

V.	V.+ «-ment» = N.
to develop – развивать	a develop <b>ment</b> – развитие
to enrol – регистрировать	an enrol <b>ment</b> - регистрация
to invest – инвестировать	an invest <b>ment</b> – инвестиция
to require – требовать	a require <b>ment</b> – требование
to improve – улучшать	an improv <b>ement</b> – улучшение
to equip – оборудовать	an equip <b>ment</b> - оборудование

**Ex. 2. Make the nouns from verbs using the suffix «-ment»:**

To move, to state, to develop, to improve, to equip, to achieve, to require, to announce, to agree, to govern, to pay, to settle, to govern, to enrol.

## PREPOSITIONS

### Pay attention to the use of prepositions:

**Without** proper documentation – без соответствующих документов

Depart **from** a country – отбывать из страны

Board a flight – совершать посадку на рейс

### Ex. 3. Translate into Russian paying attention to the prepositions:

1.To board a particular flight, 2.the safety of our passengers, 3.to depart from Germany, 4.storage of biometric data, 5. from the border, 6.to be replaced by technology, 7. without proper documentation, 8. in air transport industry, 9.incorporation of biometrics in travel documents, 10. to process data at check-in.

## GRAMMAR

### 1. Degrees of comparison of adjectives – Степени сравнения прилагательных

ФОРМА	Положительная	Сравнительная	Превосходная
односложные	large Крупный	larger Более крупный	The largest Самый крупный
многосложные	beautiful	more beautiful	The most (least) beautiful
нестандартные формы	good little much, many bad far	better less more worse further, farther	the best the least the most the worst the furthest, the farthest.

**Ex. 3a. Read the adjectives and name the degrees of comparison of adjectives:**

London is **bigger** than Paris.  
 Even **fewer** people will be illegal immigrants.  
 The Ritz Hotel is **more expensive** than the Hilton.  
 The Tower is **the oldest** building in London.  
 He is **the best** of my friends.

Для сравнения двух предметов одинакового качества прилагательное в положительной степени ставится между as ....as со значением *такой же... как, так же ...как*:

He is **as young as** my brother.  
 Greece is **as sunny as** Spain.

**Ex.4. Read the adjectives and give their degrees of comparison.**

Small, interesting, comfortable, quick, large, long, fast, beautiful, modern, much, old, new, little, good, large, convenient, far, bad, big, old, young, quick, slow, interesting, short, new, high, attractive.

**Ex. 5. Open the brackets using the proper degree of comparison:**

A)

1. Russia is (large) country in the world.
2. Russia is (large) than the United States of America.
3. Tokyo is (expensive) than Rome.
4. London is (big) than Paris.
5. The plane is (comfortable) than train.
6. The Il –96 speed is (little) than the Concorde speed.
7. Technology will play a (great) role in passengers security.
8. Sheremetyevo airport is (large) international in our country.
9. Government and airports work together to implement (smart) technologies.
10. Pre-departure screening is (effective) process.

**B) use the structure as ... as:**

1. Russia is (large) the United States of America.
2. The Volga is (large) the Yenisey.
3. Italy is (sunny) Spain.
4. Moscow is (expensive) St. Peterburg.

5. The Ritz Hotel is (comfortable) the Hilton.
6. The runway in Pulkovo airport (large) in Sheremetyevo airport.
7. The plane is (comfortable) train.
8. The Il –96 speed is (high) the Il - 86 speed.
9. The Tu –134 is (long) Tu –154.
10. Security is (important) comfort.

## 2. Future Indefinite Active Tense – Будущее простое время действительного залога

Образование: **Shall** + **V.**

**Will**

### Forms of “to check” in the Future Simple Tense

Person	Singular	Plural
1	I → <b>shall check</b> ← we	
2	you →	← you
3	↑ <b>will check</b> ↓ he, she, it                      they	

### Statements, negatives and questions in the Future Simple:

 .mp4 Aviation English 8 - Future Tense.mp4	Вопро- си- тельно е слово	Вспомога- тельный глагол	подлежащ ее	Вспом огател ьный глагол	Смысл о вой глагол	Дополнение, обстоятельство
	0	1	2	3	4	5
Утвердитель ная форма			The mechanic	<b>will</b>	<b>check</b>	the engine tomorrow.
Вопроситель ная форма (общий вопрос)		<b>Will</b>	the mechanic		<b>check</b>	the engine tomorrow? - Yes, he will. - No, he will



						not (won't).
Специальный вопрос	When	<b>will</b>	the mechanic		<b>check</b>	the engine?
Отрицательная форма			The mechanic	<b>will not (won't)</b>	<b>check</b>	the engine tomorrow.

**Ex.6. Translate the sentences; make questions and negatives:**

1. We shall answer the questions in English.
2. The mechanics will work in the hangar tomorrow.
3. He will help me to translate the text.
4. They will come back from London next week.
5. Mr. Smith will leave for Kiev next week.
6. Pulkovo will offer drinks for passengers.
7. The city will receive a modern terminal.
8. Passengers will choose the food on board.
9. They will build a new terminal.
10. You will enjoy the flight.

**READING**

**Ex.7. Read and learn the following words and word combinations:**

a)

1. biometrics n. /baɪə'metriks/ – биометрические данные
2. citizen n. /'sitizn/ – гражданин
3. facilitation n. /fə'sɪli'teɪʃn/ – облегчение
4. fraction n. /frækʃn/ – доля

5. enrolment n./in'rolmənt/ – занесение в список, регистрация
6. illegal adj. /i'liɡəl/ – нелегальный
7. particular adj. /pə'tikjulə/ – определенный
8. proper adj. /'prɒpə/ – соответствующий
9. priority n. /praɪərɪti/ – приоритет
10. queue n. /kju:/ – очередь
11. storage n. /'stɒrɪdʒ/ – хранение
12. subsequent adj. /sʌb'sekwənt/ – последующий
13. veritable adj. /'verɪtəbl/ – истинный

b)

14. biometric verification – проверка по биометрическим данным
15. drug trafficker – наркоторговец
16. multi-layered approach – многоуровневый подход
17. to process passenger data – обрабатывать данные пассажиров
18. radio frequency identification – идентификация по радио частоте

**Ex. 8. Match the words with the definitions:**

1.	Queue	A	Native member of a state.
2.	Biometrics	B	Line or sequence of persons or vehicles awaiting for their turn.
3.	Citizen	D	Writing or inscription that provides a record or evidence.
4.	Documentation	E	Making easy or less difficult.
5.	Facilitation	G	Physical characteristics of a person.
6.	Passenger	H	Traveler in a private or public means of transport.

**Ex.9. Give the definitions of the word below using a Dictionary of English language, translate the definitions into Russian and copy them out into your copy-books.**

- 1.Verification
- 2.Departure
- 3.Challenge

**Ex. 10. Read and translate the text “Passenger screening” :**

### **PASSENGER SCREENING**

Transportation security is a vital priority for governments, airlines and airports. This year, two billion passengers will take to the skies. Of these, only a small fraction will arrive without proper documentation (passport, visa etc). Even fewer will be illegal immigrants, drug traffickers, terrorists or other criminals. The challenge for our industry remains a veritable balancing act: to strike the right balance between security and facilitation. It’s not an easy task.



Security is a non-negotiable priority in today’s air transport industry. The safety of our passengers, our citizens and our airports is absolutely critical. But this need should not mean longer queues or a less pleasant passenger experience. What’s needed is a multi-layered approach where smarter regulation is combined with more effective technology offering greater degrees of automation.

Security will be achieved with less impact on passengers. International standards will be key to achieving this. And the industry came a long way: the International Civil Aviation Organization (ICAO) set out a roadmap for the incorporation of biometrics in travel documents; IATA defined a recommended practice for the use of Radio Frequency Identification (RFID).

Pre-departure passenger screening is perhaps the single most effective process for making sure that a person of interest does not board a particular flight, depart from or arrive in a particular country. Interactive system enables government systems to interface directly with airline systems so that passenger data can be processed at check-in, in real-time, prior to departure.

The processes applied to the enrolment, storage and subsequent re-use of biometrics data will be of great importance. Getting it wrong will cost the industry time and money and will serve only to enhance security in isolated areas. Getting it right, however, will deliver exceptional results on a global basis, enabling registered travellers to use biometrics verification to identify themselves at check-in, at the security checkpoint and at the border.

**Ex.11. Give Russian equivalents for the following:**

1. Vital priority, 2.without proper documentation, 3.illegal immigrants, 4.balance between security and facilitation, 5.safety of the citizens, 6.incorporation of biometrics in travel documents, 8. to arrive in a particular country, 9.to enhance security, 10. to process passenger data.

**Ex.12. Give English equivalents for the following:**

1. Без соответствующих документов, 2.нелегальные иммигранты, 3.многоуровневый подход, 4. длинные очереди, 5.совершать посадку на определенный рейс, 6. обрабатывать данные пассажиров, 7.распознавание с помощью биометрических данных, 8.занесение в список и хранение данных, 9. повышать безопасность, 10. баланс между безопасностью и облегчением поездки.

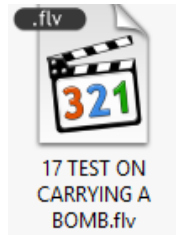
**Ex.13. Answer the questions:**

1. How many people will take to the sky this year?
2. Will all of them arrive with proper documentation?
3. Why is the security a non-negotiable priority in air transport industry?
4. What degrees of automation do we need in passengers security?
5. What kind of approach is needed?
6. What kind of characteristics will ICAO incorporate in travel documents?
7. What does RFID mean and what is it used for?
8. What does pre-departure passenger screening include?
9. Why does the government need biometric verification programs?
10. Where can the travelers identify themselves using biometric verification?

## VIDEO TASK

**Ex.13.a. You are going to watch the video about aviation security. Look at the screenshots below and make a topic.**

**Video -1**



**Imagine that now you work as an agent of airport security. Write an email to your friend telling him/her about your responsibilities, the aircompany you work in, your colleagues, what problems you have to face.**

## SPEAKING

**Ex. 14. Ask your friend in English:**

- What            passenger screening exists for;  
                   types of passengers arrive without proper documentation;  
                   characteristics ICAO wants to incorporate in passenger screening;  
                   procedures are used at passenger screening;  
                   devices are used in passenger screening;  
                   approach the security officers need;
- Where          the passengers are screened;
- Why            passenger screening is a vital priority for governments;  
                   the enrolment, storage and subsequent re-use of biometric data is of  
                   great importance.

**Ex.15. Speak on the following topics. Make use of the words and phrases given:**

1.New methods and equipment used in passengers screening.

To arrive without proper documentation, illegal immigrants, balance between security and facilitation, multi-layered approach, incorporation of biometrics in travel documents, use of Radio Frequency Identification, interactive systems.

2.The effectiveness of passenger screening.

Pre-departure screening, effective process, to board a particular flight, interactive systems, to process passenger data, registered travelers, biometrics verification, at the security checkpoint.

**Ex. 16. Act out as an interpreter in this dialogue between a security officer and a passenger:**

P: - What's wrong? Any delay?

Security Officer: - Не беспокойтесь. Проверка безопасности не займет у вас много времени.

Passenger: - Oh, very well then.

SO: - Могу я посмотреть вашу ручную кладь?.

P: - Yes, but be careful, I have important papers in my bag.

SO: - Все в порядке. А теперь пройдите через металлоискатель. У вас есть металлические предметы?

P: - Yes, my keys.

SO: - Можно их посмотреть? Все в порядке. Не звонят. Спасибо, теперь вы можете идти на посадку.

## WRITING

### Ex. 17. Translate into English:

1. Будет ли достигнут баланс между комфортом и безопасностью?
2. Сколько пассажиров приедет с неправильно оформленными документами?
3. В Европу прибудет много нелегальных иммигрантов.
4. Безопасность является неоспоримым приоритетом для авиаиндустрии.
5. Новые интерактивные системы обеспечат более быструю обработку результатов.
6. Новые технологии защитят не только самолеты и аэропорты, но и пассажиров.
7. Будут использоваться различные методы просвечивания багажа.
8. Просвечивание пассажиров и багажа – самый эффективный метод на сегодняшний день.
9. Программы проверки биометрических данных дадут исключительные результаты, но будут стоить дорого.
10. Использование новых методов контроля сделает аэропорты более безопасными.

## UNIT 13. BAGGAGE SCREENING

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### PHONETICS

Pay attention to the correct pronunciation of the combinations of letters:

<b>sure</b> [ ə ]	<b>ie</b> [i:]	<b>ture</b> [t ə ]
measure	piece	departure
pleasure	brief	picture
leisure	chief	procedure

**Ex.1. Read the words and word combinations correctly:**

- a) Measures, pleasure, exposure, piece, briefcase, procedure, adventure.
- b) Screening procedure, piece of luggage, strict airport measures, brief rundown, enhanced security measures, pre-departure screening .

### WORDFORMATION

**Analyse the word formation:**

“**Un-**“ – отрицательная приставка (в русском языке соответствует приставкам не-, без- ).

checked – проверенный	<b>unchecked</b> – непроверенный
to lock –запереть	to <b>unlock</b> – отпереть
translatable – переводимый	<b>untranslatable</b> – непереводаимый
professional – профессиональный	<b>unprofessional</b> – непрофессиональный

### PREPOSITIONS

a) выражают падежные отношения:

падеж	вопрос	Предлог	Пример
дательный	Кому?	<b>to</b>	Subject <b>to</b> visual inspection - подлежащий (чему?)



	Чему?		визуальной проверке
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b) имеют собственное лексическое значение:

Some doubts **about** an item – некоторые сомнения о предмете

Travel **to** US – путешествовать в США (предлог направления)

Travel **through** US – путешествовать через США

### Ex. 2. Translate into Russian paying attention to the prepositions:

1. Access to the contents of your luggage, 2. subject to further screening, 3. to travel to France, 4. to travel through Germany, 5. for the protection of traveling public, 6. subject to visual inspection, 7. airport measures for checked luggage, 8. to have some doubts about an item, 9. report about unattended items to the uniformed police officers, 10. before coming to the airport.

## GRAMMAR

**1. Future Simple Passive** – Простое будущее время страдательного залога

<b>Will be</b>	+	<b>Past Participle</b>
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The luggage **will be screened** by a metal detector. – Багаж **будет осмотрен** металлодетектором.

**Statements, questions and negatives in Future Simple Passive** – Утверждения, вопросы и отрицания в простом будущем времени страдательного залога.

The luggage **will be screened** by a metal detector.

<p>Aviation English 22 - Passive voice.mp4</p>	Вопрос и- тельное слово	Вспомо- гательн ый глагол	Подлежа- щее	Сказуемо- е (смыслов ой глагол)	Дополнение
--	----------------------------------	------------------------------------	-----------------	---	------------

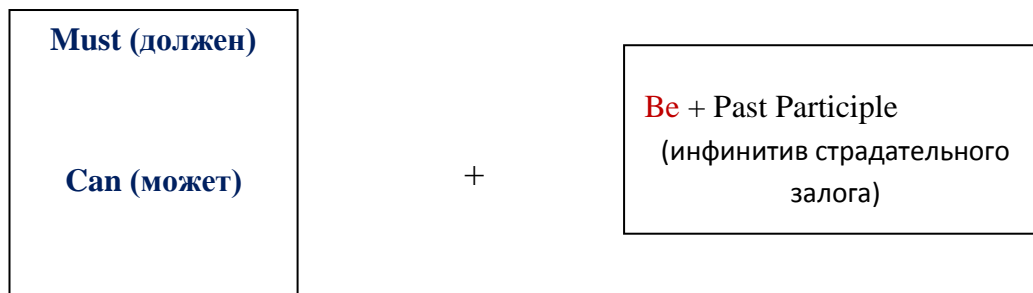
	0	1	2	3	4
Утвердительная форма			The luggage	<b>will be screened</b>	by a metal detector.
Отрицательная форма			The passengers	<b>will not be (won't) be screened</b>	by a metal detector.
Вопросительная форма (общий вопрос)		<b>Will</b>	the luggage	<b>be screened</b>	by a metal detector.
Специальные вопросы	What	<b>will</b>	the luggage	<b>be screened by?</b>	
	Where	<b>will</b>	the luggage	<b>be screened?</b>	

### Ex. 3. Transform the statements into Future Simple Passive:

1. Pulkovo will employ stricter security measures next year.
2. Security officers will use metal detectors.
3. The airport security will screen passengers.
4. They will discharge passengers from airliners to the sterile area.
5. Security officers will screen baggage.
6. The airport security will provide a first line of defense.
7. The police will use dogs for explosive detection.
8. The mechanics will check the engine.
9. They won't delay this flight.
10. The security will prevent carrying weapons on board.

### 2. Modal verbs + Passive Indefinite Infinitive

**Модальные глаголы + инфинитив страдательного залога**



Must be transported – должен быть перевезен

Can be transported – может быть перевезен

Should be transported – следует перевезти

May be transported – можно перевезти

### Statements, negatives and questions with modal verbs and Passive Infinitive

- Утверждения, вопросы и отрицания с модальными глаголами и инфинитивом страдательного залога.

The baggage **must be checked** at the check-in desk.

				Сказуемое		
	Вопросительное Слово	Модальный глагол	подлежащее	Модальный глагол	Инфинитив	Дополнение, Обстоятельство
	0	1	2	3	4	5
Утвердительная Форма			The baggage	<b>must</b>	<b>be checked</b>	at the check-in desk.
Вопросительная Форма		Must	the baggage		<b>be checked</b>	at the check-in desk?
Отрицательная			The baggage	<b>must not</b>	<b>be checked</b>	at the check-in

Форма				(mustn 't)		desk.
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**Ex. 4. Translate the sentences into Russian:**

1. The text can be translated without a dictionary.
2. The text should be read carefully.
3. The tag must be attached to your luggage.
4. The weight of hand luggage must not exceed 10 kg.
5. Umbrella may be taken to the cabin.
6. The tags can be obtained at the check-in desk.
7. The baggage must be labelled.
8. All the documents must be checked by airport officers.
9. All the checked luggage must be screened.
10. The flight must be delayed due to adverse weather conditions.

**Ex. 5. Make up the sentences of your own:**

Подлежащее	Модальный глагол	Инфинитив страдательного залога + обстоятельство	
The checked luggage	can		checked carefully.
The documents	must		translated quickly.
The tag	may		taken on board.
The text	should	be	obtained at the check-in desk.
The bag			screened.
The engine			

**READING**

**Ex.6. Read and learn the following words and word combinations:**

a)

1. advisable adj. /əd'vaizəbl/ – желательный, целесообразный

2. capable adj. /'keɪpəbl/ – способный
3. handle v. /'hændl/ – обращаться, обрабатывать
4. lock v. /lɒk/ – закрывать на замок, запирасть
5. measure n. /'meʒə/ – мера
6. responsibility n. /rɪs'pɒnsəbɪləti/ – ответственность
7. rundown n. /rʌn'daʊn/ – краткое изложение
8. strict adj. /strikt/ – строгий
9. wrap v. /ræp/ – заворачивать

b)

10. contents of luggage – содержимое багажа
11. contraband items – контрабандные товары
12. enhanced security measures – усиленные меры безопасности
13. outer garments – верхняя одежда
14. subject to visual inspection – подлежащий визуальной проверке
15. subject to screening – подлежащий просвечиванию
16. unattended luggage – багаж, находящийся без присмотра

**Ex. 7. Match the words with the definitions:**

1.	Measure	A	Looped strip connecting pulleys.
2.	Garment	B	Article of dress.
3.	Luggage	D	What is contained in thing.
4.	Contents	E	Suitcases, bags etc. For containing personal belongings.
5.	Visual	G	Concerned or used in seeing.
6.	Belt	H	Suitable action to achieve some end.

**Ex.8. Give the definitions of the word below using a Dictionary of English language, translate the definitions into Russian and copy them out into your copy-books.**

1. Inspection;
2. Package;
3. Item.

## Ex. 9. Read and translate the text “Baggage screening”

### BAGGAGE SCREENING

Enhanced security measures are in force at the nation's airports. Many of the responsibilities for airport security, including passenger and baggage screening, are handled by the federal Transportation Security Administration (TSA). All of the measures are in place for the protection of the traveling public.



The vehicles not permitted are trucks with closed toolboxes, trailers and panel vans. In addition, vehicles entering the short-term parking lots and the parking deck are subject to visual inspections. It is advisable to take unneeded packages out of your vehicle before coming to the airport.

Stricter airport measures for checked luggage became reality on January 1st, 2003. It affects all passengers travelling to, from or through U.S. airports. Here is a brief rundown of the Transportation Security Administration's policy regarding air travel:

- Several methods of screening may be employed, but the TSA will be screening all checked luggage. Every piece of checked luggage will be screened.
- The aim is that all commercial U.S. airports will have automated screening procedures. Screening machines that are capable of detecting explosives were installed at many of the largest airports in the United States, Canada and many European countries. All luggage entering the United States from foreign destinations are subject to screening.
- Do not lock your luggage. In many cases, TSA baggage handling agents may require access to the contents of your luggage and will break locks as required.
- Food may set off a 'false positive'. Food should not be packed in checked luggage.
- Do not wrap gifts as they may be subject to further screening.
- Do not pack film in checked luggage as it may be damaged by the screening machines.

At security screening, passengers will be asked to remove outer garments (coats, jackets, sweaters, etc.) and to place them on the x-ray machine belt. You should be prepared to empty all pockets of all items including cell phones and pagers and place those items in trays provided at security screening. The screening process will be expedited if you do not wear an excessive amount of jewellery or other metal objects.

There are a large number of contraband items not allowed either on your person or in carry-on luggage. The best rule to follow is if you have doubts about an item, it is best to put it in your checked baggage. Passengers can ask for guidance on whether or not an item is prohibited from airline personnel at the ticket counter. Passengers are encouraged to report unattended items or any suspicious activity at the airport to the uniformed police officers, National Guard troops or airport staff.

**Ex.10. Give Russian equivalents for the following:**

1. Enhanced security measures, 2. baggage screening handled by Transportation Security Administration, 3. vehicles subject to visual inspections, 4. to remove outer garments, 5. x-ray machine belt, 6. excessive amount of metal objects, 8. unattended items, 9. to screen all checked luggage, 10. automated screening procedures.

**Ex.11. Give English equivalents for the following:**

1. Строгие меры безопасности, 2.осмотр пассажиров и багажа, 3.подлежащий визуальной проверке, 4. снять верхнюю одежду, 5. положить предметы на ленту, 6. предметы, находящиеся без присмотра, 7.использовать различные методы осмотра, 8.закрывать багаж на замок, 9. содержимое багажа, 10. зарегистрированный багаж.

**Ex.12. Answer the questions:**

1. What are passenger and baggage screening handled by?
2. Are the trucks subject to visual inspections and why?
3. What are the passengers asked to do at security screening?
4. Why should you be prepared to empty all pockets?
5. What items are not allowed on your carry-on luggage?

6. What should the passengers do with unattended items of baggage?
7. What methods of screening will be employed at the airports?
8. Is it recommended to passengers to lock their luggage?
9. May the handling agents require an access to the contents of your luggage?
10. Why is it better not to pack film in checked luggage?

## VIDEO TASK

**Ex.9.a. You are going to watch the videos about baggage screening. Look at the screenshots below and make a topics.**



### Video - 1



### Video -2



**Imagine that now you work as an agent of baggage security. Write an email to your friend telling him/her about your responsibilities, the aircompany you work in, your colleagues, what problems you have to face.**



## SPEAKING

### Ex. 13. Ask your friend in English:

- What            baggage screening exists for;  
                   baggage screening is handled by;  
                   kind of vehicles are subject to visual inspections;  
  
                   the passengers are asked to do at security screening;  
  
                   objects they are asked to put on the x-ray machine belt;  
  
                   objects the passengers are encouraged to report to airport staff;
- Where          the baggage is screened;
- Why            stricter security measures became reality;  
  
                   it is better not to lock your luggage;  
  
                   it is better not to pack film in checked luggage.

### Ex. 14. Act out as an interpreter in this dialogue between a security officer and a passenger:

Security Officer: - Пожалуйста, снимите вашу верхнюю одежду и положите ее на ленту. Это делается для вашей безопасности.

Passenger: - OK. Is it really so important?

SO: - Да, в последнее время аэропорты применяют усиленные меры безопасности. Вам также придется положить свой телефон, ключи, деньги и другие металлические предметы на специальный поднос.

P: - Good. What shall I do with my cabin bag?

SO: - Положите ваш кейс на ленту для просвечивания. Мы посмотрим, есть ли в нем предметы, запрещенные для провоза. А, вот в вашем багаже ножницы. Придется открыть ваш кейс и осмотреть его содержимое. Разве вы не знали, что острые предметы теперь запрещены для провоза в ручной клади?

P: - Of course I knew about it but I forgot. What shall I do with them?

SO: - Вам придется либо сдать их в багаж, либо сдать на хранение.

P: - All right, I'll put them into my baggage. I suppose it won't take much time. Is that all?

SO: - Да, проверка закончена. Вы свободны, спасибо.

## WRITING

### Ex. 17. Translate into English:

1. Обеспечением безопасности американских аэропортов занимается Федеральная Служба Транспортной Безопасности.
2. При обеспечении безопасности могут быть использованы разные методы.
3. В аэропортах действуют усиленные меры безопасности.
4. Данные пассажиров будут обрабатываться перед посадкой в самолет.
5. Все металлические предметы нужно вынуть из карманов и положить на ленту.
6. Пассажиров просят сообщать о багаже, оставленном без присмотра.
7. Сотрудники службы безопасности могут потребовать открыть ваш багаж.
8. Каждая единица багажа должна просвечиваться.
9. Рентгеновские аппараты должны быть установлены во всех аэропортах.
10. Пассажиров попросят снять верхнюю одежду при проверке безопасности.

## UNIT 14. SECURITY SPECIALISTS

### PHONETICS

Pay attention to the correct pronunciation of the combinations of letters:

<b>au /ɔ/</b> authority author authorization	<b>au /ɔ/</b> authority author authorization	<b>ow /aʊ/</b> allow allowance	<b>ea /ɛ:/</b> search learn earn
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**Ex.1. Read the words and word combinations correctly:**

- a) Authorization, authorized, allowed, searches, allowance.
- b) With Customs authorization, authority to screen and search, powers allowing to screen, undertake reasonable searches of people boarding, under a search warrant.

### WORDFORMATION

“-able” – суффикс прилагательного

V. (глагол) + суффикс «-able» = Adj.(прилагательное)

V.	V. + -able = Adj.
to translate - переводить	translatable – переводимый
to change – изменять	changeable – изменчивый
to eat – есть	eatable – съедобный
to compare – сравнить	comparable – сравнимый
to reason – убеждать	reasonable – убедительный

**Ex.2. Make the adjectives from the verbs.**

To translate, to read, to understand, to change, to control, to repair, to check, to eat, to forget, to compare.

**PREPOSITIONS**

Depend **on** a consent to search – зависеть от согласия на обыск

**Under** a search warrant – на основании обыска

Deliver **to** the police – доставить в полицию

**Ex. 3. Translate into Russian, paying attention to the prepositions:**

1. Under the Civil Aviation Act 1990, 2. authorised under a search warrant, 3. to take on board, 4. to deliver a person to the police, 5. goods subject to Customs control, 6. depending on the geographic area, 7. depend on the person giving his consent to search, 8. undertake reasonable searches of people, 9. to be of harm to aviation security, 10. to be of interest to Customs.

**GRAMMAR****1. Present Perfect Tense – Настоящее время совершенного вида.**

Употребляется для выражения действия, совершившегося к настоящему моменту, результат которого имеется налицо в настоящем времени. Переводится на русский язык в основном прошедшим временем.

The firm **has** already **designed** a new model of aircraft. – Фирма уже **разработала** новую модель самолета.

**B) Forms of “to check” (regular verbs) – формы глагола “to check”**

Образование:

Have, Has + Past Participle
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Person	Singular	plural
1	I	we
2	you <b>have checked</b>	you

3	he, she, it <b>has checked</b>	they
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### B) Forms of “to begin” (irregular verbs) – формы глагола “to begin”

Person	Singular	Plural
1	I	we
2	you <b>have begun</b>	you
3	he, she, it <b>has begun</b>	they

### c) Compare the two tenses – Сравните 2 времени:

Past Simple	Present Perfect
4. He checked the engine <u>yesterday</u> .	2. He <b>has just checked</b> the engine.
5. The pilot contacted the tower <u>5 minutes ago</u> .	2. The pilot <b>has</b> already <b>contacted</b> the tower.
6. He flew to Moscow last week.	3. He <b>has flown</b> to Moscow <u>this week</u> .

### d) Statements, questions and negatives in Present Perfect

	Вопросит. Слово	Подлежащее	Вспомог. Глагол	Наречие Времени	Смысловой глагол	дополнение
	0	1	2	3	4	5

Утвердительная Форма		The officer	<b>has</b>	already	<b>examined</b>	the luggage.
Вопросительная форма (общий вопрос)	<b>Has</b>	the officer			<b>examined</b>	the luggage yet?
Специальный Вопрос	What <b>has</b>	the officer			examined	yet?
Отрицательная Форма		The officer	<b>has not</b> ( <b>hasn't</b> )		<b>examined</b>	the luggage yet?

**e) Words and word combinations with which we use Present Perfect – Слова и словосочетания, с которыми используется настоящее время совершенного вида:**

Just	ТОЛЬКО ЧТО
Already	Уже
Not yet	еще не
This week (month, year...)	на той неделе (в этом месяце ...)
Lately	в последнее время
Recently	Недавно
For 5 years	в течение 5 лет
Since 1998	с 1998 года

**Ex. 4. Transform the sentences into questions and negative forms:**

1. He has already read the text.
2. They have written the letter.
3. The air traffic controller has already contacted the aircraft.
4. The crew members have already followed all the instructions.
5. Flight 549 from London has already landed.

6. The captain has already studied the flight plan.
7. Our captain has already flown more than one thousand hours.
8. We have already established direct contact with London Radar.
9. Lufthansa flight 258 has already departed to Berlin.
10. We have just written the exercise.

## 2. Participle I ( причастие настоящего времени) в функции определения к существительному

Относится к существительному и отвечает на вопрос «Какой?».

The person **giving** his consent to the search ...

Человек, **дающий** согласие на обыск ...

### Ex. 5. Translate into English and define the function of Participle I:

1. New powers allowing to aviation security to screen, 2. searches of people boarding an aircraft, 3. vehicles entering a security enhanced area, 4. person giving a consent to search, 5. maintaining the status quo with screening and searching powers, 6. measures ensuring aviation security, 7. the powers authorising search, 8. people entering a sterile area, 9. the powers depending on a consent to be searched, 10. the specialists working in the parameters of their legislation.

## READING

### Ex.6. Read and learn the following words and word combinations:

a)

1. alignment n. /ə'lainmənt/ – линия
2. authority n. /ə'ɔ:riɪti/ – власть, полномочие
3. detain v. /di'tein/ – задерживать
4. harm n. /hɑ:m / – вред
5. power n. /'paʊə/ – власть
6. search v. /sə:tʃ/ – обыскивать
7. threat n. /θret / – угроза
8. undertake v. /ʌndə'teik / – предпринимать

b)

9. consent to search – согласие на обыск
10. reasonable grounds – приемлемые основания

11. secure area – безопасная зона  
 12. security enhanced area – зона повышенной безопасности  
 13. subject to customs control – подлежащий таможенному контролю

**Ex. 7. Match the words with the definitions:**

1.	Search	A	Power or right.
2.	Authority	B	Giving authority.
3.	Officer	D	Government department administering imports.
4.	Customs	E	Civil force responsible for maintaining public order.
5.	Police	G	Look through to find anything concealed.
6.	Authorization	H	Person holding position of authority.

**Ex.8. Give the definitions of the word below using a Dictionary of English language, translate the definitions into Russian and copy them out into your copy-books.**

1. Consent;
2. Area;
3. Warrant.

**Ex. 9. Read and translate the text “Security specialists”**

**SECURITY SPECIALISTS**

The Aviation Security Service has the authority to screen and, if necessary, undertake reasonable searches of people boarding or items taken on board an aircraft. New powers allowing to aviation security officers to screen and search people (and vehicles) entering a security area have already arisen. Depending on whether people and vehicles or just people are screened, aviation security officers could screen and, if necessary, search:



- to prevent weapons or other items of harm to the aircraft or aviation security being taken into a security enhanced area
- any person and their personal effects (or any occupied vehicle) only if authorised under a search warrant or with the person's consent
- goods subject to Customs control only with Customs' prior authorisation.

An aviation security officer's ability to screen and search a person and/or their vehicle will depend on the person giving their consent to the search.

If a person consents and an item is found (e.g. a weapon), the aviation security officer may seize it if they have reasonable grounds to believe it may not lawfully be taken on board an aircraft or may be of harm to aviation security. (This covers instances where items that were not being taken on board an aircraft could harm aircraft or the airport.)

A difficulty arises when an item is found that is not related to aviation security, but could be of interest to an agency such as Customs (e. g. endangered species or antiquities). In alignment with current provisions, aviation security officers would need to ensure the search was started with the intent of ensuring aviation security and that once any item was found, the search ceased until the relevant agency was contacted. Aviation security officers do not have the legal authority to detain a person until someone from the appropriate agency (e. g. a Customs officer) is present; however, they do have the power to seize any drugs found.



The new provisions have prevented aviation security officers from alerting the appropriate government agency. Maintaining the status quo with new screening and searching powers have ensured aviation security officers do not work outside the parameters of their legislation.

If a person refuses consent, the aviation security officer could ask them to leave the secure area or deliver them to the police.

**Ex.10. Give Russian equivalents for the following:**

1. Authority to screen and search, 2.threat to aviation security, 3.security enhanced area, 4.Customs authorization, 5.consent to the search, 6.to leave the secure area, 8. to deliver to the police 9.to be of harm to aviation security, 10. to detain a person.

**Ex.11. Give English equivalents for the following:**

1. Полномочия на просвечивание и обыск, 2. зона повышенной безопасности, 3. таможенное разрешение, 4. задержать пассажира, 5. согласие на обыск, 6. доставить в полицию, 7. угроза авиационной безопасности, 8. нанести вред самолету, 9. не относящийся к авиационной безопасности, 10. покинуть зону безопасности.

**Ex.12. Answer the questions:**

1. What authorities does the security officer have?
2. Why is it necessary to search people at the airport?
3. What items are strictly prohibited to take on board?
4. Do the security officers have a power to detain a person?
5. Is the consent to search always necessary?
6. What has an aviation security officer's ability to screen and search?
7. What happens if a dangerous item is found at a search?
8. Does the security officer screen the vehicles?
9. What happens if a person refuses to be searched?
10. Where is a person delivered to in this case?

**VIDEO TASK**

**Ex.12.a. You are going to watch the videos about the Aviation Security Service. Look at the screenshots below and make a topics.**

**Video - 1**

**Imagine that now you work as an agent of Aviation Security Service. Write an email to your friend telling him/her about your**

**responsibilities, the aircompany you work in, your colleagues, what problems you have to face.**

## **SPEAKING**

### **Ex. 13. Ask your friend in English:**

- What authorities a security officer has;  
 the purposes of screening and searching are;  
 the security officer does if a dangerous item is found;  
 the security officer does if a person refuses to be searched;
- Where the person is delivered when he refuses to be searched;
- Why search is necessary;  
 the security officers cannot detain a person;

### **Ex.14. Speak on the following topics. Make use of the words and phrases given:**

#### 1.Powers of aviation security officer

To screen and search passengers and vehicles, to screen items of baggage, to find a dangerous item, to seize an item, to be of harm to aviation security, to detain a person, to refuse consent, the secure area, to deliver a person to the police.

#### 2.The purposes of passenger search

Authority to screen and search, effective process, to prevent weapons or other dangerous items, to take into a security enhanced area, goods subject to Customs control, to ensure aviation security.

## **WRITING**

**Ex. 17. Translate into English:**

1. У сотрудников службы безопасности есть полномочия на обыск.
2. Обыск необходим для того, чтобы предотвратить пронос оружия на борт самолета.
3. Если человек отказывается дать согласие на обыск, сотрудник службы безопасности может доставить его в полицию.
4. Сотрудники службы безопасности не имеют права задерживать пассажира.
5. Новые постановления обеспечили более широкие полномочия сотрудникам службы безопасности.
6. Всегда ли необходимо согласие пассажира на обыск?
7. Какие предметы представляют угрозу авиационной безопасности?
8. Данные предметы подлежат таможенному контролю.
9. Личные вещи обыскиваются с согласия пассажира.
10. В каком случае сотрудник службы безопасности может попросить пассажира покинуть зону безопасности?



## UNIT 15. SAFETY POLICY

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### PHONETICS

Pay attention to the correct pronunciation of the combinations of letters:

<b>sh</b> /ʃ/	<b>ph</b> /f/	<b>ur</b> /ə/
should	phrase	survey
shelf	emphasise	turn
show	physics	burn

Ex.1. Read the words and word combinations correctly:

- Should, shelf, share, pharmacy, phase, survey, shell, crash, philosophy.
- Should be used, safety survey, dusty shelf, short document.

### WORDFORMATION

Analyse the wordformation:

“-ly” – суффикс наречия. Наречия образуются от прилагательных и отвечают на вопрос «Как?»

happy – счастливый	happily – счастливо
honest – честный	honestly – честно
beautiful – красивый	beautifully – красиво
serious – серьезный	seriously – серьезно

Ex. 2. Make the words using the suffix “-ly” and translate them into Russian:

Sad, physical, regular, typical, precise, peaceful, incredible.

### PREPOSITIONS

Обратите на значение предлога **through**:

- Через, сквозь  
She looked **through** the window - Она посмотрела через окно.
- Через, посредством

Support the policy **through** actions – поддерживать полис посредством действий.

**Ex. 3. Translate into Russian paying attention to the prepositions:**

1. To walk through the forest, 2. demonstrate the commitment through visible actions, 3. to travel through France, 4. to support the policy through actions,

## GRAMMAR

### GERUND – Герундий

<https://www.youtube.com/watch?v=zPzjJHKyNwc>

**Герундий** – неличная форма глагола, обладающая как свойствами существительного, так и глагола.

Образуется прибавлением окончания -ing к основе глагола:  
V. + -ing.

Обладая свойствами существительного, герундий может сочетаться с предлогами и выполнять функцию определения (Какой?), дополнения (Кого? Что?), обстоятельства (Как? Где? Когда?). Также он может быть подлежащим (Кто? Что?).

- The first **hijacking** occurred in 1930. (подлежащее) – Первый угон самолета произошел в 1930 году.
- Criminal activity includes **hijacking** and destroying aircraft. (дополнение) – Преступная деятельность включает угон самолета и разрушение в/с.



**Ex. 4. Translate the sentences into Russian, define the function of Gerund – Переведите предложения на русский язык, определите функцию герундия:**

11. I think of going to the south.
12. I am fond of reading.
13. Reading is her favorite occupation.
14. Thank you for coming.
15. I am surprised at hearing this.
16. We intend shipping the goods in June.
17. Loading heavy weight requires great skill.
18. He entered the room without noticing her.
19. Criminal activity includes hijacking and destroying aircraft.

20. The first hijacking occurred in May 1930.

## READING

**Ex.5. Read and learn the following words and word combinations:**

a)

1. commitment n. /kə'mitmənt/ – обязательство
2. contradict v. /kɒntrə'dikt/ – противоречить
3. meaningful adj. /'mi:nɪfʊl/ – значимый
4. poster n. /'pəʊstə/ - плакат
5. recognize v. /rɪkə'gnaɪz/ – признавать
6. survey n. /'səveɪ/ – отчет, исследование
7. b)
8. compliant with regulations – соответствующий правилам
9. to get behind –
10. provision of air navigation – обеспечение аэронавигации
11. safety management system – система управления безопасностью
12. safety performance – исполнение безопасности

**Ex. 6. Match the words with the definitions:**

1.	Policy	A. Inspection or investigation.
2.	Commitment	B. Dedication or obligation to a particular action.
3.	Survey	C. Contract of insurance, document containing this.
4.	Priority	D. An interest having prior claim to attention.

**Ex. 7. Give the definitions of the word below using a Dictionary of English language, translate the definitions into Russian and copy them out into your copy-books.**

1. Regulation
2. Provision
3. Performance.

## Ex. 8. Read and translate the text “Safety Policy:

### SAFETY POLICY

The Safety Policy gives the ‘overall intention and direction as formally expressed by management’. The Safety Policy conveys the commitment of all managers to achieving acceptable safety performance. Managers demonstrate this commitment through visible actions (e.g. participation in safety surveys, rewarding safe decisions in the face of commercial pressures, etc.). The Safety Policy is typically a short document or poster. The contents of a good policy should:

- Be memorable – few people are going to read and remember a 30 page “Policy Document”.
- Be clear and meaningful – think about your audience, avoid strings of abstract words.
- Demonstrate senior management commitment – emphasise that senior managers are ultimately accountable and show that this is taken seriously by signing the policy and stressing the priority of improving safety and minimising safety risks.
- Recognise safety’s value to the business – well managed safety is a very good investment, show this is recognised in the policy.
- Show we will be compliant with regulations - ensure that this is highlighted.



Writing a policy is only one part of this element. How should the policy be used? It should not be confined to a dusty shelf or remote part of the intranet. We need to:

- Publicise it – e.g. have a launch event for it.
- Senior managers get behind it – use it in presentations.
- Use it in training.
- Update it – regularly and if something changes e.g. signatory.
- Support it through actions – all the effort in preparing this policy will be wasted if one decision is made which directly contradicts what is written. If that happens then staff will conclude that it is all warm words.



## Legal Requirements

Commission Regulation **EC No. 2096/ 2005** which lays down common requirements for the provision of air navigation services states that:

*A provider of air traffic services shall, as an integral part of the management of its services, have in place a safety management system (SMS) which includes, as its foundation, a statement of safety policy defining the organisation's fundamental approach to managing safety.*

### Ex.9. Give Russian equivalents for the following:

1. Acceptable safety performance, 2.safety survey, 3.typically short document, 4.senior management commitment, 5.priority of improving safety 6.compliant with regulations, 8. well managed safety, 9.to contradict, 10. safety management system.

### Ex.10. Give English equivalents for the following:

1. Обязательство, 2.полис безопасности, 3.отчет о безопасности, 4. улучшение безопасности, 5.признавать значимость безопасности, 6. соответствующий правилам, 7.противоречить написанному, 8.обеспечение аэронавигации, 9. система управления безопасностью, 10. уменьшить риски.

### Ex.11. Answer the questions:

1. What kind of document is a Safety Policy?
2. How do the managers achieve safety performance?
3. What are the characteristics of a good safety Policy?
4. What can you say about the contents of a Safety Policy?
5. How do you understand the concept of “safety performance”?
6. How should the Policy be used?
7. How should be a Policy supported through actions?
8. What should a Safety policy be compliant with?
9. What does Commission Regulation No 2096/2005 state about the Safety Policy?
- 10.What does a SMS include?

## VIDEO TASK

**Ex.11.a.** You are going to watch the videos about the Aviation Security Service. Look at the screenshots below and make a topics.



a) <https://www.youtube.com/watch?v=thqbjA2DC-E>

b) [https://www.youtube.com/watch?v=5U\\_T8D2ML60](https://www.youtube.com/watch?v=5U_T8D2ML60)



**Imagine that now you work as an agent of Aviation Security Service. Write an email to your friend telling him/her about your responsibilities, the aircompany you work in, your colleagues, what problems you have to face.**

## SPEAKING

**Ex. 12. Ask your friend in English:**

- |      |  |
|------|--|
| What | <p>a safety Policy exists for;</p> <p>contents should a Safety Policy have;</p> <p>characteristics of a Safety Policy do you consider essential;</p> <p>procedures are used at passenger screening;</p> <p>legal requirements are established concerning Safety Policy;</p> <p>SMS system include.</p> |
| How  | <p>staff should use a Safety Policy;</p>   |

**Ex.13. Speak on the following topics. Make use of the words and phrases given:**

1.Safety Policy Characteristics

Short document/poster, to be memorable, to be clear, to demonstrate safety commitment, to be compliant with regulations, to be updated .

2.The use of Safety Policy.

To use in presentations, to update regularly, to support Policy through actions, a to include Safety Policy into a safety management system (SMS).

## WRITING

**Ex. 14. Translate into English:**

1. Полис по безопасности представляет собой краткий документ или плакат.
2. Задача персонала – усиление безопасности и уменьшение рисков.
3. Полис безопасности должен соответствовать законодательству в этой сфере.
4. Поставщики транспортных услуг обязаны иметь систему управления безопасностью.
5. Задача менеджера – достичь приемлемого уровня исполнения безопасности.
6. Написание отчетов по безопасности входит в обязанности менеджера.
7. Действия персонала не должны противоречить написанному в документе.
8. Следует признать важность понятия «безопасность».
9. Текст полиса должен регулярно пересматриваться.
10. Полис должен быть написан четко и ясно.

## UNIT 16. SAFETY ORGANISATION

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### PHONETICS

Pay attention to the correct pronunciation of the combinations of letters:

**sion** /ʒn/  
 revision  
 provision  
 decision

**ew** /ju:/  
 review  
 view  
 few

**Ex.1. Read the words and word combinations correctly:**

a) Revision, review, inclusion new.

b) Safety policy decisions, to review safety performance results, provision of services.

### WORDFORMATION

**Analyse the wordformation:**

“-sion” – суффикс, образующий существительное от глагола. При этом изменяется написание и произношение существительного.

provide – обеспечивать	provision – обеспечение
decide – решать	decision – решение
include – включать	inclusion – включение

**Ex. 2. Make the words using the suffix “-sion”and translate them into Russian:**

To include, to provide, to decide, to revise.

### PREPOSITIONS

Обратите внимание на значение предлога “**at**”:

1.а. Для обозначения места (с названиями учреждений)

To work **at** the airport – работать в аэропорту

1.b. Для обозначения места созначением «около, у»

To stop **at** the door – остановиться у двери

3. Для обозначения времени с указанием момента

**At** 7 o'clock – в 7 часов

4. В некоторых выражениях

**At** the rate – в размере

**At** first sight – на первый взгляд

**At** the level – на уровне

**At** the end – в конце, и др.

### **Ex. 3. Translate into Russian paying attention to the preposition “at”:**

1. To stop at the door, 2. at first, 3. at the end of the month, 4. at home, 5. at night, 6. at one's option, 7. at the same time, 8. at the airport, 9. to be useful at working level, 10. to work at the factory.

## **GRAMMAR**

### **Существительное в функции определения**

A) **N. + N.** – существительное + существительное

Flight plan – план полета, полетный план

2. чего? ← 1. что?



### **Ex. 4. Translate into Russian:**

1. Investment policy, 2. cargo operations, 3. air terminal, 4. railway passengers, 5. aerodrome complex, 6. satellite system, 7. air traffic, 8. overhaul centre, 9. development program, 10. safety organization.

b) N.+ N. + N. - существительное + существительное + существительное

flight instrument error – ошибка пилотажного прибора

чего? ←2. 1.что?

### Ex. 5. Translate into Russian:

1. Air traffic controller, 2.Aircraft Maintenance base, 3.Flight Information Service, 4.Fuel supply Complex, 5. Aircraft position information, 6.air traffic service, 7.safety management function, 8. safety management system, 9. safety policy decisions, 10. safety management activities.

## READING

### Ex.6. Read and learn the following words and word combinations:

a)

1. advise v. /əd'vaiz/ – советовать
2. appoint v. /ə'point/ – назначать
3. deal with v. /di:i/ – заниматься чем-либо
4. fulfil v. /ful'fil/ - выполнять
5. support v. /sə'po:t/ – поддерживать
6. provision n. /prə'viziʒn/ – обеспечение

b)

1. consultative body – консультативный орган
2. issues related to the safety performance – результаты, связанные с исполнением требований безопасности
3. to involve the staff – вовлекать персонал
4. representatives of the management – представители менеджмента

### Ex. 7. Match the words with the definitions:

1.	Staff	A. Group of people appointed by a larger body to attend to special business.
2.	Committee	B. Separate part of an organization.

3.	Department	C. Group of people carrying on work under manager.
4.	Body	D. Group of persons regarded as a unit.

**Ex. 8. Give the definitions of the word below using a Dictionary of English language, translate the definitions into Russian and copy them out into your copy-books.**

1. Responsibility

2. Risk

3. Resource.

**Ex. 9. Read and translate the text “Safety Organization”:**

### SAFETY ORGANIZATION

The purpose of the safety organisation is to support the safe, efficient and continuous provision of services. The safety management function has responsibility for development and maintenance of the safety management system and will support line management in fulfilling their safety responsibilities. Positions that need to be present in any organization include:

- safety manager;
- safety committee; and
- safety specialist(s)



#### Safety Director

Safety Directors are required in large organisations e.g. when several safety managers are appointed in large ATS Units. Broadly their role is to:

- Analyse Key Risk Areas (KRA) and trends;
- Act as a focal point for dealing with the regulator;
- Develop and revise the Safety Management System of the Organisation.

#### Safety Manager

For an organisation that does have a Safety Director the Safety Manager's role is broadly:

- Ensure that the day to day Safety Management is performed;
- Chair the Safety Committee;
- Prepare safety reports and analysis for the Unit they assigned to;
- Advise the Safety Director as to possible solutions/improvements.

### **Safety Department**

Larger organization may require a dedicated safety department. This department ensures the overall administration of the SMS and often deals with resource intensive activities such as Safety Surveys.

### **Safety Committees (SC)**

Safety Committees are useful at working level as they involve the staff in the safety management activities. Safety Committees are consultative bodies composed of representatives of the management and the staff. They provide expert advice at the operational management level and support the work of the Safety Manager. The objective of the safety committee is to provide a forum to discuss issues related to the safety performance of the organization. The safety committee makes recommendations concerning safety policy decisions, and reviews safety performance results. During the initial implementation phase of an SMS, the safety committee would also review progress of the implementation process. The terms of reference for the safety committee should be documented in the organization's safety management manual.

#### **Ex.10. Give Russian equivalents for the following:**

1. To support the provision of services, 2.safety management system, 3.safety management is performed, 4.safety department, 5.to deal with the resource intensive activities, 6.representatives of the staff, 7. operational management level, 8. well managed safety, 9.safety policy decisions, 10. safety management manual.

#### **Ex.11. Give English equivalents for the following:**

1. Обеспечение услуг, 2.выполнять обязанности, связанные с обеспечением безопасности, 3.комитет по безопасности, 4. специальный отдел по безопасности, 5.деятельность по управлению безопасностью, 6.



представители персонала, 7.рекомендации, касающиеся обеспечения безопасности, 8.заниматься отчетами по безопасности, 9. повышение уровня безопасности, 10. специалисты по безопасности.

### Ex.12. Answer the questions:

1. What is the purpose of a safety organization?
2. What functions does the safety management have ?
3. What positions need to be present in any organization?
4. What are the safety director responsibilities?
5. What is the safety manager role?
6. What does a Safety committee deal with?
7. What is the objective of the Safety Committee?
8. What kind of recommendations does the safety Committee make?
9. Why is the safety Committee useful?
10. When does the safety Committee review the implementation process?

### VIDEO TASK

**Ex.12.a. You are going to watch the videos about the Safety Organization. Look at the screenshots below and make a topics.**

<https://www.youtube.com/watch?v=fB7yr1sxO0Y>



**Imagine that now you work as a safety manager. Write an email to your friend telling him/her about your responsibilities, the aircompany you work in, your colleagues, what problems you have to face.**

## SPEAKING

### Ex. 13. Ask your friend in English:

- What            the objectives of a safety organisation are;  
                   positions need to be present in any organisation;  
                   the safety director responsibilities are;
- the safety manager role is;
- the objective of the safety committee is;
- Why            the Safety Committees are useful;

### Ex.14. Speak on the following topics. Make use of the words and phrases given:

#### 1.Safety Manager responsibilities

To ensure safety performance, to advise the safety director, improvements, positions that need to be present in any organization, to prepare the safety reports.

#### 2.The Safety Committee activities

To involve the staff into safety management activities, to provide an expert advice, to make recommendations, to review safety performance results, to be useful.

## WRITING

### Ex. 15. Translate into English:

1. Поддержание систем безопасности – цель любой организации.
2. Специалисты по безопасности необходимы в любой организации.
3. Развитие системы управления безопасностью входит в задачи директора.
4. Безопасность является неоспоримым приоритетом для авиаиндустрии.

5. Менеджер по безопасности готовит отчеты.
6. В крупных организациях специальный отдел занимается безопасностью.
7. Комитеты по безопасности вовлекают персонал в мероприятия по управлению безопасностью.
8. Комитеты по безопасности дают соответствующие рекомендации.
9. Менеджер по безопасности консультирует директопра по многим важным вопросам.
10. Анализ рисков входит в компетенцию Директора.

## UNIT 17. SAFETY MONITORING

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### PHONETICS

Pay attention to the correct pronunciation of the combinations of letters:

<b>th</b> //	<b>ou</b> /u:/	<b>cc</b> /ks/
<b>with</b>	<b>route</b>	<b>accident</b>
<b>this</b>	<b>could</b>	<b>access</b>
<b>within</b>	<b>should</b>	

Ex.1. Read the words and word combinations correctly:

- Within, accept, route, accident.
- En-route accidents, within an organization, could be in excess .

### WORDFORMATION

Analyse the word formation:

“ - al” – суффикс прилагательного

N. (имя существительное) +суффикс “-al” = Adj. (имя прилагательное)

N.	N. + “-al” = Adj.
Politics – политика	Political - политический
Industry – промышленность	Industrial – промышленный
Culture – культура	Cultural – культурный
History – история	Historical – исторический

Ex. 2. Make the adjectives from the nouns using the suffix “-al”:

Nature, economics, education, constitution, culture, architecture, statistics.

### PREPOSITIONS

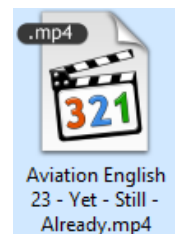
Pay attention to the preposition:

**Within** an organization в пределах организации

## GRAMMAR

### Participle II ( причастие прошедшего времени) в функции определения к существительному

Относится к существительному и отвечает на вопрос «Какой?». Может стоять как перед существительным, так и после него. На русский язык как правило, переводится страдательным причастием с окончанием –нный/-тый.



- In a **given** aviation sector - в данном авиационном секторе.
- The methods **used** in protecting airports – методы, используемые для защиты аэропортов.
- To use a **hijacked** plane – угнанный самолет.
- To screen the **checked** baggage – просвечивать зарегистрированный багаж.

#### Ex. 3. Translate into Russian:

1. The written report was on the table.
2. The book taken from the library must be returned.
3. A broken cup was lying on the table.
4. The answer received from the sellers surprised us.
5. She mended the torn sleeve of her dress.
6. The signed document was on the table.
7. The Secretariat headed by a Secretary General is divided into 5 main parts.
8. The Assembly composed from representatives of many countries is the sovereign body of ICAO.
9. The informed figures were written in a journal.
10. The loaded cargo was in the cargo hold.

## READING

#### Ex.4. Read and learn the following words and word combinations:

a)

1. apply v. /ə'plai/ – применять
2. casualty n. /kaesjuəlti/ - несчастный случай
3. concern v./kən'sə:n/ – касаться, to be ~ быть обеспокоенным
4. evaluate v. /i'væljueit/ – оценивать
5. loop n. /'lu:p/ - петля
6. remedial adj // - облегчающий
7. snapshot n. /snæpʃot/ – моментальный снимок

8. survey n. /'səveɪ/ – отчет, исследование  
 b)  
 9. accident rates – показатели происшествий  
 10. carry out – выполнять  
 11. time frame – временные рамки

**Ex. 5. Match the words with the definitions:**

1.	Indication	A. Stated numerical proportion between two sets of things.
2.	Rate	B. .Discovering existence.
3.	Detection	C. .Showing presence of smth.
4.	Monitoring	D. .Maintaining regular surveillance

**Ex. 6. Give the definitions of the word below using a Dictionary of English language, translate the definitions into Russian and copy them out into your copy-books.**

1. Staff
2. Stakeholder
3. Accident.

**Ex. 7. Read and translate the text “Safety Monitoring:**

**SAFETY MONITORING**

Safety performance monitoring provides a feedback loop to complete the safety management cycle. The objective of this is to allow system performance to be evaluated and any necessary changes effected. In addition, all stakeholders require an indication of the level of safety within an organization for various reasons, for example:

- Staff may need confidence in their organization’s ability to provide a safe work environment.
- Passengers are concerned with their own safety.

- Shareholders wish to protect their investment.

Safety Monitoring activities are to be carried out by the Safety Manager/safety department for the purpose of identifying underlying factors leading to weaknesses within the organization. Safety performance monitoring indicators are a measure of the safety performance of an aviation organization. Safety monitoring applies to:

- Safety management processes; and
- Safety performance of the organisation.

Safety Surveys provide data and improvement opportunities on all safety management processes that individually also provide data for safety monitoring activities.



Since aviation accidents are rare events, accident rates are not good indicators of safety performance. They may be of limited value at the global, regional or national level. Accident rates are even less useful as an indicator of safety when applied to individual aerodromes or flight information regions (FIRs). For any given FIR, for example, the expected time between en-route accidents could be in excess of 100 years. Safety Monitoring will permit early detection of trends and possible remedial actions in relation to:

### **Monitoring techniques**

#### **Statistical search**

Statistical safety performance indicators illustrate historic safety achievements; they provide a “snapshot” of past events. Presented either numerically or graphically, they provide a simple, easily understood indication of the level of safety in a given aviation sector in terms of the number or rate of accidents, incidents or casualties over a given time frame.

#### **Annual safety report**

The annual report shall consist of an aggregation and re-analysis of the 3 monthly reports.

#### **Monthly reports**

Monthly reports are to be provided by Heads of Departments and Units to the Safety manager/safety department.

**Ex.8. Give Russian equivalents for the following:**

1. To provide a feedback loop, 2.to be evaluated, 3.an indication of the level of safety, 4.concerned with their own safety, 5.accident rates, 6.en-route accidents, 7. early detection, 8. in a given aviation sector, 9.the annual report, 10. casualty.

**Ex.9. Give English equivalents for the following:**

1. Быть оцененным, 2. быстрый результат, 3.быть обеспокоенным по поводу собственной безопасности, 4. выполняться, 5.показатели происшествий, 6. происшествия на маршруте, 7.моментальный снимок, 8.в данные временные рамки, 9. ежемесячный отчет, 10. обнаружение.

**Ex.10. Answer the questions:**

1. What is the purpose of a safety monitoring?
2. What do the stakeholders require concerning safety?
3. Who are the safety monitoring activities carried out by?
4. What do the safety surveys provide?
5. What do the accident rates tell us?
6. Are the accident rates indicators of safety?
7. Name the main safety monitoring techniques.
8. How are the statistical data presented?
9. Who provides annual and monthly reports?
10. What does the safety monitoring permit?

**VIDEO TASK**

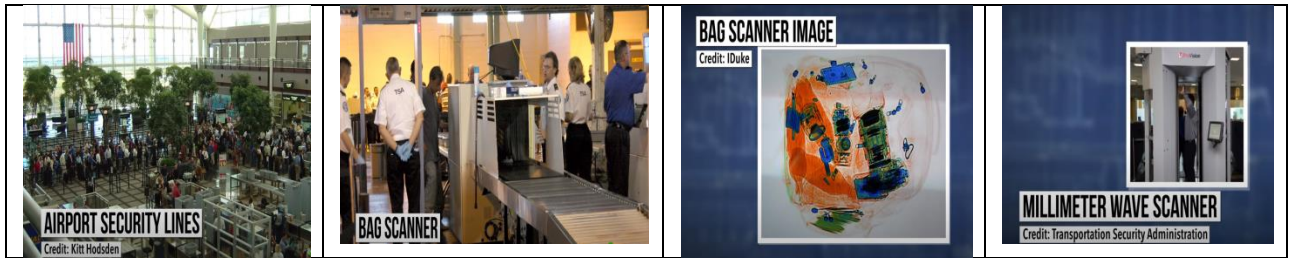
**Ex.10.a. You are going to watch the videos about the Safety Monitoring. Look at the screenshots below and make a topics.**

<https://www.youtube.com/watch?v=fB7yr1sxO0Y>





## Video -1



## Video - 2

[https://www.youtube.com/watch?v=K\\_Ry7O6UEZQ](https://www.youtube.com/watch?v=K_Ry7O6UEZQ)



**Imagine that now you work as a the Instructor of Aviation Security. Write an email to your friend telling him/her about your responsibilities, the aircompany you work in, your colleagues, what problems you have to face.**

## SPEAKING

**Ex. 11. Ask your friend in English:**

What objectives of a safety monitoring you know  
 requirements concerning safety the stakeholders have;  
 the safety monitoring provides;  
 safety monitoring techniques can you name.

Why accidents rates are not good indicators of the safety performance;

Who carries out the Safety Monitoring activities;  
makes annual safety reports.

**Ex.12. Speak on the following topics. Make use of the words and phrases given:**

1.Safety Manager responsibilities concerning safety monitoring

To carry out, an indication of the level of safety, accident rates, safety surveys, to permit early detection of trends and possible remedial actions.

2.The Safety Monitoring Techniques

To present numerically, annual reports, monthly reports, statistical search, rate of accidents, flight information region.

**WRITING**

**Ex. 13. Translate into English:**

1. Поддержание показателей безопасности – одно из требований акционеров.
2. Пассажиры обеспокоены своей безопасностью.
3. Показатели происшествий не всегда принимаются во внимание.
4. Отчеты по безопасности предоставляют данные по процессам улучшения безопасности.
5. Показатели авиапроисшествий практически не используются для мелких аэродромов.
6. Обязанность менеджера – написание ежемесячных и годовых отчетов по безопасности.
7. Статистические данные представлены графически.
8. В крупных организациях специальные отделы занимаются безопасностью.
9. Мониторинг позволит выявить тенденции и предпринять необходимые действия.
10. Годовые отчеты предоставляются отделами по безопасности.

## UNIT 18. SAFETY DOCUMENTATION

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### PHONETICS

Pay attention to the correct pronunciation of the combinations of letters:

**oa /ou/**

goal

coat

approach

**dure /dʒə/**

procedure

**Ex.1. Read the words and word combinations correctly:**

a) Procedure, goal, float, approach.

b) Safety procedures, the organization's approach to safety, the main goal.

### WORDFORMATION

**Analyse the wordformation:**

N. (существительное) + суффикс “-ful” = Adj. (прилагательное)

N.	N. + “-ful “= Adj.
a success - успех	successful – успешный
a beauty – красота	beautiful – красивый
a help – помощь	helpful – полезный

**Ex. 2. Make the adjectives from the nouns using the suffix “-ful”:**

Beauty, skill, use, law, care, power, tact, fruit, peace, purpose, help.

### GRAMMAR

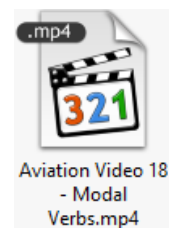
#### Modal verbs Should, would.

Форма **should** употребляется в качестве вспомогательного глагола в сочетании с инфинитивом для выражения совета и переводится как «должен, следует».

The manual **should document** all the aspects of the SMS. –  
Руководство **должно отобразить** все аспекты системы управления безопасностью.

В этом же значении может употребляться и глагол **would**.

This **would include** that safety documentation accurately reflects the current environment.



### Ex. 3. Translate the sentences into Russian, paying attention to modal:

1. It's late. I think we **should go** home now..
2. I think everybody **should learn** foreign languages.
3. When you play tennis, you **should watch** the ball.
4. I think Peter **should** buy new clothes.
5. The safety committee **would** review the implementation process.
6. The good safety policy **should be** memorable.
7. How **should** the policy **be used**?
8. The contents of the good policy **should be** clear and meaningful.
9. The policy **should not be confined** to a dusty shelf.

## READING

### Ex.4. Read and learn the following words and word combinations:

a)

1. appropriate adj. / ə'prɒprieɪt/ - соответствующий
2. availability n. /ə'veɪlə'bɪləti/ – наличие
3. claim n. /kleɪm/ – требование
4. elaborate v. /i'laeboreɪt/ - вырабатывать
5. record n. /'rekɒd/ - запись
6. reliability n. /rɪləiə'bɪləti/ – надежность

b)

7. current environment – текущая обстановка
8. main goal – главная задача

**Ex. 5. Match the words with the definitions:**

1.	Record	A. Right or means of approaching or reaching .
2.	Manual	B. Handbook, reference book.
3.	Reliability	C. State of being recorded or put in writing.
4.	Access	D. Having trust, confidence.

**Ex. 6. Give the definitions of the word below using a Dictionary of English language, translate the definitions into Russian and copy them out into your copy-books.**

1. Authorisation
2. Distribution
3. Filing.

**Ex. 7. Read and translate the text “Safety Documentation”:****SAFETY DOCUMENTATION**

Safety records are collected to demonstrate to all stakeholders that operations have been and continue to be undertaken in a safe manner. The main goal of documentation and records management is to guarantee access, exactness, reliability, security and quick availability of all useful information.

**Responsibilities and roles**

The Safety Manager should be responsible for managing all aspects of the operation of the SMS. This would include ensuring that **safety documentation** accurately reflects the current environment, providing periodic reports on safety performance. For ensuring safety management documentation and information management tasks, the Safety Manager should ensure the following:

- The SMS is well documented in a safety management manual
- Documents are updated regularly and are readily available to those who need them

- Appropriate equipment and technical support are available for managing safety information
- Safety databases are used to support safety analyses and performance monitoring.
- Appropriate staff have access to safety databases

**Safety Records.** A Safety Record is any information, which can be used to support a safety claim. Safety Records are the products of the operation of the SMS:

- Reports of safety occurrences investigation;
- Recommendations and remedial action and their follow-up;
- Statistical data elaborated by the Safety Department;



**Safety Management Manual.** A safety management manual provides management with an essential document for communicating the organization's approach to safety to the whole organization. The manual should document all aspects of the SMS, including the safety policy, safety procedures and individual safety accountabilities. The manual should be written so that it reflects the intent and processes of the SMS.

**Document configuration.** The main goal of documentation and records configuration is to guarantee access, exactness, reliability, security and quick availability of all useful information. The tasks needed to meet these objectives concern definition, organisation and achievement of rules in relation with:

- |  |                                    |
|--|------------------------------------|
| - document identification              | - document authorisation           |
| - document drawing up and presentation | - document distribution            |
| - document verification                | - document evolution and up dating |
|  | - document filing                  |

**Document presentation.** Specific formats would be defined for each document type. Their availability would be stated: way to the electronic files, hardcopy in secretariat.

**Document Verification.** Verification would concern various aspects: translation, presentation, electronic data exchange, respect of configuration management rules, etc.

**Document authorisation.** The approval authority verifies that the document is in accordance with requirements. The approval authority accepts the shared responsibility of the consequences.

**Document distribution.** Any document had to be classified in accordance with the confidentiality level of its content. These **classes** would allow drawing up the distribution lists of authorised people.

**Document filing.** It would be necessary to define the determination of criteria: document filed according to chronological number, or type, or department,...and the filing means: Paper copy, electronic file, CD Rom, Diskette, taking into account the document class and confidentiality aspect.

**Ex.8. Give Russian equivalents for the following:**

1. In a safe manner, 2.availability of all useful information, 3.access and exactness, 4.to reflect the current environment, 5.appropriate equipment, 6.safety record, 7. to elaborate statistical data, 8. Safety Management Manual, 9. verification, 10. document filing.

**Ex.9. Give English equivalents for the following:**

1. Надежность и доступность, 2. отражать текущую обстановку, 3.соответствующее оборудование, 4. вырабатывать, 5. руководство по управлению безопасностью, 6. проверка, 7. хранение документов, 8. распространение, 9. статистические данные, 10. по хронологической последовательности.

**Ex.10. Answer the questions:**

1. What is the main goal of documentation management?
2. What should the safety documentation reflect?
3. What should the safety manager ensure?
4. What kind of document is a Safety Record?
5. What should a Safety Management Manual provide?
6. How should the Safety Management manual be written?
7. What is the main goal of Safety Records?
8. How is this goal achieved?

9. How should the document filing be done?  
 10. Explain your understanding of the term “document authorization”.

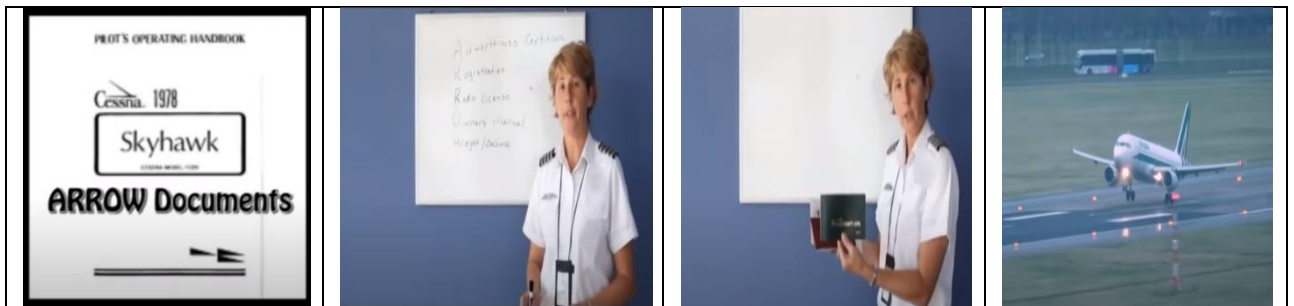
### VIDEO TASK

**Ex.10.a.** You are going to watch the video about Aircraft ARROW Documents . Look at the screenshots below and make a topic.

[https://www.youtube.com/watch?v=OmPG\\_sl9t08](https://www.youtube.com/watch?v=OmPG_sl9t08)



#### Video -1



**Imagine that now you work as a Manager of Aviation Security. Write an email to your friend telling him/her about your responsibilities, the aircompany you work in, your colleagues, what problems you have to face.**

### SPEAKING

**Ex. 11. Ask your friend in English:**

- What objectives of safety documentation you know  
 parameters safety document guarantee;  
 the safety documents reflect.
- How safety records should be done;  
 Safety Management Manual should be written
- Who ; makes annual safety reports.



**Ex.12. Speak on the following topics. Make use of the words and phrases given:**1.Safety Manager responsibilities concerning safety documents

To carry out, to guarantee reliability, should be responsible, to reflect the current environment, to ensure, appropriate<sup>3</sup> equipment, safety databases, appropriate staff.

2.The Safety Documentation requirements

A Safety Management Manual, a Safety record, to guarantee access, document authorization, document configuration, document distribution, filing.

**WRITING****Ex. 13. Translate into English:**

1. Менеджеру следует использовать базы данных при анализе безопасности.
2. Руководство по управлению безопасностью должно отражать все необходимые процедуры.
3. Документы должны отражать точную, доступную и надежную информацию.
4. Отчеты по безопасности должны предоставлять данные по процессам улучшения безопасности.
5. Документы следует регулярно обновлять.
6. Менеджеру следует писать ежемесячные и годовые отчеты по безопасности.
7. Статистические данные представлены графически.
8. В крупных организациях специальные отделы занимаются безопасностью.
9. Доступ к документам по безопасности следует ограничить.
10. Годовые отчеты должны предоставляться отделами по безопасности.

## UNIT 19. ACCIDENTS INVESTIGATION

---

### PHONETICS

Pay attention to the correct pronunciation of the combinations of letters:

**aw/ɔ:/**  
draw  
raw

**al /ɔ:/**  
chalk  
halt

**Ex.1. Read the words and word combinations correctly:**

- Drawing, halting, half, alter.
- The drawing of conclusions, to halt the process.

### WORDFORMATION

**Analyse the word formation:**

**”-tion”** – суффикс имени существительного

V.(основа глагола) + суффикс ”-tion” = N. (существительное)

V.	V. +” -tion” = N.
to educate – обучать	an education – обучение
to institute – учреждать	an institution – учреждение
to populate – населять	a population – население
to prevent - предотвращать	a prevention предотвращение

**Ex.2. Make the nouns from the verbs using the suffix ”-tion”:**

To collect, to combine, to connect, to dictate, to produce, to restrict, to introduce, to translate, to notify.

## GRAMMAR

### Conditional Sentences

Придаточные условия соединяются с главным союзами if (если), unless(если не), on condition that (при условии, что). Такие придаточные выражают условия, а главные предложения выражают следствия, вытекающие из этого условия.



	Тип условия	Придаточное предложение	Главное предложение
<b>I</b>	реальное	<b>If + Present Simple</b> If he <u>works</u> hard	<b>Future Simple</b> he <u>will finish</u> this work.
<b>II</b>	маловероятное	<b>If + Past Simple</b> If my brother <u>had</u> time now	<b>Would + Indefinite Infinitive</b> He <u>would help</u> them.
<b>III</b>	нереальное	<b>If + Past Perfect</b> If I <u>had seen</u> him yesterday	<b>Would + Perfect Infinitive</b> I <u>would have asked</u> about it.

#### 1. Real condition – I st type

All stages of an investigation shall be conducted unless the Safety Department accepts a written justification for halting the process at any stage. – Все стадии расследования будут проведены, если Отдел Безопасности не примет письменное разрешение на прекращение процесса на любой стадии.

#### 2. Unreal condition - II<sup>nd</sup> and III<sup>rd</sup> types

Direct causes are those events which if they were not present, would have prevented the occurrence from happening. – Прямые причины – это такие, которые, если бы не присутствовали, предотвратили бы происшествие.

**Ex. 3. Translate the sentences into Russian, paying attention to Conditionals:**

1. If he **has** money he **will buy** the new clothes.
2. If they **learned** foreign languages they **wouldn't have had** any problems.
3. If he **gathered** all the necessary information, he **would have written** the report.
4. If you **see** an accident you **will report** about it.
5. If they **knew** all the causes they **would have written** the occurrence report.
6. If they **determine** the causes it **will be** easier to prevent the accidents.
7. The policy **will be used** correctly if it **is** compliant with regulations.
8. If they **find** the causes they **will make** the recommendations.
9. The policy **won't be confined** to a dusty shelf if **it is written** clearly.
10. The preliminary report **will be written** unless the process **is halted** by the administration.

**READING**

**Ex.4. Read and learn the following words and word combinations:**

a)

1. accident n. /'æksɪdənt/ - несчастный случай, происшествие
2. cause /kɔ:z/ - причина
3. finding n. /'faɪndɪŋ/ - определение, находка, открытие
4. halt v. /hɔ:lt/ - останавливаться
5. incident n. /'ɪnsɪdənt/ – происшествие
6. issue v. /'ɪʃu/ – выпуск, спорный вопрос
7. preliminary adj. /prɪ'limɪneri/ - предварительный

b)

8. determination of causes - определение причин
9. to draft the preliminary occurrence report – разработать предварительный отчет о происшествии

**Ex. 6. Match the words with the definitions:**

1.	Investigation	A. Unexpected harmful event .
----	---------------	-------------------------------

2.	Accident	B. Thing that produces an effect.
3.	Incident	C. Making systematic inquiry.
4.	Cause	D. Event or minor occurrence.

**Ex. 7. Give the definitions of the word below using a Dictionary of English language, translate the definitions into Russian and copy them out into your copy-books.**

1. Prevention
2. Justification
3. Reconstruction.

**Ex. 8. Read and translate the text “Accidents Investigation”:**

### **ACCIDENTS INVESTIGATION**

The sole objective of the investigation of an accident or incident, as stated in ICAO Annex 13/chapter 13, shall be the prevention of accidents or incidents.

#### **Definition of Investigation (ICAO Annex 13)**

A process conducted for the purpose of accident prevention which includes the gathering and analysis of information, the drawing of conclusions, including the determination of causes and, when appropriate, the making of safety recommendations.

All stages of an investigation shall be conducted unless the Safety Department accepts a written justification for halting the process at any stage.

#### **Key roles and responsibilities**

- **Notifier** – is the person who initially contributes to the occurrence notification and triggers the investigation process.
- **Supervisor** – should receive the initial notification to ensure services are safeguarded.

- **Safety Management group** – is ultimately responsible for the management of the overall investigation process and for ensuring that recommendations are acted upon.
- **Investigator** – is appointed to co-ordinate further factual information gathering and analysis.

### **Preliminary report.**

Investigators should use the gathered information to draft the preliminary occurrence report. A preliminary report shall be issued by the investigator(s) in charge within (72) hrs of the notification of the safety occurrence.



**Reconstruction.** The purpose of the reconstruction is put the events in a time sequence that order and spacing between events.

**Analysis.** The SOFIA (Sequentially Outlining and Follow-up Integrated Analysis) methodology may be used for incident analysis.

### **Findings and causes**

**Findings** shall provide a **selection of data** extracted from:

- Factual Data itself;
- Reconstruction;
- Analysis.

**Causes** or probable causes: where as ICAO recommends to list all probable causes without making differentiation between primary causes, and requires to identify DIRECT from INDIRECT causes.

- DIRECT causes are those events which if they were **not** present, would have prevented the occurrence from happening
- INDIRECT causes do not influence the emergence of the occurrence but have played a part in it.

### **Final report**

The final report shall be produced in the following format.

1. Factual information (Brief summary, Chronology of events )
2. Analysis
3. Conclusions (Findings, Causes)

4. Recommendations
5. Annexes (transcripts of radio transmissions, radar screen shots etc...)

**Ex.9. Give Russian equivalents for the following:**

1. Prevention of accidents, 2.determination of causes, 3. written justification, 4.preliminary report, 5.findings and causes, 6. reconstruction of the events, 7. a direct cause, 8. conclusion, 9. to gather information, 10. to provide a selection of data.

**Ex.10. Give English equivalents for the following:**

1. Предотвращение катастроф, 2. предварительный отчет, 3. собранная информация, 4. реконструкция событий, 5. извещение, 6.расследование происшествий, 7.определение причин, 8.стадии расследования, 9. статистические данные, 10. ответственный.

**Ex.11. Answer the questions:**

1. What is the objective of the accident investigation?
2. What stages of an investigation should be conducted?
3. What should the notifier ensure?
4. What should the investigator co-ordinate?
5. Who should draft a preliminary report?
6. When should the preliminary report be issued?
7. What is the purpose of events reconstruction?
8. How is this purpose achieved?
9. What causes should be discovered?
10. Name the parameters of the final report.

**VIDEO TASK**

**Ex.11.a. You are going to watch the video about Accidents Investigation. Look at the screenshots below and make a topic.**



<https://www.youtube.com/watch?v=u0AX0mLsHiw>



**Imagine that now you work as a notifier. Write an email to your friend telling him/her about your responsibilities, the aircompany you work in, your colleagues, what problems you have to face.**

## SPEAKING

### Ex. 12. Ask your friend in English:

- What            objective of accident investigation is;  
                   positions are involved in accident investigation;  
                   the safety documents reflect.
- How            safety records should be done;  
                   Safety Management Manual should be written
- Who            makes preliminary reports.

**Ex.13. Speak on the following topics. Make use of the words and word combinations given below:**

#### 1. Key roles and responsibilities concerning accident investigation

A notifier, occurrence investigation, a supervisor, a safety management group, an investigator, to gather information.

#### 2. The Preliminary Report

A Reconstruction, to issue, the events, to use the methodology, the findings, a selection of data, the causes, direct/indirect.



**WRITING****Ex. 14. Translate into English:**

1. Расследование происшествий помогает их предотвращению.
2. Предварительный отчет должен быть написан в течение 72 часов.
3. Документы должны отражать точную, доступную и надежную информацию.
4. Реконструкция событий позволяет выяснить причины авиапроисшествий.
5. Должны проводиться все стадии расследования авиапроисшествий.
6. Менеджеру следует писать ежемесячные и годовые отчеты по безопасности.
7. Окончательный отчет включает в себя фактическую информацию и выводы.
8. ИКАО рекомендует перечислять все возможные причины авиапроисшествий.
9. Доступ к документам по безопасности следует ограничить.
10. В задачу менеджера по безопасности входит сбор и обработка информации.

### Сводная таблица спряжения глаголов в действительном залоге

Вид Время	<b>Indefinite</b> <i>Неопределенное</i>	<b>Continuous</b> <i>Длительное</i>	<b>Perfect</b> <i>Совершенное</i>	<b>Perfect Continuous</b> <i>Совершенное длит.</i>
	<b>I или II</b>	<b>to be + IV</b>	<b>to have + III</b>	<b>to be + IV</b>
<b>Present</b> <i>Настоящее</i>	I, we, you, they + <b>I</b> he, she, it + <b>I-s</b>	<b>I + am IV</b> he, she, it + <b>is IV</b> we, you, they + <b>are IV</b>	I, we, you, they + <b>have III</b> he, she, it + <b>has III</b>	I, we, you, they + <b>have been IV</b> he, she, it + <b>has been IV</b>
Пример:	I ask	<b>I am asking</b>	<b>I have asked</b>	<b>I have been asking</b>
<b>Past</b> <i>Прошедшее</i>	I, he, she, it, we, you, they + <b>II</b>	I, he, she, it + <b>was IV</b> we, you, they + <b>were IV</b>	I, he, she, it, we, you, they + <b>had III</b>	I, he, she, it, we, you, they + <b>had been IV</b>
Пример:	I <b>asked</b>	<b>I was asking</b>	<b>I had asked</b>	<b>I had been asking</b>
<b>Future</b> <i>Будущее</i>	I, we + <b>shall I</b> he, she, it, you, they + <b>will I</b>	I, we + <b>shall be IV</b> he, she, it, you, they + <b>will be IV</b>	I, we + <b>shall have III</b> he, she, it, you, they + <b>will have III</b>	I, we + <b>shall have been IV</b> he, she, it, you, they + <b>will have been IV</b>
Пример:	<b>I shall ask</b>	<b>I shall be asking</b>	<b>I shall have asked</b>	<b>I shall have been asking</b>

**Сводная таблица спряжения глаголов в страдательном залоге  
(Passive Voice)**

Вид	<b>Indefinite</b>	<b>Continuous</b>	<b>Perfect</b>
Время	<i>Неопределенное</i>	<i>Длительное</i>	<i>Совершенное</i>
	<b>to be</b> (am, is, are, was, were, ...) + <b>III-я форма</b> (-ed форма)		
<b>Present</b> <i>Настоящее</i>	I + <b>am III</b> he, she, it + <b>is III</b> we, you, they + <b>are III</b>	I + <b>am being III</b> he, she, it + <b>is being III</b> we, you, they + <b>are being III</b>	I, we, you, they + <b>have been III</b> he, she, it + <b>has been III</b>
Пример:	I <b>am asked</b>	I <b>am being asked</b>	I <b>have been asked</b>
<b>Past</b> <i>Прошедшее</i>	I, he, she, it + <b>was III</b> we, you, they + <b>were III</b>	I, he, she, it + <b>was being III</b> we, you, they + <b>were being III</b>	I, he, she, it, we, you, they + <b>had been III</b>
Пример:	I <b>was asked</b>	I <b>was being asked</b>	I <b>had been asked</b>
<b>Future</b> <i>Будущее</i>	I, we + <b>shall be III</b> he, she, it, you, they + <b>will be III</b>	-----	I, we + <b>shall have been III</b> he, she, it, you, they + <b>will have been III</b>
Пример:	I <b>shall be asked</b>		I <b>shall have been asked</b>

### Таблица наиболее употребительных предлогов английского языка

предлог	значение	пример
at	На, у, при (о месте) В (о времени)	<b>At</b> the airport. <b>At</b> five o'clock.
by	Творительный падеж (кем? Чем?)	The aircraft was destroyed <b>by</b> the fire.
for	Для, за, в течение	They bought a ticket <b>for</b> 300 dollars. They brought the documents <b>for</b> a manager.
from	От, из, с, от (о времени)	The flight <b>from</b> New York to London.
in	В, на (о месте)	They live <b>in</b> Moscow.
of	Родительный падеж (кого? Чего?)	Types <b>of</b> aircraft.
on	На, в, о, об	The mechanics work <b>on</b> the ground.
over	Над, сверху, через	A bridge <b>over</b> the river.
to	Дательный падеж (кому? Чему?)  К, в, на (о направлении)	She gave the letter <b>to</b> the secretary.  They never fly <b>to</b> Paris.
with	Творительный падеж (Чем?)  С (совместность действия)	The text was written <b>with</b> a pencil.  She went on holiday <b>with</b> her friends.

### Дополнительные видео материалы:



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12. Air cargo tariffs and rules // [www.iata.org](http://www.iata.org)

**Н.А. Лебедева**

# **English for Specific Purposes: Aviation**

Учебное пособие по изучению авиационного английского языка по специальности «Эксплуатация воздушных судов и организация воздушного движения»

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Учебное пособие “**English for Specific Purposes: Aviation**” по изучению авиационного английского языка представляет собой учебный комплекс для студентов высших и средних учебных заведений гражданской авиации, обучающихся по направлению подготовки «Аэронавигация» и специальности высшего профессионального образования «Эксплуатация воздушных судов и организация воздушного движения», для авиационных специалистов, выполняющих и обеспечивающих международные полеты, а также для обучающихся по образовательной программе магистратуры.

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## ВВЕДЕНИЕ

Учебное пособие “**English for Specific Purposes: Aviation**” разработано в соответствии с образовательной программой по авиационному английскому языку для высших и средних учебных заведения гражданской авиации и предназначено как для практической работы в аудитории с преподавателем, так и для самостоятельной работы.

Пособие состоит из двух частей (II Sections). Первая часть (Section 1) пособия содержит 6 разделов (Units):

1. Профессия пилота.
2. Воздушное судно.
3. Влияние погоды на авиацию.
4. Визуальные средства навигации.
5. Курсоглиссадная система посадки.
6. Радары.

Разделы первой части пособия (Section 1) включают упражнения на формирование и закрепление фонетических, лексических, грамматических навыков, способности восприятия англоязычной речи на слух и говорения на профессиональные темы, в объеме достаточном для эффективного общения на общие, конкретные и связанные с работой темы (ПК-10). Задания и упражнения включают в себя парную или групповую работу, работу с таблицами актуализируя и формируя словарный запас. Разделы основной части пособия включают аудио упражнения, начитанные носителем языка и направлены на понимание и закрепление лексического материала.

Вторая часть пособия (Section 2) содержит видео задания к каждому из разделов, цель которых понять просмотренный видеоролик и закрепить речевые умения и навыки.

Пособие содержит разнообразные иллюстрации и фотографии для более полного представления темы, а также рекомендуются тематические интернет ресурсы, где можно найти дополнительную информацию по существующим разделам через QR- коды, что во многом экономит время.

В буклете для преподавателя к данному пособию содержатся ключи к упражнениям и тексты для аудирования.

Автор выражает благодарность носителю языка Линде Клеинфельд - **Linda Kleinfeld** за озвучивание аудиоматериала.

*Лебедева Н.А.*

# SECTION 1



## UNIT I

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### Pilot's profession

1. Being a pilot.
2. Pilot's duties
3. Personality traits.
4. Pilot-in- command.
5. Crew coordination



#### 1. BEING A PILOT

**Ex. 1.1. Vocabulary:** *Learn the new words and practice the pronunciation.*

English	Pronunciation	Russian
<b>to join (Rossiya Airlines)</b>	[dʒɔɪn]	начать работу в (авиакомпании)
<b>to start out</b>		начинать профессиональную деятельность
<b>to clock in (1h45)</b>	[klɒk]	регистрироваться (на рабочем месте) в ... (указанное время)
<b>to involve smth</b>	[ɪn'vɔlv]	привлекать, вовлекать, втягивать, включать в себя
<b>vital decision</b>	['vaɪt(ə)l] [dɪ'sɪʒn]	жизненно важное решение
<b>Particularity</b> <b>the flight's particularity</b>	[pə,tɪkjə'lærəti]	частность, деталь, подробность, особенность, специфика (рейса)
<b>to concern</b>	[kən'sɜ:n]	затрагивать, касаться, иметь отношение
<b>range of skills</b>		ряд умений и навыков
<b>to coordinate one's skills</b>	[kəu'ɔ:dɪneɪt]	координировать, согласовывать

		умения и навыки
<b>to make the final decision</b>		принять окончательное решение
<b>suitable</b>	[ 's(j)u:təbl ]	годный, подходящий, соответствующий
<b>punctuality</b>	[ pʌŋktjʊ 'æltɪ ]	пунктуальность, точность
<b>fundamentals</b>	[ ,fʌndə'ment(ə)l ]	основы
<b>to make sure</b>		убедиться, удостовериться, обеспечить
<b>setback</b>	[ 'setbæk ]	регресс, движение назад, повторение (чего-либо), неудача
<b>distinction</b>	[ dɪ'stɪŋkʃ(ə)n ]	различие, отличительный признак
<b>to adopt a strict discipline</b>	[ ə'dɒpt ] [ 'dɪsəplɪn ]	следовать строгой дисциплине
<b>to avoid smth</b>	[ ə'vɔɪd ]	избегать, остерегаться ч-л
<b>to cut down smth</b>		<i>фр. гл.</i> сокращать ч-л
<b>to cope with pace</b>	[ kəʊp ] [ peɪs ]	справиться, выдержать, совладать (с темпом)
<b>challenge</b>	[ 'tʃælɪndʒ ]	сложная задача, проблема, вызов
<b>diversity factor</b>	[ daɪ'vɜ:sɪti ] [ 'fæktə ]	элемент разнообразия
<b>background</b>	[ 'bækgraʊnd ]	происхождение, биографические данные, связи, окружение (всё, что связано с жизнью человека)
<b>to face new situations</b>		столкнуться с новыми ситуациями

**Ex. 1.2.** Read and listen to the interview with Eric Bernard, flight Captain on the Boeing 777. Study the meaning of the expressions in bold.



**I joined** Air France in 1978, after passing the ENAC entrance exam and preparatory course. **I started out as a co-pilot for a few years** before being made captain. I have been a captain for 18 years now. **I have piloted numerous types of aircraft** ranging from the Caravel to the Boeing 777, which I fly today.



To begin my mission, I have to clock in 1h45 m before the scheduled flight departure time.

The second phase concerns **the flight preparation, an important phase that involves** determining the amount of fuel to carry, a vital decision to be taken.

The third phase involves meeting the crew. The crew comprises the co-pilot, first officer and cabin crew, who together discuss the **flight's particularities**.

The next phase is our arrival at the aircraft, one hour before so that we can **welcome passengers approximately 40 minutes before the scheduled take-off**.



My mission other than **piloting the aircraft**, also concerns **piloting a team** and involves a range of skills as well. It is a group work. As a captain, I am the one who **makes the final decision in all situations** using the different skills available to make the most appropriate choice. The captain's job is to transport passengers from point A to B in optimum safety conditions, ensuring that they arrive at the destination on time, so punctuality is **fundamentals**. Good customer relation skills are equally important to make sure that all passengers have pleasant time on board our aircraft and arrive at their destination feeling relaxed.

The main setback is **unstable lifestyle**. Some people find it easier than others do. This might mean getting up early or very late for a night flight, or having to fly on

Sunday or a public holiday. **There are no distinctions** made between working days. It is about spending a lot of time away from home. It means **having adopted a strict discipline** to avoid being tired, such as avoiding having alcohol before a flight or cutting down parties and social occasions.

There is some contrast you have to accept. The rhythm and ability **to cope with pace** are the main challenges that make my job different from other professions offering a much more stable lifestyle.

What I like about my job is the diversity factor. The different places we visit, the people we meet from different backgrounds, the fact that no two flights are the same due to the weather conditions and the technical flight aspects, as well as passengers we are transporting.

We constantly **face new experiences** and situations in this profession.

**Ex. 1.2.** *Listen to the interview with Eric Bernard, flight Captain on the Boeing 777. Study the meaning of the expressions in bold.*

**I joined** Air France in 1978, after passing the ENAC entrance exam and preparatory course. **I started out as a co-pilot for a few years** before being made captain. I have been a captain for 18 years now. **I have piloted numerous types of aircraft** ranging from the Caravel to the Boeing 777, which I fly today.

To begin my mission, I have to clock at 1h45 m before the scheduled flight departure time.

The second phase concerns **the flight preparation, an important phase that involves** determining the amount of fuel to carry, a vital decision to be taken.

The third phase involves meeting the crew. The crew comprises the co-pilot, first officer and cabin crew, who together discuss the **flight's particularities**.

The next phase is our arrival at the aircraft, one hour before so that we can **welcome passengers approximately 40 minutes before the scheduled take-off**.

My mission other than **piloting the aircraft**, also concerns **piloting a team** and whole range of skills as well. The primary skills are those of the captain and



first-officer or co-pilot, who has more or less the same skills and whose experience one day allows him to become a captain.

The second most important skill belongs to the chief purser. He or she supervises a team of flight attendants on board and liaises with a captain. In addition, the chief purser who looks after the passengers comfort and safety supervises flight attendants.



It is group work. As captain, I am the one who **makes the final decision in all situations** using the different skills available to make the most suitable choice. The captain's job is to transport passengers from point A to B in optimum safety conditions, ensuring they arrive at the destination on time, so punctuality is **fundamentals**, good customer relation skills are equally important to make sure that all passengers spend pleasant time on board our aircraft and arrive at their destination feeling relaxed.

The main setback is **unstable lifestyle**. Some people find it easier than others do. This might mean getting up early or very late for a night flight, or having to fly on Sunday or a public holiday. **There are no distinctions** made between working days. It is about spending a lot of time away from home. It is **having adopted a strict discipline** to avoid being tired, such as avoiding drinking before a flight or cutting down the parties and social occasions.

There are some sorts of contrast you have to accept. The rhythm and ability **to cope with pace** are the main challenges compared to other professions that offer a much more stable lifestyle.

What I like about my job is the diversity factor. The different places we visit the people we meet from different backgrounds, the fact that no two flights are the same due to the weather conditions and the technical flight aspects, and the passengers we are transporting.

We constantly **face new experiences** and situations in this profession.

**Ex 1.3.** Match the words with their definitions.

<b>1</b>	fundamentals	<b>a</b>	to accept or start using smth new
<b>2</b>	to cope with	<b>b</b>	likely to end or change suddenly
<b>3</b>	distinctions	<b>c</b>	a specific detail
<b>4</b>	to adopt	<b>d</b>	a difference between two different things
<b>5</b>	to start out	<b>e</b>	to deal successfully with a difficult situation
<b>6</b>	particularity	<b>f</b>	main principles, or the most important of smth
<b>7</b>	unstable	<b>g</b>	to begin doing smth
<b>8.</b>	flight safety	<b>h</b>	knowledge and skills gained through time spent doing a job or activity
<b>9.</b>	experience	<b>i</b>	to try to prevent something from happenning
<b>10.</b>	to avoid	<b>j</b>	freedom from any danger, injury or risk during the flight

**Ex. 1.4.** Complete the sentences with the words from the recording.

1. I have to \_\_\_\_\_ 1h 45m before the scheduled flight departure time.
2. The crew \_\_\_\_\_ the co-pilot, first officer, and cabin crew.
3. Together, we discuss the \_\_\_\_\_ of the upcoming flight.
4. As captain, I am the one who makes the final \_\_\_\_\_ in all situations.
5. There are no \_\_\_\_\_ made between working days.
6. No two flights are the same \_\_\_\_\_ the weather conditions.
7. We constantly \_\_\_\_\_ new situations and experience new things in this profession.

**Ex. 1.5.** Fill in the table below with the ideas from the text to describe profession of a pilot. Use the expressions below to make your own ideas.

<i>Daily routine</i>	<i>Responsibilities</i>	<i>Advantages</i>	<i>Disadvantages</i>

- irregular working hours
- work at nights, at weekends
- learn all the time
- take a medical screen
- take a lot of professional tests
- bonus aviation tickets
- high status
- early retirement
- insurance
- resort treatment paid by company
- a lot of free time
- long holidays
- company benefits
- a lot of responsibility
- challenging
- well-paid
- respected
- stressful

**Ex. 1.6.** Rearrange the words to make questions then discuss them with a partner.


1. A captain / he / been / has / long / how?

2. Types /aircraft /of / what / piloted / he / has?
3. His / day / working / what / he / does / day / time / start?
4. He / prepare / the / flight / does / for / he / how?
5. Supervises / who / a team / flight attendants / of / on board?
6. Task / what / job / is / the / his / primary / of?
7. Advantages / what / disadvantages / are / profession / his / of?
8. Profession / why / he / does / like / his?

## 2. Pilot's duties

**Ex.2.1.** *Learn the new words and word combinations:*

English	Pronunciation	Russian
<b>to perform</b>	[ pə'fɔ:m ]	исполнять, выполнять; делать,
<b>generally</b>	[ 'dʒen(ə)r(ə)li ]	обычно, как правило; в целом
<b>to employ smb</b>	[ im'plɔɪ ], [ em- ]	брать на работу нанимать
<b>scheduled services</b>	[ 'ʃedju:l ] [ 'skedʒu:l ]	транспортное обслуживание по расписанию, регулярные перевозки
<b>freightservices</b>	[ freɪt ] [ 'sɜ:vis ]	грузовые перевозки
<b>safetyfeature</b>	[ 'seɪftɪ [ 'fi:tʃə ]	признак безопасности
<b>congested</b>	[ kən'dʒestɪd ]	перегруженный
<b>challenging</b>	[ 'tʃælɪndʒɪŋ ]	требующий напряжения (сил); трудно выполнимый, сложный

<b>to undertake smth</b>	[ ,ʌndə'teɪk ]	предпринимать, совершать
<b>to undertake for</b>		что-л.  брать на себя ответственность за что-л.
<b>experienced</b>	[ ɪk'spiəriən(t)st ] [ ek- ]	знающий, опытный
<b>therefore</b>	[ 'ðeəfɔː ]	поэтому, следовательно
<b>efficiently</b>	[ ɪ'fɪj(ə)ntli ], [ ə- ]	эффективно, разумно
<b>to include smth</b>	[ ɪn'kluːd ]	заключать, включать в себя, содержать в себе ч-л
<b>thoroughly</b>	[ 'θɹʌrəli ]	полностью; основательно, тщательно
<b>to ensure smth</b>	[ ɪn'juə ], [ ɪn'ʃɜː ]	гарантировать, обеспечивать удостовериться, убедиться чём-л.
<b>to close out smth</b>		завершать ч-л



**Ex.2.2.** Listen to the recording “Pilot’s duties”. Choose the correct word in each pair.

- Airline pilots carry passengers and cargo on either domestic / internal or international / cosmopolitan flights.
- The best and most important attribute / feature on any airplane is a well-trained, highly motivated / inspired and professional pilot.
- Flying today’s complex airline aircraft in very congested / populated and complicated / sophisticated airspace is a challenging task even for experienced pilots.
- The primordial / primary task of a pilot is to handle / operate aircraft safely and efficiently.

5. Pilot's duties embrace / include much more than simply boarding and flying the plane.
6. Pilots must check weather circumstances / conditions and plot a safe route.
7. They must then file / scrape the flight plan with Air Traffic Control.
8. During preflight checks, pilots must thoroughly check the aircraft to ensure / confirm that all systems are operating properly and that all aircraft / equipment is functioning properly.
9. During the flight, pilots must monitor / observe its progress and maintain communications with Air Traffic Control headquarters / facilities on the ground.
10. After the flight, they conclude / complete the necessary paperwork for the flight and close out the flight documents.

**Ex. 2.3** Match the words with their definitions.

<b>1</b>	scheduled	<b>a</b>	involving a lot of different but related parts
<b>2</b>	chartered	<b>b</b>	in a well-organized and often quick way
<b>3</b>	complex	<b>c</b>	having skill or knowledge from doing something
<b>4</b>	challenging	<b>d</b>	in a correct way
<b>5</b>	experienced	<b>e</b>	hired for temporary use
<b>6</b>	efficiently	<b>f</b>	important and needed
<b>7</b>	safe	<b>g</b>	in an accurate and exact way
<b>8</b>	thoroughly	<b>h</b>	planned at a certain time
<b>9</b>	properly	<b>i</b>	difficult, but usually interesting and enjoyable
<b>10</b>	necessary	<b>j</b>	not dangerous

**Ex.2.4.** Complete the sentences using information from the exercises above.

1. Airline pilots carry passengers and..... .
2. The best and the most important feature on any airplane is.. .
3. The primary task of a pilot is to ..... .
4. Pilots must check ..... .
5. During preflight check the pilot ..... .
6. During the flight pilots must..... .
7. After the flight the pilot completes ..... .

### 3. Personality traits

**Ex.3.1.** Read the following adjectives to describe a personality. Choose the best ones to describe the pilot's qualities. You can add some more traits for your ideas.

English	Pronunciation	Russian
<b>efficient</b>	[ɪ'fɪʃ(ə)nt ]	умелый, подготовленный, квалифицированный (о человеке)
<b>hard-working</b>	['hɑ:dwɜ:kɪŋ]	работающий, трудолюбивый, усердный
<b>quick-thinking</b>	[kwɪkθɪŋkɪŋ]	быстро мыслящий, сообразительный
<b>imaginative</b>	[ɪ'mædʒɪnətɪv]	одарённый богатым воображением, творческий,
<b>clear-thinking</b>	[klɪə'θɪŋkɪŋ]	рассудительный
<b>courageous</b>	[kə'reɪdʒəs]	бесстрашный, мужественный
<b>persuasive</b>	[pə'sweɪsɪv]	убедительный, убеждающий о чел.
<b>polite</b>	[pə'laɪt]	вежливый
<b>helpful</b>	['helpf(ə)l ], [-ful]	полезный, услужливый,

<b>friendly</b>	[ˈfrendli]	Дружелюбный
<b>experienced</b>	[ɪkˈspɪəriən(t)st ] [ek-]	опытный квалифицированный
<b>determined</b>	[dɪˈtɜːmɪnd]	решительный, непреклонный
<b>reliable</b>	[rɪˈlaɪəbl ]	надежный тех. безотказный, надёжный

**Ex.3.2.** Use the pattern to express your opinion.

I think a pilot **should** be patient  
**has to** be + careful **to V**  
**must** be responsible  
stress-resistant

- = to avoid errors in his job (not to make mistakes);
- = to make right decision;
- = to react quickly to environmental changes and emergencies;
- = to cope with the stress;
- = to operate aircraft safely and efficiently.

## 4. Pilot- In-Command

**Ex.4.1.** Learn the new words and practice the pronunciation.

English	Pronunciation	Russian
<b>indeed</b>	[ɪnˈdiːd ]	на самом деле, конечно, несомненно
<b>to be responsible for..</b>	[rɪˈspɒn(t)səbl ]	быть ответственным за ..., отвечать за ...
<b>handling of the aircraft</b>	[ˈhændlɪŋ ]	управление самолетом
<b>according to =</b>		в соответствии с...



<b>in accordance with</b>		
<b>laid-down</b>		установленный
<b>thoroughly</b>	[ 'θʌrəli ]	основательно, тщательно
<b>to make use</b>		воспользоваться
<b>distractions</b>	[ di'strækʃ(ə)n ]	отвлекающие моменты
<b>to interfere with</b>	[ ,ɪntə'fiə ]	служить препятствием, мешать чему-л
<b>unduly</b>	[ ʌn'dju:li ]	чрезмерно; неоправданно
<b>to supervise smth</b> <b>to supervise the fuelling</b>	[ 's(j)u:pəvaɪz ]	смотреть, наблюдать за чем-л. заведовать, контролировать заправкой
<b>embarkation</b>	[ ,embɑ:'keɪʃ(ə)n ]	посадка, погрузка (на судно, самолёт)
<b>to master smth</b> <b>to master English</b> <b>(Navigation)</b>	[ 'mɑ:stə ]	овладевать, усваивать достичь вершин мастерства в чём-л.
<b>to assess</b>	[ ə'ses ]	оценивать, давать оценку
<b>to full extent</b>	[ ik'stɛnt ],	в полной мере
<b>to make suggestion</b>	[ sə'dʒestʃ(ə)n ]	давать совет
<b>removal</b>	[ ri'mu:v(ə)l ]	перемещение; переезд, вывоз; смещение (с должности)
<b>various</b>	[ 'veəriəs ]	различный, разнообразный
<b>permission</b>	[ pə'mɪʃ(ə)n ]	разрешение, позволение
<b>to fulfill</b>	[ ful'fil ]	выполнять, исполнять
<b>to meet the requirements</b>	[ ri'kwaɪəmənt ]	отвечать требованиям

<b>discretion</b>	[di'skreʃ(ə)n]	свобода действий; свободный выбор
<b>at your discretion</b>		на ваше усмотрение
<b>completion of the flight</b>	[kəm'pli:ʃ(ə)n]	завершение, окончание (полета)
<b>FCOM (Flight Crew Operation Manual)</b>		Руководство по летной эксплуатации
<b>to share tasks</b>	[ʃɛə]	распределять задачи
<b>situational awareness</b>	[sɪtʃʊ'eɪʃnələ'weənəs]	ситуационная осведомленность
<b>to accomplish</b>	[ə'kɒmplɪʃ]	выполнять, совершать
<b>to enhance</b>	[ɪn'hɑ:ns]	повышать, увеличивать
<b>to capture</b>	['kæptʃə]	захватить, завладеть

**Ex.4.2.** Listen to the recording “Pilot -in- Command” and complete the sentences with the word combinations below.

*according to                      use of                      in command of interfere  
embarkation of the passengers      unduly with  
prior to early for      in control of responsible for*

1. The Pilot in Command is indeed \_\_\_\_\_ the aircraft.

2. This means not only being \_\_\_\_\_ the smooth and professional handling of the aircraft, but also being \_\_\_\_\_ the situation in general.

3. You should know your aircraft well and know how to operate it efficiently \_\_\_\_\_ the established standard operating procedures.



4. You should plan each flight and be well-rested \_\_\_\_\_ flight.

5. Arrive \_\_\_\_\_ each flight if possible, and plan at a professional pace, making \_\_\_\_\_ the resources available.

6. Do not allow distractions to \_\_\_\_\_ your planning.

7. After planning the flight, you will then probably need to organize and supervise the fueling of the airplane and then the loading of the baggage and \_\_\_\_\_.

**Ex.4.3.** Match the English word combination with Russian equivalents. Pay attention to the prepositions.

<b>to be familiar with ....</b>	отвечать за...., быть за старшего
<b>to be responsible for smth. ....</b>	подчиняться кому либо, отвечать перед ....
<b>to be in charge of....</b>	быть ответственным за.....
<b>to have the responsibility for .....</b>	Быть компетентным в...
<b>to be proficient in...</b>	нести ответственность за.....
<b>to be responsible to smb.....</b>	быть знакомым с .....

**Ex.4.4.** Give the synonyms for the following expressions.

- to be competent in the sphere of ...
- to handle smth
- properly
- to be in charge of smth
- to be experienced in
- to face the problem



**Ex.4.5.** Create the sentences using the pattern below.

<b>Subject (who)</b>	<b>Verb</b>	<b>Object(what)</b>	<b>When</b>
I	Am	<b>Noun</b> (e.g. <i>safety</i> )	before the flight, in flight, etc
A pilot	(is)responsible	<b>V+ing</b> (e.g. <i>planning</i>	
A captain	for	<i>the route</i> )	
A purser	study(studies )	the weather data	
	brief (briefs)	the cabin crew	
Passengers	embark	the plane	

- to brief the cabin crew before the flight;
- to do a walk- around check;
- to study the weather data;
- to communicate with air traffic controller prior to take-off and during flight and landing;
- to analyse the flight plan;
- to supervise the loading and fuelling of the aircraft;
- to ensure all safety systems are working properly;
- to ensure noise regulations are followed during take off and landing;
- to communicate with passengers using the public address system;
- to react quickly and appropriately to environmental changes and emergencies.

**Ex.4.6.** Make a list of PIC's responsibilities. You can add some more from the list above.



## 5. Crew coordination

**Ex.5.1.** Listen to the recording “*Crew coordination*” and fill in the gaps with the words you hear:

Crew coordination is the term used to \_\_\_\_\_ the organization and \_\_\_\_\_ of tasks associated with a particular flight in a \_\_\_\_\_ cockpit environment. In a two-pilot cockpit, the tasks should be \_\_\_\_\_ organized and \_\_\_\_\_ so that one pilot has the \_\_\_\_\_ task of \_\_\_\_\_ the aircraft. This person is known as the \_\_\_\_\_ (PF), and he is supported and \_\_\_\_\_ by the Pilot Not Flying (PNF). Each person’s duties should be clearly \_\_\_\_\_ either by the standard \_\_\_\_\_ procedures or by the \_\_\_\_\_, with the \_\_\_\_\_ being fairly evenly \_\_\_\_\_ between the two. There must be systematic \_\_\_\_\_ between the PF and PNF, with an open \_\_\_\_\_ of information in both \_\_\_\_\_. The tasks being \_\_\_\_\_ by one must be monitored by the other, in both \_\_\_\_\_ and abnormal situations. Vital tasks, such as running through \_\_\_\_\_, are usually \_\_\_\_\_ together.

**Ex.5.2.** Match the words with their definitions.

1	associated	a	observed and checked over a period of time
2	distributed	b	given to two or more people
3	supported	c	shown or described clearly
4	monitored	d	done or fulfilled
5	defined	e	connected with something else
6	divided	f	provided with help
7	performed	g	given in shares to a number of people; spread over an area

**Ex. 5.3.** *Continue the idea:*

1. Crew coordination is the term used to \_\_\_\_\_.
2. The tasks should be systematically organized and distributed so that \_\_\_\_\_ .
3. Pilot Flying is supported and monitored by\_\_\_\_\_.
4. There must be systematic cooperation between \_\_\_\_\_ .
5. The tasks being performed by one must be \_\_\_\_\_
6. Vital tasks, such as\_\_\_\_\_

**Ex.5.4.** *Have you ever heard about Pilot's Golden Rules? Study the following information. Then match the rules with their meanings.*

**These are Golden Rules for any pilots: Fly, Navigate, Communicate and Manage.** Task sharing should be adapted in that order to the prevailing situation (i.e., task sharing for hand flying or with AP engaged, task sharing for normal operation or for abnormal / emergency conditions, as defined in the FCOM) and tasks should be accomplished in accordance with the following priorities:

**1. Fly    2. Navigate    3. Communicate and Manage**

	<p>Select the desired modes for vertical navigation and lateral navigation (i.e., selected modes or FMS-managed navigation), being aware of surrounding terrain and minimum safe altitude. This rule can be summarized by the following three “ know where ... ” statements of situational awareness :</p> <ul style="list-style-type: none"> <li>• Know where you are;</li> <li>• Know where you should be; and,</li> <li>• Know where the terrain and obstacles are.</li> </ul>
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	Effective crew communication involves communications between flight crew and controller, between flight crewmembers and between flight crew and cabin crew. Communication allows sharing goals and intentions and enhancing crew's situational awareness.
	PF must concentrate on flying the aircraft (i.e., by controlling and/or monitoring the pitch attitude, bank angle, airspeed, thrust, sideslip, heading, ...) to capture and maintain the desired targets, vertical flight path and lateral flight path. PNF must backup the PF by monitoring flight parameters and by calling any excessive deviation.

**Ex.5.5.** Use the proper words from box to fill in the text “Crew Resource Management”.

<i>air traffic controllers</i>	<i>ability</i>	<i>build</i>	<i>effective (x2)</i>
<i>application</i>	<i>decisions</i>	<i>experience</i>	
<i>combine</i>	<i>crosschecking</i>	<i>identify</i>	<i>routinely</i>

Crew resource management is the \_\_\_\_\_ of team management concepts and the \_\_\_\_\_ use of all available resources to operate a flight safely. In addition to the aircrew, it includes all other groups \_\_\_\_\_ working with the aircrew who are involved in \_\_\_\_\_ required to operate a flight. These groups include airplane dispatchers, cabin crew, maintenance personnel, and \_\_\_\_\_.



There are some techniques that help to \_\_\_\_\_ good CRM habit patterns on the flight deck. For example, situational awareness and communications. Situational awareness or the \_\_\_\_\_ to accurately perceive what is going on in the flight deck and outside the airplane. It requires ongoing, monitoring, questioning, \_\_\_\_\_, communication, and refinement of perception.

It is important that all flight deck crewmembers \_\_\_\_\_ and communicate any situation that appears unsafe or out of the ordinary. Experience has proven that the most \_\_\_\_\_ way to maintain safety of flight and resolve these situations is to \_\_\_\_\_ the skills and experience of all crewmembers in the decision making process to determine the safest course of action.

**Ex.5.6.** *Imagine that you are interviewing an aviation specialist. You are interested in CRM. Fill in the proper questions.*

Q. \_\_\_\_\_?

A. To operate a flight safely.

Q. \_\_\_\_\_?

A. It includes all other groups routinely working with the aircrew.

Q. \_\_\_\_\_?

A. There are some techniques.

Q. \_\_\_\_\_?

A. It means the ability to accurately perceive what is going on in the flight deck and outside the airplane,

Q. \_\_\_\_\_?

A. Monitoring, questioning, crosschecking, communication, and refinement of perception.

Q. \_\_\_\_\_?

A. To identify and communicate any situation that appears unsafe or out of the ordinary.

Q. \_\_\_\_\_?

A. To combine the skills and experience of all crewmembers in the decision making process to determine the safest course of action.



**Ex.5.7.** *What is another way of saying?*

- available resources
- flight deck
- maintenance personnel
- situational awareness
- to maintain safety of flight
- decision making process

**Ex.5.8.** *Study the information below. Underline the most important for you.*

**The best advice for a new pilot is:**

- ✓ to gain the knowledge and learn the skills to be a good pilot;
- ✓ to have well-placed confidence in yourself;
- ✓ to know your limitations and limitations of the airplane;
- ✓ to exert command over your flight from the planning stage to the signing-off stage;
- ✓ to approach each and every flight with total professionalism.

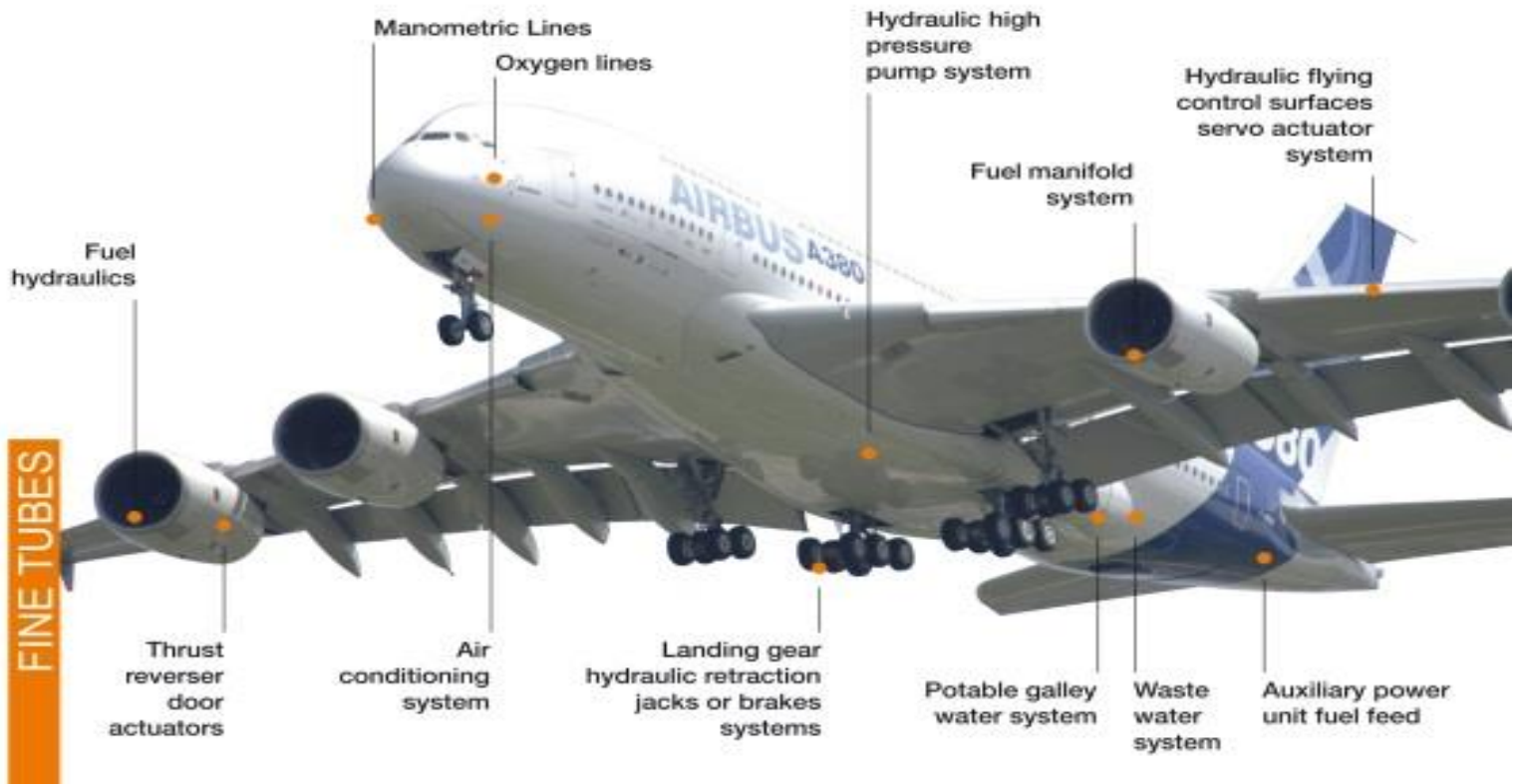
**Ex.5.9.** *Discuss the questions with a partner.*

1. What is crew coordination?
1. How should the pilots' tasks be distributed?
2. What does the PNF do in flight?
3. Who is responsible for performing the vital tasks?
4. What are the Golden Rules?

## UNIT II

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### AIRCRAFT



1. Aircraft classes and types.
2. Aircraft components.
3. Aircraft specifications.
4. Aircraft construction.
5. Avionics and flight controls.
6. Cockpit. Aircraft instruments.
7. Aircraft systems.
8. Principle of flight.



## 1. Aircraft classes and types

**Ex.1.1.** *Learn the new words and practice the pronunciation.*

English	Pronunciation	Russian
<b>aircraft, n</b> (heavier -than air - vehicle)	['ɛəkra:ft]	воздушное судно, летательный аппарат тяжелее воздуха
<b>vehicle, n</b>	['vi:əkl ],['vi:ɪkl]	транспортное средство
<b>weapon, n</b>	['wepən]	оружие
<b>balloon, n</b>	[bə'lu:n]	воздушный шар
<b>to support, v</b>	[sə'pɔ:t]	поддерживать
<b>aerodynamic, adj</b>	[,e(ə)rōdɪ'namik]	аэродинамический
<b>aerofoil, n</b>	['ɛərə(u)fɔɪl]	аэродинамическая поверхность; профиль (крыла);
<b>necessary = needed</b>	['nesəs(ə)rɪ]	необходимый,           нужный, требуемый
<b>executive aircraft</b>	[ɪg'zekjʊtɪv],	административное   воздушное судно
<b>helicopter, n</b>	['helɪkɔptə]	вертолёт
<b>freighter, n = cargo aircraft</b>	['freɪtə] [ 'kɑ:gəʊ]	грузовой самолёт
<b>jumbo jet= wide- body jet</b>	['dʒʌmbəʊ ]	реактивный           самолет, широкофюзеляжный самолет
<b>amphibian (amphibious plane)</b>	[æm'fɪbɪən] [æm'fɪbɪəs]	самолет-амфибия (плавающий самолет)
<b>bomber, n</b>	['bɒmə]	бомбардировщик (самолёт)

**Ex.1.2.** *Listen to the definition of an aircraft and fill in the gaps.*

An aircraft (airplane, aeroplane, plane) is a \_\_\_\_\_ which is able to fly in the air and carry \_\_\_\_\_, \_\_\_\_\_, or \_\_\_\_\_. Airplanes, \_\_\_\_\_, \_\_\_\_\_, airships, and \_\_\_\_\_ are all aircraft. They are \_\_\_\_\_ supported by the dynamic action of the air upon their aerodynamic \_\_\_\_\_, or airfoils, to develop the necessary \_\_\_\_\_.

**Ex.1.3.** *Skim the text and title it. Make a list of flying machines.*

\_\_\_\_\_

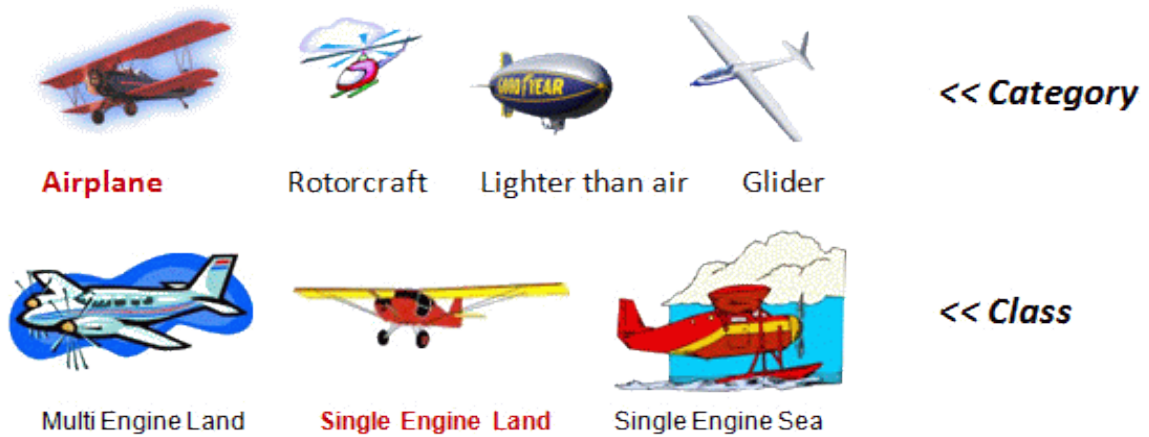
Airplanes are heavier than air in contrast to such vehicles as hot –air-balloons, airships, gliders that are lighter than air.

Airplanes also differ from other heavier- than – air craft, such as helicopters, because they have fixed wings; control surfaces, movable parts of the wings and tail, which make it possible to guide their flight; and power plants, or special engines that move airplane forward and permit level or climbing flight.

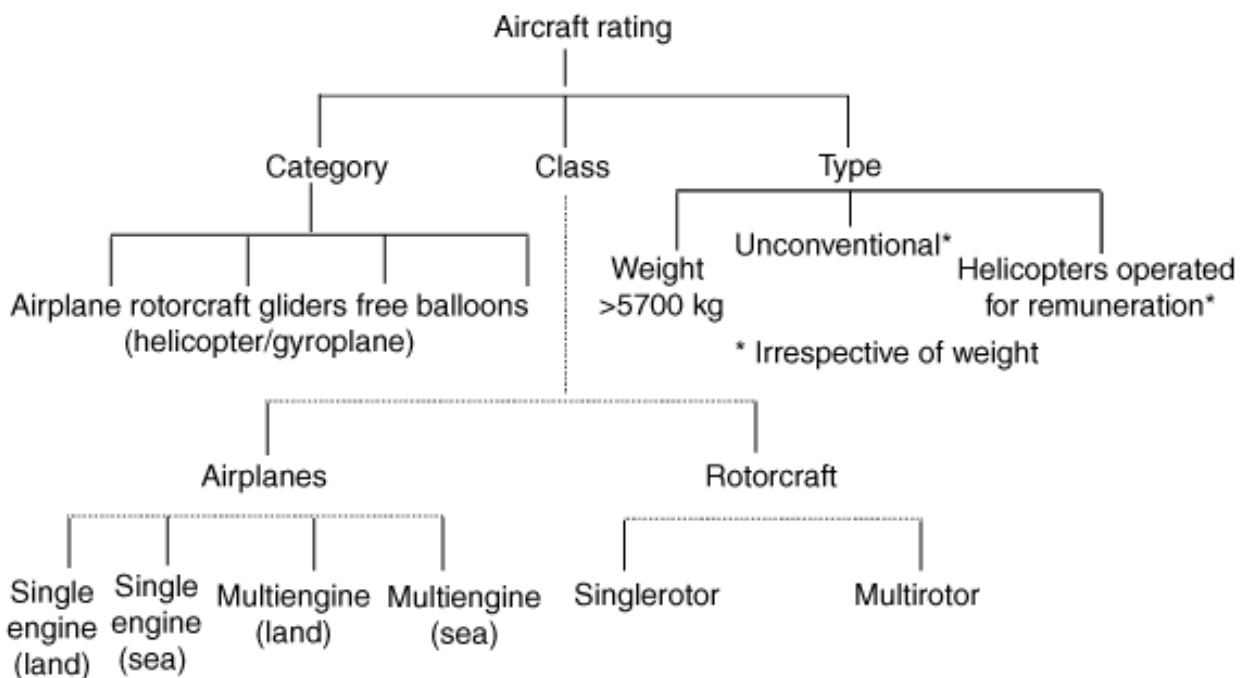
Modern airplanes range from ultrahigh aircraft weighing no more than 46kg and used to carry a single pilot, to great jumbo, capable of carrying several hundred people, several hundred tons of cargo and weighing nearly 500 metric tons.

**WHAT IS THE  
DIFFERENCE BETWEEN  
CATEGORY, CLASS AND  
TYPE?**

Classification of aircraft consists of a multilevel diagram with each category divided into sub-categories.



**Ex.1.4.** Study the diagrams. Imagine that you are interviewing an aviation specialist. You are interested in aircraft classification. Fill in the proper questions.



Q. \_\_\_\_\_ ?

A. A category is an overarching classification of aircraft. For example, airplane, helicopter, and glider, etc.

Q. \_\_\_\_\_?

A. Each category is broken down into a “class.”

Q. \_\_\_\_\_?

A. Airplanes and helicopters are classified as “single-engine” or “multi-engine.”

Q. \_\_\_\_\_?

A. Airplanes may be classified as “land” or “sea”. You can also combine the classifications to complicate things. They can be “single-engine land,” “single engine sea,” or “multi-engine land.”

Q. \_\_\_\_\_?

A. I’ve personally never seen a multi-engine sea aircraft, but they exist, so I’ve been told!

Q. \_\_\_\_\_?

A. Type rating for aircraft. This is where things get confusing. All turbojets, regardless of weight, require a “type” rating. Non-turbojet (i.e. turboprop) airplanes don’t have a separate “type” rating until they get above 12,500 pounds.

Q. \_\_\_\_\_?

A. Civil aircraft are divided into *commercial* and *general* types, however there are some overlaps.

Q. \_\_\_\_\_?

A. Commercial aircraft include types designed for scheduled and charter airline flights, carrying passengers, mail and other cargo.

Q. \_\_\_\_\_?

A. The larger passenger-carrying types are the airliners, the largest of which are wide-body aircraft. Some of the smaller types are also used in general aviation, and some of the larger types are used as VIP aircraft.

**Ex.1.5.** Study the table below. Chose the appropriate heading for the following and fill in the table.

Range	Purpose	Aircraft Category (ICAO)	Approach	Power	Size	Classes
-------	---------	--------------------------	----------	-------	------	---------

	Commercial, military, general aviation
	Long –haul, medium- haul, short –haul, vertical takeoff and landing(VTOL), short takeoff and landing(STOL), space shuttles
	Single engine, twin jet, four- engine, tri jet, six jet
	Narrow- bodied, wide-bodied, jumbo, light aircraft
	Fighter, bomber, tanker, executive jet, amphibians (can operate on both land and sea), seaplanes(can take off and land on water)
	A,B,C,D

**Ex.1.6.** Work with a partner and form your ideas using the following expressions.

- flying machines, airplanes, aircraft....
- to be grouped/divided/classified into...
- weight, capability, range, purpose, maneuverability..
- depend on, according to, used for
- modern, nowadays, at present

**Ex.1.7.** Using background information speak on Aircraft Approach Category (ICAO). What do letters A,B,C, D, E correspond to?

**Ex.1.8.** *Identify some of the aircraft types in the pictures below. Use the following vocabulary and structure.*

Transporter cargo aircraft, bomber, tanker, executive jet, amphibious plane, airliner, helicopter, light aircraft, freighter, business jet, jumbo.

*This is a .....*

*It is a .....*

*In the picture I can see .....*

*The picture shows / performs / presents .....*

*There is / are ...in the picture.*

**g**



**a**



**b**



**c**



**d**



**e**



**f**

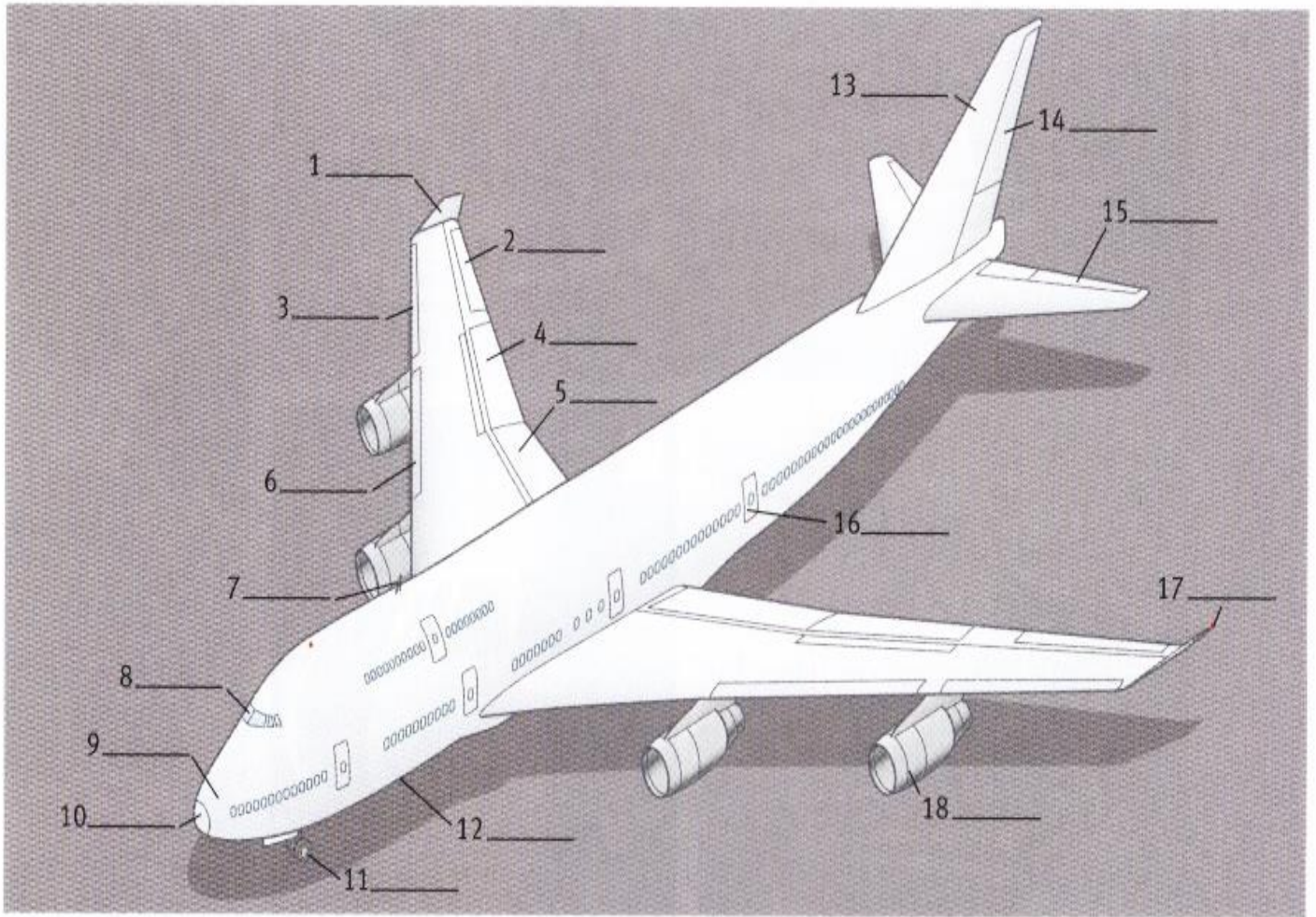


## 2. Aircraft components

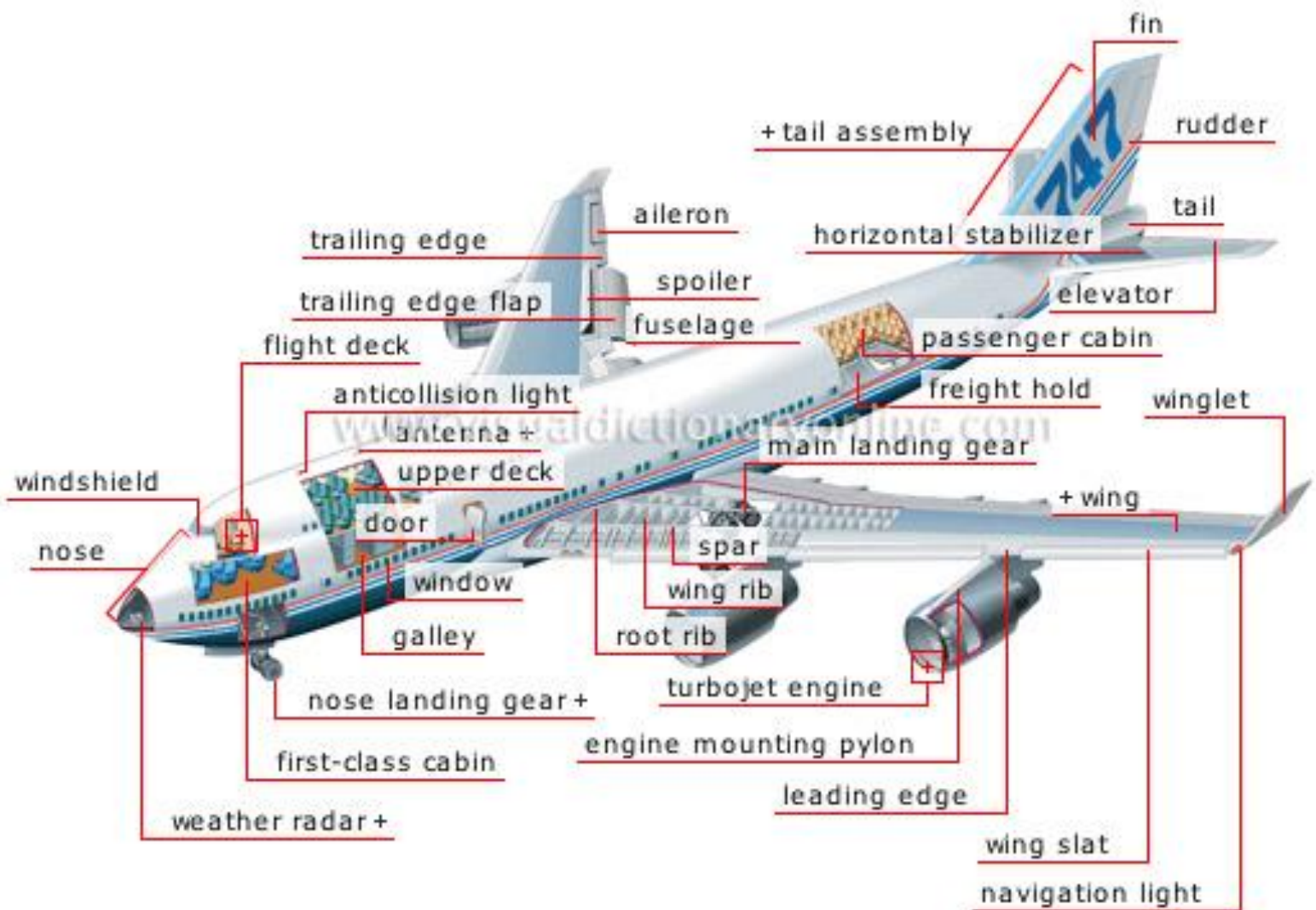
**Ex.2.1.** Practice the pronunciation of the following words and give the Russian equivalent.

English	Pronunciation	Russian
nose	[nəʊz]	
flap	[flæp]	
landing gear	['lændɪŋ] [gɪə]	
nacelle	[nə'sel]	
cockpit	['kɒkɪt]	
windshield	['wɪn(d)ʃi:ld]	
windscreen	['wɪn(d)skri:n]	
fuselage	['fju:z(ə)lɑ:ʒ]	
slat	[slæt]	
vertical stabilizer	['vɜ:tɪk(ə)l 'steɪb(ə)laɪzə]	
rudder	['rʌdə]	
elevator	['elɪveɪtə]	
horizontal stabilizer	[,hɔ:rɪ'zɒnt(ə)l 'steɪb(ə)laɪzə]	
compartment	[kəm'pɑ:tmənt]	
trailing edge	['treɪlɪŋedʒ]	
leading edge	['li:dɪŋedʒ]	
aileron	['eɪl(ə)rən]	
spoiler	['spɔɪlə]	
airbrake	['eə breɪk]	
static discharger	[dɪs'ʃɑ:dʒə]	
pylon	['paɪlən]	
radome	['reɪdəʊm]	
outboard slat	['aʊtbɔ:d]	

**Ex.2.2** Use the words from the box to label the pictures.

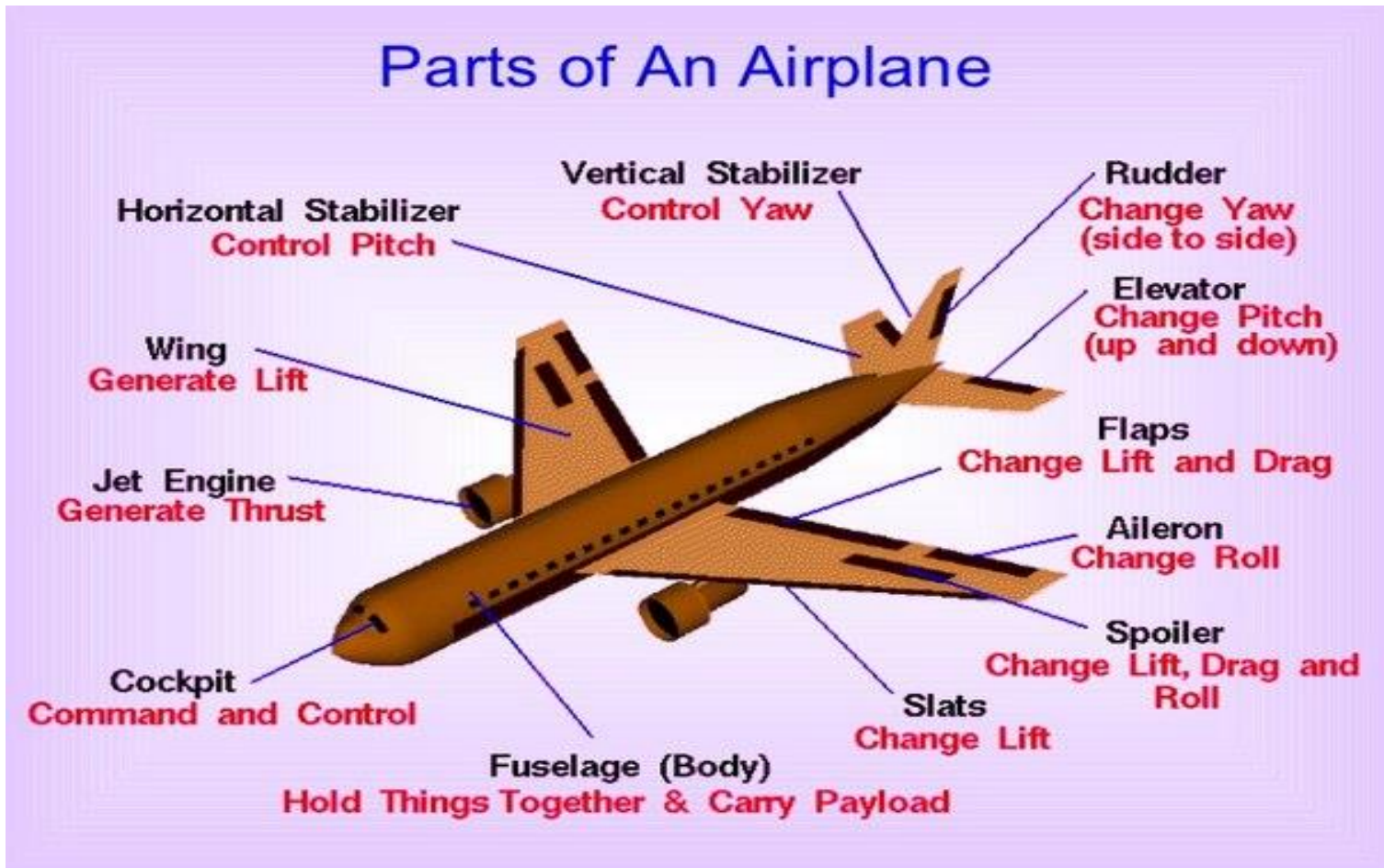


**Ex.2.3.** Check your answers using the picture below.





Ex.2.4. Study the following information.



Ex.2.5. Match each part below with what it does or provides.

<b>engine</b>	houses the passenger cabin, cockpit and under floor areas
<b>wing</b>	provides directional guidance in flight
<b>vertical stabilizer</b>	with fin and rudder also contributes to stability and balance
<b>fuselage</b>	identify the aircraft, make visible at night
<b>engine pod/nacelle</b>	surrounds and protects engine
<b>rudder</b>	with elevators provides stability and balance in flight
<b>navigation lights</b>	provides lift
<b>horisontal stabilizer</b>	provides thrust

**Ex.2.6.** Use the words in the box to fill in the text.

*tires, checks, lightning, surfaces, vehicles, damage, wear, leading, doors, hatches, undercarriage, foreign, blades, engine, fuselage, ground*

Before flying the pilot carefully ..... the aircraft. He looks at the external ..... for signs of damage. A plane may be damaged by a bird s or .....strike or contact with any other ..... object, or by service ..... on the ..... Bent or distorted panels may be a visual indication of hidden ..... to the airframe.

He then checks the ..... for excessive ..... or cuts on the .....

He inspects the ..... edge of the wing for damage and checks the fastenings on the ..... cowling. He examines the visible fan ..... on the engines.

Moving along the ..... to the tail he does the same .....checks over surfaces before the ensuring that all cargo ..... and access ..... are ..... fastened.

**Ex.2.7.** Answer the questions.

1. What does the pre-flight inspection include?
2. How can an aircraft be damaged?
3. What parts of an aircraft might be the most damageable?
4. Why is it necessary to do the pre-flight check?
5. Who usually carries out the pre-flight check of the aircraft?



### 3. Aircraft specifications

#### Grammar reference 1

Describing objects, the following language is often used

<p><b>1) shape</b>  <i>It is / It's + adjective (round, rectangular, cylindrical...)</i></p>
<p><b>2) material</b>  <i>It is / It's made of + noun (wood, metal, leather, plastic, glass...)</i></p>
<p><b>c size</b>  <i>It is / It's + size (big, small, medium...)</i>  <i>It is / It's + comparison (bigger than, smaller than...)</i></p>
<p><b>3) brand / model</b>  <i>It is / It's made by + company name ('Boeing' ...)</i></p>
<p><b>4) color</b>  <i>It is / It's + color (red, black, green ...)</i></p>
<p><b>5) features</b>  <i>It has + noun (buttons, a small door, a large handle, a switch ...)</i></p>
<p><b>6) use/capable</b>  <i>It is / It's used for + verb + ing (writing, washing, listening ...)</i>  <i>It is / It's used to + infinitive (write, wash, listen to ...)</i>  <i>It is / It's capable of + verb + ing</i></p>
<p><b>7) the components that make up an object</b></p>
<p><b>It consists of</b> + nouns (a dial and a pointer)  *components = parts</p>

**Plural forms:** substitute **they are / they're**    **it is** for 'it is'.

### Examples

*They are made of leather / they're brown.*

**Ex.3.1.** Discuss with a partner what these aircraft components could be. Note down your ideas next to sentences **a** to **i**. Write the appropriate phrase in the following sentences.

*It's shaped like / it's used for / it's (they're) made by / it consists of / it's (they're) made of*

**a** \_\_\_\_\_ accommodating passengers.

**b** \_\_\_\_\_ Airbus Industries.

**c** \_\_\_\_\_ rubber.

**d** \_\_\_\_\_ identifying the aircraft, make visible at night

**e** \_\_\_\_\_ the Boeing Aircraft company.

**f** \_\_\_\_\_ metal.

**g** \_\_\_\_\_ generating lift.

**h** \_\_\_\_\_ passenger cabin, cockpit and under floor areas.

**i** \_\_\_\_\_ a long cylinder.

➤ **Study the following information:**

**HOW+ ADJECTIVE?** –it is a very common pattern in conversation

How **long** is the aircraft? *It is 3m long (It is .... m in length). (Its length is ...m).*

What is its width?	It's 3m wide	How wide is it?	It's 3m in width
What is its length?	It's 33m in length.	How long is it?	It's 33m in length
What is its height?	It's 10m in height	How high is it?	It's 10m in height.

What is its weight?	It weighs 150 tones	How much does it weigh?	It weighs 150 tones
What is its capacity?	It has a capacity of 30,000 liters	How much can it hold?	It can hold 30,000 liters

**Ex.3.2.** *Work with a partner. Read the aircraft specifications and answer the questions below.*

**Maximum takeoff weight** 202,000 kg

**Wing span** 60.30 m

**Overall length** 58.37 m

**Vertical fin height** 17.89 m

**Cabin width** 5.28 m

**Average cruise speed** 880 kph

**Freight capacity** 12,858 kg

**Engines** 2

**Example:**

*What is the wingspan of the aircraft? 60.30 m*

- a) How long is the aircraft? \_\_\_\_\_
- b) How high is the top of the vertical fin? \_\_\_\_\_
- c) How fast does the aircraft cruise? \_\_\_\_\_
- d) How much freight (cargo) can it carry? \_\_\_\_\_
- e) How many engines does it have? \_\_\_\_\_



**Ex.3.3.** *Work with a partner and discuss the features of an aircraft you are familiar with.*

## Grammar reference 2

### Making comparisons

➤ To compare two or more things we use adjectives of comparison.

**For short adjectives (one syllable) add **-er** to the adjective.**

**Example:**

C is safe

C is safer than B.

**For most two-syllable adjectives ending in **-y** change the **-y** to **-ier**.**

**Example:**

A is heavy.

A is heavier than B.

**For most other adjectives (two syllables or more), use **more** before the adjective.**

**Example:**

A is reliable.

A is **more** reliable than B.

A is **much more** reliable than B

**To say two items are similar, use **as ... as****

**Example**

B is **as big as** A.

B is **not as powerful as** A.

**Some comparatives are irregular:**

**Example:**

good – **better**

bad – **worse**

little –**less**

much/many-**more**

far –**further/farther**

➤ There are many ways we can talk about similarities and differences.

<p><b>1 We can use comparative adjectives.</b></p> <p><b>Examples</b></p> <p>An Airbus is <b>bigger</b> and <b>higher</b> than a helicopter.</p> <p>Airbuses are <b>heavier</b> than helicopters.</p> <p>A helicopter is <b>more manoeuvrable</b> than an Airbus.</p> <p>An Airbus is <b>less manoeuvrable</b> than a helicopter.</p>	<p><b>2. We can use <u>not as + adjective + as</u> to show differences and <u>as + adjective + as</u> to show similarity.</b></p> <p><b>Examples</b></p> <p>A helicopter is <b>not as fast as</b> an Airbus. (The Airbus is faster)</p> <p>An Airbus is <b>as comfortable as</b> a Boeing to travel in. (The Airbus and the Boeing are equally comfortable)</p> <p>An Airbus is <b>not as manoeuvrable as</b> a helicopter. (The helicopter is more manoeuvrable)</p> <p>This helicopter is <b>as old as</b> the Airbus. (The helicopter and the Airbus are the same age.)</p>
<p><b>3. We can use <u>both ___ and ___</u> to show similarity and <u>neither ___ nor ___</u> to show opposite similarity.</b></p> <p><b>Examples</b></p> <p><b>Both</b> the helicopter <b>and</b> the Airbus have engines.</p> <p><b>Both of them</b> are used for transport.</p> <p><b>Both</b> a car <b>and</b> a bus are noisy.</p>	<p><b>4. We can use connecting words in a sentence. Use words like <u>but</u>, <u>while</u>, <u>whereas</u>, and <u>however</u> to show differences and <u>also</u> and <u>too</u> to show similarity.</b></p> <p><b>Examples</b></p> <p>Helicopters usually can carry only a few passengers <b>whereas</b> Airbuses can carry a few hundred passengers.</p> <p>Airbuses and some helicopters have rubber</p>

<p>Helicopters and Airbuses <b>both</b> have fuel <b>and</b> electrical systems</p> <p><b>Neither</b> Airbuses <b>nor</b> helicopters are cheap to run.</p>	<p>tyres <b>however</b>, an Airbus's tyres are <b>bigger</b>.</p> <p>Helicopters have either one or two doors <b>while</b> Airbuses usually have many more.</p> <p>Helicopters and Airbuses are expensive <b>but</b> helicopters are usually less expensive than Airbuses.</p> <p>Helicopters have windows and Airbuses <b>also</b> have windows.</p> <p>Helicopters are enjoyable to travel in and many people think Airbuses are fun <b>too</b>.</p>
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**Ex.3.4.** *Work in small groups. Compare the two aircraft. Write as many similarities and differences as you can. Use the adjectives from the list below.*

<i>narrow</i>	<i>long</i>	<i>heavy</i>	<i>comfortable</i>	<i>noisy</i>	<i>wide</i>	<i>old</i>	<i>modern</i>	<i>slow</i>	<i>reliable</i>
<i>expensive</i>		<i>powerful</i>	<i>efficient</i>	<i>large</i>	<i>fast</i>	<i>capable</i>		<i>light</i>	<i>high</i>
		<i>complicated</i>		<i>short</i>	<i>maneuverable</i>				

a



b



c



d



e



f



**Ex.1.** Listen to the recording and fill in the chart below.

	<b>Airbus 300-600R</b>	<b>McDonnell Douglas MD-80</b>
Type of engine		
Number of seats in a row		
Maximum seating capacity		
Business class seats		
Economy class seats		
Cabin width		
Wingspan		
Fuselage		
Range		
Cruising altitude		
Maximum takeoff weight		
Cabin doors		
Emergency exits		

**Ex.3.5.** *Work with a partner. Person A should read about the MD-80 and Person B should read about the A300-600R. Then make comparison of these aircraft.*

**Person A**

**The Airbus 300-600R.** The Airbus 300-600R is a short, medium to long-range aircraft, with two Pratt & Whitney turbofan engines attached to the wings. This aircraft has two aisles with 10 seats across. The cabin is 4.5 meters wide, with a maximum seating capacity of 278. The cabin is divided into business class (24 seats) and economy class (254 seats). The wingspan of the A300-600R is 44.84 meters and the fuselage is 54.08 meters long. It has a range of 4,997 nautical miles with a full passenger load. The cruise altitude of this aircraft is 12,300 meters. The maximum takeoff weight is 170,500 kg. The A300-600R has four cabin doors and cargo compartment doors at the front and back of the aircraft. It also has two emergency exits above each wing.



**Person B**

**McDonnell Douglas MD-80.** The McDonnell Douglas MD-80 is a short to medium range aircraft. There is a single aisle. The two Pratt & Whitney turbofan engines are mounted on the rear of the fuselage below the T-tail. These aircraft have a maximum seating capacity of 147 in economy class. There is no business class. The cabin is 2.24 meters wide, with 5 seats across. The wingspan is 32.87 meters and the fuselage is 45.06 meters long. The aircraft can fly at 860 km/h at an altitude of 11,300 meters with a range of 2,360 nautical miles. The maximum takeoff weight is 67,812 kg. The MD-80 has one passenger cabin door on the left side, and a central staircase

in the tail. It has three cargo compartment doors and two galley service doors, one at the back and one at the front. There are four emergency exits.



## Grammar Reference

### 3. Passive Voice

**Пассивный (страдательный) залог сказуемого**  
на месте подлежащего - объект, над которым  
совершается действие

Характер действия время в русск.яз.	Simple Indefinite Простое Неопределенное	Progressive= Continuous длительное=про долженное непрерывное	Perfect Совершенное законченное, результатив- ное
Инфинитив	<b>to be + P II (III)</b>  <b>to be operated</b>	<b>to be being P II (III)</b>  <b>to be being operated</b>	<b>to have been +P II (III)</b>  <b>to have been operated</b>
Present Настоящее	<b>am</b> <b>is</b> <b>operated</b> <b>are</b>	<b>am</b> <b>is</b> > <b>being</b> <b>operated</b> <b>are</b> (сейчас, в	<b>have/ has</b> > <b>been operated</b>

		данный момент, в настоящий период времени)	
Past Прошедшее	<b>was</b> > <b>operated</b> <b>were</b> (вчера, на прошлой неделе, год назад- в конкретное время в прошлом)	<b>was</b> > <b>were</b> > <b>being operated</b>	<b>had</b> > <b>been operated</b>
Future Будущее	<b>will</b> > <b>be</b> <b>operated</b>	_____	<b>will</b> > <b>have</b> <b>been</b> <b>operated</b>
Future - in the - past	<b>would</b> > <b>be</b> <b>operated</b>	_____	<b>would</b> > <b>have</b> <b>been</b> <b>operated</b>

NOTE: > в отрицательных предложениях место отрицательной частицы  
«NOT»

> в вопросительных предложениях место подлежащего

**Ex.3.6.** *Read the following sentences and translate them into Russian.*

**Present:**

Boeing aircraft are made in the United States.

Air France aircraft is being refueled.

All aircraft have been repaired.

**Past:**

This airport was built in 1977.

The passengers were being served dinner as they were flying over the Himalayas.

When I arrived at the airport, I realized that my flight had been cancelled.

**Future:**

The seatbelt signs will be activated before landing.

New high-speed passenger aircraft are going to be developed in the next ten years.

**Ex.3.7.** *Form the passive voice of the following sentences.*

- a) Pilots fly aircraft.
- b) Mechanics serve the aircraft at regular intervals.
- c) We will ask all passengers in rows 26 to 40 to disembark using the rear entrance.
- d) Air Traffic Controllers divert the aircraft around the storm.
- e) The flight crew reset the circuit breaker.
- f) Incorrect phraseology on the radio may cause misunderstanding between pilots and ATC.
- g) There will be no meals served on the cheaper flights.
- h) Captain Karloff flew the aircraft yesterday.
- i) The airline advised the new gate number only twenty minutes before boarding.
- j) Snow covered the runways and taxiways.
- k) They have repainted the entire fleet in the new company colors.
- l) We will ask all passengers in rows 26 to 40 to disembark using the rear entrance.
- m) They are going to close Runway 23 for half a day due the work in progress.

**Ex.3.8.** *Put the verb in brackets in the passive form. Use the past, present or future in each of sentences.*

- a) Last year nearly seven thousand people \_\_\_\_\_ (employ) by Pacific International Airlines.
- b) The gate \_\_\_\_\_ (close) fifteen minutes before the departure of each flight.
- c) In autumn, many of the mountains north of the aerodrome \_\_\_\_\_ (cover) in clouds.
- d) The aircraft \_\_\_\_\_ (give) landing priority.
- e) The captain announced that the flight \_\_\_\_\_ (delay) because of engine problems.
- f) The flight \_\_\_\_\_ (scheduled) to depart at 11.30.
- g) Cabin crew \_\_\_\_\_ (train) to know what to do in an emergency.



**Ex.3.9** Learn the following verbs, form their Passive, where it is possible.

to consist of smth	Состоять из....
to contain smth	содержать в себе, включать, иметь в своём составе; вмещать Syn: hold, comprise, include, accommodate
to build into smth	встраивать в....
to include smth	включать в себя, содержать в себе Syn: comprise, contain .
to stow smth into	укладывать что-то внутри чего- то
to attach smth to smth	прикреплять ... к... Syn: add , affix fasten
to connect smth with smth by smth (by smb)	соединять что- то с чем то каким-то образом
to divide smth into smth	отделять одно от другого
to reduce smth	снижать, понижать что-то
to hinge	закреплять шарнирно
to fix smth to smth	фиксировать, прикреплять ...к...
to suspend	подвешивать
to fold up	складывать, свернуть



**3.10.** Fill in the gaps with the proper form of the verb in the box.

<i>to shape</i>	<i>to contain (x2)</i>	<i>to stow</i>	<i>to build</i>	<i>to attach(x2)</i>	
<i>to fix</i>	<i>to display</i>	<i>to move</i>	<i>to divide</i>	<i>to support</i>	<i>to steer</i>
<i>to suspend</i>	<i>to connect</i>	<i>to fold up</i>	<i>to hinge</i>		

An aircraft consists of many components, the largest of which is the *fuselage*. The fuselage .....like a long cylinder. It .....the passenger seating, the flight deck and compartments in which baggage or cargo .....Doors and windows ..... into the fuselage, including the *windscreen* through which the pilots look to see where they are going.

The *wings* are another very large component. They .....to the top or bottom of the fuselage. They usually .....the fuel tanks. Often the *engines* .....directly to the wings, or they may .....below them and .....*bypylons*.

Two important parts of the aircraft .....to the back or *rear* of the fuselage. They are the large *vertical stabilizer* or *fin*, which usually .....the airline's logo, and the *horizontal stabilizer*.

When an aircraft is on the ground, such as during taxiing, takeoff and landing, the undercarriage .....the weight. The undercarriage .....into the *main landing gear*, which is very large and strong, and the *nose wheel*, which is smaller. Pilots .....the aircraft along the ground, by turning the nose wheel.

Undercarriages may be either .....,which means they stay down and cannot ....., or retractable. Most of the larger aircraft have *retractable* undercarriages, meaning that the wheels can .....into the wings or fuselage during flight. This gives a much smoother and more aerodynamic shape to the aircraft, significantly reducing fuel consumption.

*Control surfaces*, which enable pilots to change the flight path of the aircraft, .....to the back of the wings, vertical stabilizer and horizontal stabilizer. The

*aileron*s .....to the back of the wings, the *rudder* to the back of the vertical stabilizer, and the *elevator* to the back of the horizontal stabilizer.

**Ex.3.11.** Read the passage in more details and complete the table below.

Component	Location	Function

## 4. Aircraft construction

**Ex.4.1.** Learn the new words and practice the pronunciation.

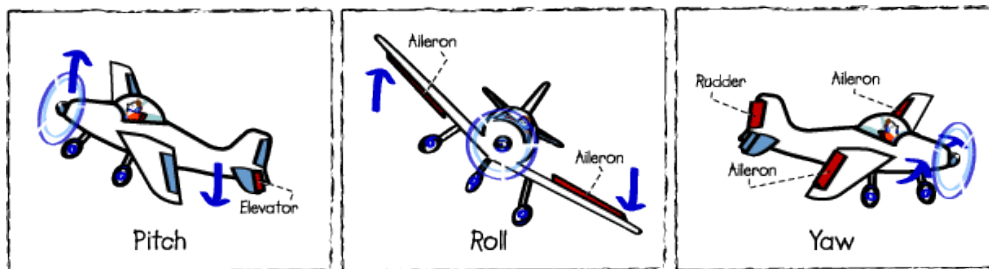
English	Pronunciation	Russian
<b>to comprise</b>	[kəm'praɪz]	включать; заключать в себе, содержать
<b>propulsion system</b>	[prə'pʌlʃ(ə)n]	двигательная (силовая) установка
<b>maneuverability</b>	[mə'nu:v(ə)rə'bɪlətɪ]	манёвренность; мобильность, подвижность
<b>to stack</b>  <b>stack, n</b>	[stæk]	располагаться эшелонировать самолёты по высоте ( <i>перед заходом на посадку</i> );этажерка
<b>to retract into, v</b>	[rɪ'trækt]	втягивать, вбирать в...

		убирать шасси
<b>to decrease, v</b>	[di'kri:s]	<u>уменьшать</u> , <u>сокращать</u>
<b>drag, n</b>	[dræg]	лобовое сопротивление
<b><u>float</u>, n</b>	[fləʊt]	поплавок гидросамолёта
<b>hull, n</b>	[hʌl]	корпус судна
<b>hence, adv</b>	[hen(t)s]	<i>нареч.</i> поэтому, следовательно
<b>beyond</b>	[bi'jɒnd]	<i>нареч.</i> далеко, вдали; на расстоянии <i>предл.</i> за, по ту сторону, за пределами
<b>to produce thrust</b>	[prə'dju:s θrʌst]	создавать силу тяги
<b>propeller-driven piston engine</b>		поршневой винтовой двигатель
<b>to increase, v</b>	[in'kri:s]	возрастать, увеличиваться; расти; усиливаться
<b>to house (the engine(s) within), v</b>	[haʊz]	размещать(двигатели внутри)
<b>mounted in/on ... , adj</b>	['maʊntɪd]	<i>прил.</i> смонтированный, установленный в /на ...
<b>pod, n</b>	[pɒd]	<i>сущ.</i> 1) отделяемый грузовой отсек ( <i>транспортного самолёта</i> ) 2) гондола двигателя
<b>to hang, v</b>	[hæŋ]	<i>гл.</i> вешать, подвешивать = hangover нависать ; парить

<b>attached to..</b>	[ə'tæʃt]	прикреплённый к ...
<b>auxiliary power unit</b>	[ɔ:g'zɪl(ə)rɪ]	вспомогательная силовая установка
<b>to yaw, v</b>	[jɔ:]	отклоняться от курса
<b>yawing</b>	[jɔ:ɪŋ]	рыскание
<b>to lower \ raise the ailerons</b>		опускать/поднимать элероны
<b>longitudinal axis</b>	[ˌlɒŋdʒɪ'tju:dlɪn(ə)l]	продольная ось
<b>axis</b> <i>мн. axes</i>	['æksɪs]	ось, осевая линия
<b>to bank, v</b>	[bæŋk]	крениться
<b>lateral axis</b>	['læt(ə)r(ə)l]	поперечная ось
<b>pitch, n</b>	[pɪtʃ]	угол наклона тангаж
<b>trim tab, n</b>	[trɪm][tæb]	триммер
<b>simultaneously, adv</b>	[ˌsɪm(ə)'teɪniəsli]	одновременно, совместно
<b>extended</b>	[ɪk'stendɪd], [ek-]	вытянутый; растянутый
<b>to adjust, v</b>	[ə'dʒʌst]	регулировать; выверять настраивать
<b>deflection, n</b>	[dɪ'flekʃ(ə)n]	отклонение (стрелки <i>прибора</i> )
<b>to reverse, v</b>	[rɪ'vɜ:s]	давать задний <i>или</i> обратный ход; реверсировать
<b>complicated</b>	['kɒmplɪkeɪtɪd]	запутанный;

		СЛОЖНЫЙ; СОСТАВНОЙ ОСЛОЖНЁННЫЙ
<b>leading edge slot</b>		щель передней кромки крыла
<b>three slotted inner/outer flaps</b>		внутренние/внешние трех щелевые закрылки

**Ex.4.2.** Listen and check you know these verbs.



**to set:** The computers are set to control stability of flight parameters in flight.

**to trim:** During takeoff the pilot needs to trim the aircraft continuously.

**to roll:** The aircraft rolls when one wing moves up and the opposite wing down.

**to yaw:** The aircraft yaws to the left or right around its vertical axis.

**to pitch:** The pilot can pitch the nose up or down. Wind can pitch the nose up or down.

**to raise:** The pilot raises the elevators to force the tail down.

**to lower:** The pilot lowers elevators to force the tail up.

**Ex.4.3.** Fill in gaps with the proper words.

1. The computers \_\_\_\_\_ control stability of \_\_\_\_\_ in flight.
2. During \_\_\_\_\_ the pilot needs \_\_\_\_\_ the aircraft continuously.
3. The aircraft \_\_\_\_\_ when one wing \_\_\_\_\_ and the opposite wing \_\_\_\_\_.
4. The aircraft \_\_\_\_\_ to the left or right around its \_\_\_\_\_.
5. The pilot can \_\_\_\_\_ the \_\_\_\_\_ up or down. Wind can \_\_\_\_\_ the \_\_\_\_\_ up or down.

6. The pilot \_\_\_\_\_ the horizontal elevator to force the \_\_\_\_\_.

7. The pilot \_\_\_\_\_ the horizontal elevators to force the \_\_\_\_\_.



**Ex.4.4.** *Listen to the recording “Parts of an aircraft”*

The parts of an aircraft are generally divided into **three categories**

The **airframe** comprises the mechanical structure and associated equipment.

The **propulsion system** comprises the engine or engines and associated equipment.

The **avionics** comprise the electrical flight control and communication systems.

**Airframe.** The airframe of an aircraft is its mechanical structure. The main parts of the airframe are the fuselage, wing, tail assembly or empennage, and undercarriage.

**Fuselage.** The fuselage is the main structure or body of the aircraft and carries the aircraft payload i.e. the passenger and/or freight as well as the flight crew and cabin staff in safe and comfortable conditions. The fuselage provides the flight crew with the effective position for operating an aircraft in the cockpit or flight deck. The fuselage contains passenger cabin and cargo hold. In a single- and twin-engine aircraft, it will often also contain the engine or engines.

**Wing.** The wings are the main lifting surfaces and support the weight of the aircraft in the air. The wings of an aircraft produce lift. Most early fixed-wing aircraft were biplanes, having wings stacked one above the other. Most types nowadays are monoplanes, having one wing on each side.

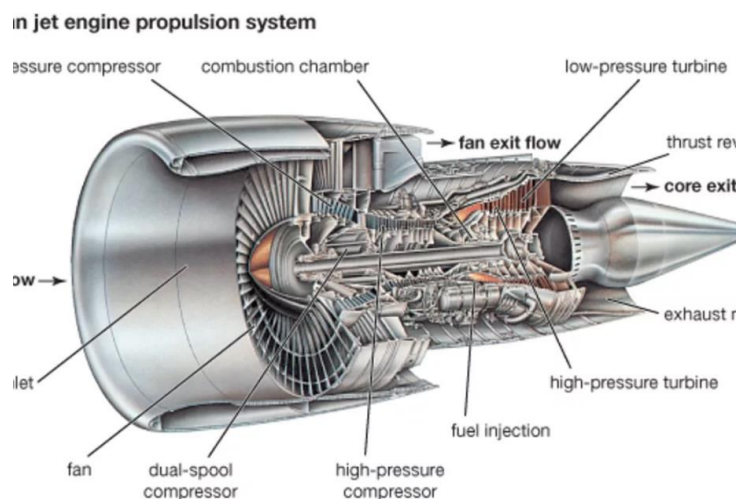
**Undercarriage** The undercarriage, or landing gear, is the structure that supports an aircraft on the ground provides a means of maneuvering the aircraft on the ground. Most commonly, wheels are used but skids, floats, or a combination of these and other elements can be used, depending on the surface. There may be retractable and fixed landing gear called non-retractable. Many aircraft have

undercarriage that retracts into the wings (wing bay) and/or fuselage structure to decrease drag during flight.

**Ex.1.** Match the words with their definitions.

1	airframe	<b>a</b>	a structure at the rear of an aircraft that provides stability during flight
2	avionics	<b>b</b>	one of a pair of long narrow parts on which an aircraft rests
3	empennage	<b>c</b>	the main body of an aircraft
4	float	<b>d</b>	landing gear
5	fuselage	<b>e</b>	electronic systems used on aircraft
6	propulsion system	<b>f</b>	one of usually two long, flat parts of an airplane that extend from the sides
7	skid	<b>g</b>	one of the round parts underneath an aircraft
8	undercarriage	<b>h</b>	the mechanical structure of an aircraft
9	wheel	<b>i</b>	a machine that produces thrust to push an aircraft forward
10	wing	<b>j</b>	a hollow structure underneath an aircraft enabling it to take off and land on water

1. What are the categories the parts of an aircraft are divided into?
2. What are the main parts of the airframe?
3. What does the fuselage contain?
4. What is the landing gear used for?
5. Is the wing the part of the fuselage?
6. What do wings produce?





**Ex.4.5.** Listen to the recording and match the two halves of the sentences.

1	The avionics comprise the flight control systems and other electronic equipment, including	<b>a</b>	the ailerons, the elevators and the rudder.
2	Flight control surfaces are hinged or movable airfoils which are used by the pilot to control	<b>b</b>	the airplane in “roll” by their different movement.
3	The three basic control surfaces are	<b>c</b>	the airplane bank to the left or to the right and move around its longitudinal axis.
4	The rudder controls	<b>d</b>	the elevator, the control for making the plane climb or dive by raising or lowering the tail.
5	The ailerons are located at the trailing edge close to the wing tips and designed to control	<b>e</b>	the direction, altitude and speed of the airplane.
6	Lowering or raising the ailerons makes	<b>f</b>	the plane dives.
7	To change the altitude of the flight, the pilot uses	<b>g</b>	cockpit instrumentation, radar, and communication systems.
8	When the control stick (or yoke) is moved forward, the elevators lower, and	<b>h</b>	the yawing movement of the airplane around its vertical axis.

**Ex.4.4.** Listen to the recording “Propulsion system and fill in the gaps.

An aircraft engine, or \_\_\_\_\_, produces \_\_\_\_\_ to propel an aircraft. \_\_\_\_\_ engines and \_\_\_\_\_ engines work in combination with a propeller to produce thrust. \_\_\_\_\_ and \_\_\_\_\_ engines produce thrust by increasing the \_\_\_\_\_ of \_\_\_\_\_ of an aircraft.

Aircraft use several different kinds of engines, but they can all be classified into two major categories: \_\_\_\_\_ engines which are \_\_\_\_\_ today on light general aviation planes and \_\_\_\_\_ engines used by most modern aircraft now. Many aircraft house the engines within the

\_\_\_\_\_ itself. Most large planes, however, have their engines \_\_\_\_\_ in separate pods \_\_\_\_\_ below the \_\_\_\_\_ or sometimes attached to the fuselage. These pods are called \_\_\_\_\_. Planes also have an \_\_\_\_\_ (APU), a small turbine for alternate power to support aircraft systems on the ground and in flight.

- What types of engines do you know?
- Where are the engines housed?
- What is APU? What is it used for?

**Ex.4.5.** *Read the passages in more detail and complete the table below.*

Component	Design	Function	Purpose

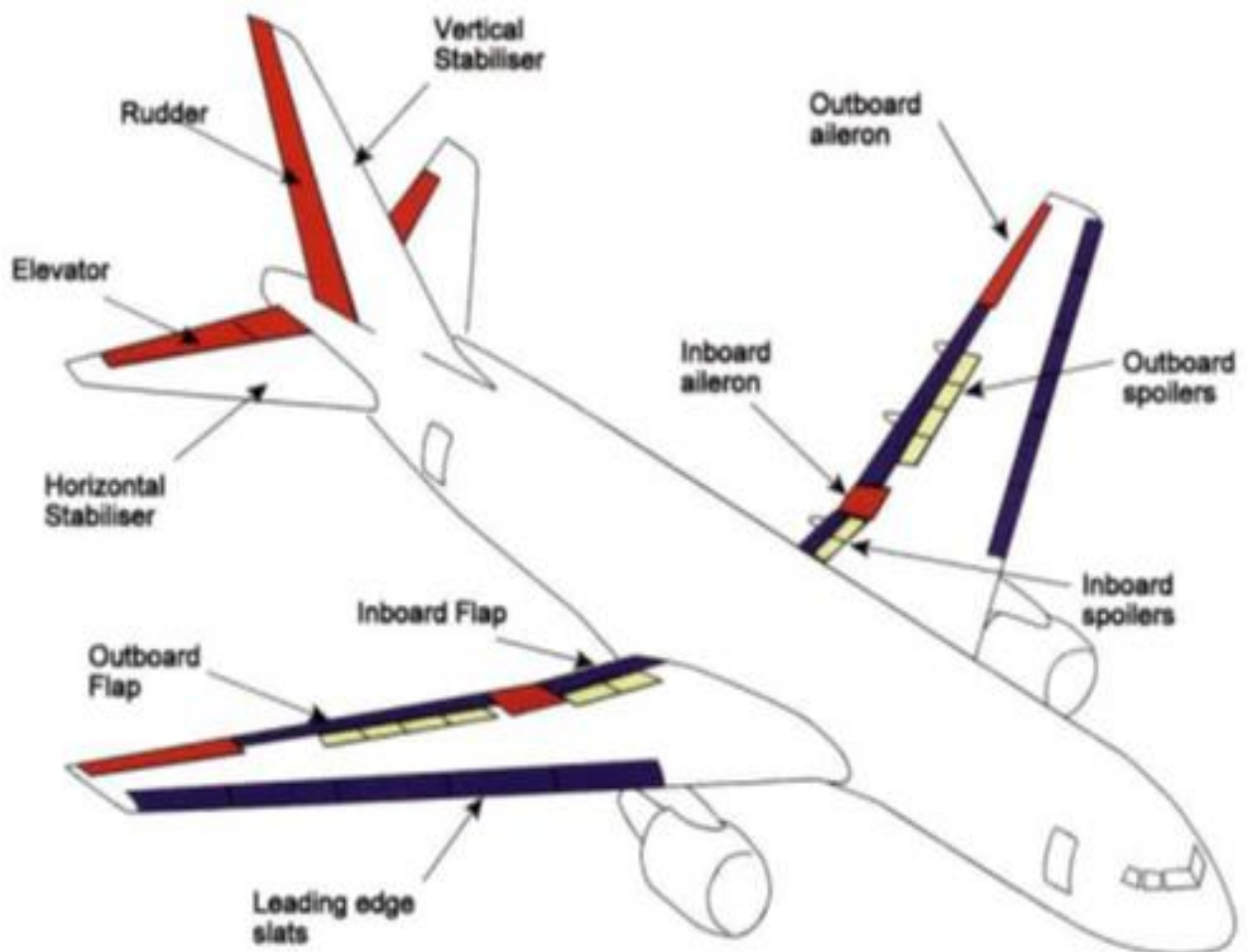
**Ex.4.6.** *Look at the picture below and discuss questions **a** and **b** with a partner.*

- What is the name of the structure at the end of the wing?
- What is its function?



## 5. Avionics and flight controls.

The avionics comprise the flight control systems and other electronic equipment, including the cockpit instruments, radar, and communication systems.



**Ex.5.1.** Read the text about aircraft flight controls. What are they designed for? How are they controlled?

For steady flight, the aircraft must be in a state of balance and the controls are required to maneuver the aircraft around its three axes (vertical axis, lateral axis and longitudinal axis of rotation).

Flight control surfaces are hinged or movable airfoils, which are used by the pilot to control direction, altitude and speed of the airplane. The movement of the flying control surfaces in response to the movement of the cockpit controls may be achieved:

- a) Mechanically: the control surfaces are connected directly to the cockpit controls by a system of cables, rods, levers and chains.
- b) Hydraulically: the control surfaces are moved by hydraulic power. The control valve may still be operated mechanically.
- c) Electrically; movement of the cockpit control sends an electrical signal to the control surface. The movement of the control may be achieved hydraulically

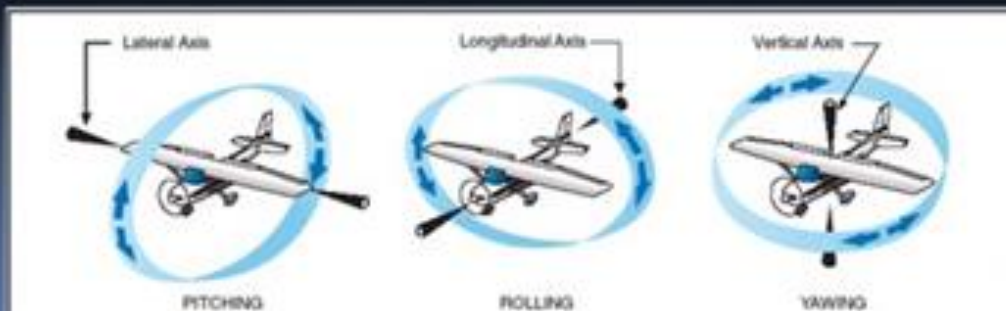
**Ex.5.2.** Listen to the recording “Flight control surfaces” and match the two halves of the sentences.

<b>1</b>	The avionics comprise the flight control systems and other electronic equipment, including	<b>a</b>	the ailerons, the elevators and the rudder.
<b>2</b>	Flight control surfaces are hinged or movable airfoils which are used by the pilot to control	<b>b</b>	the airplane in “roll” by their different movement.
<b>3</b>	The three basic control surfaces are	<b>c</b>	the airplane bank to the left or to the right and move around its longitudinal axis.
<b>4</b>	The rudder controls	<b>d</b>	the elevator, the control for making the plane climb or dive by raising or lowering the tail.
<b>5</b>	The ailerons are located at the trailing edge close to the wing tips and	<b>e</b>	the direction, altitude and speed of the airplane.

	designed to control		
6	Lowering or raising the ailerons makes	f	the plane dives.
7	To change the altitude of the flight, the pilot uses	g	cockpit instrumentation, radar, and communication systems.
8	When the control stick (or yoke) is moved forward, the elevators lower, and	h	the yawing movement of the airplane around its vertical axis.

## Primary Flight Controls

- What are the primary flight controls and which axes make them move the aircraft about?
  - Aileron (Longitudinal)
  - Elevator (Lateral)
  - Rudder (Vertical)



**Ex.5.3.** Match the control surfaces, the types of motion they create, and the verbs used to describe these types of motion.

Control surface	Movement	Verb
<b>rudder</b>	banking / rotation around the front-to-back axis	<b>pitch</b>
<b>aileron</b>	climbing or diving / rotation around the side-to-side axis	<b>yaw</b>
<b>elevator</b>	turning to the left or right / rotation around the vertical axis	<b>roll</b>

**Ex.5.4.** Read the answers to some questions with a partner discuss what you think the questions could be?

Q. \_\_\_\_\_?

A. To manoeuvre the aircraft around its three axes.

Q. \_\_\_\_\_?

A. Hinged or movable airfoils.

Q. \_\_\_\_\_?

A. Mechanically, hydraulically and electrically.

Q. \_\_\_\_\_?

A. It provides directional guidance while the aircraft is on the runway, or corrects imbalance during the flight

Q. \_\_\_\_\_?

A. The yawing movement of the airplane around its vertical axis.

Q. \_\_\_\_\_?

A. At the trailing edge close to the wing tips.

Q. \_\_\_\_\_?

A. Makes the airplane bank to the left or to the right and move around its longitudinal axis.

Q. \_\_\_\_\_?


A. No, they don't. The elevators lower.

Q. \_\_\_\_\_?

A. It is called "pitch".

**Ex.5.6.** Complete the table below.

Flight control surface	Location	Function

 **Ex.5.4.** Listen and read "Secondary Control surfaces" and complete the table below:

Airplanes have a set of secondary flight control surfaces that may include devices such as flaps, slats, trim tabs, spoilers, and speed brakes. Flaps are usually located along the trailing edge of both the left and right wing, typically inboard of the ailerons and close to the fuselage. Flaps are similar to ailerons in that they affect the amount of lift created by the wings.

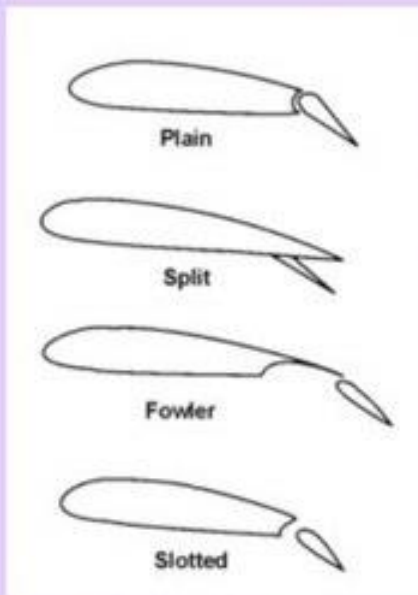
However, flaps only deflect downward to increase the lift produced by both wings simultaneously. Flaps are most often used during take off and landing to increase the lift the wing generates at a given speed. This effect allows a plane to take off, or land at a slower speed. Flaps on the leading-edge, often called leading-edge



slats, are usually extended from the front of the wing at low speed to change the way the air flows over the wing, therefore increasing lift. Trim tabs may be located on the elevator, rudder and aileron. These tabs all share the same purpose. They are used to adjust the flight path of an airplane more precisely. The pilot

can set the deflection of the trim tabs that create basic control deflection surfaces automatically.

Flight control surface	Location	Function



wing flaps



spoilers



leading edge slats



leading edge slats



speed brakes





**Ex.5.5.** *Read the answers to some questions. With a partner, discuss what you think the questions could be?*

**Q.** \_\_\_\_\_?

**A.** Flaps, slats, trim tabs, spoilers, and speed brakes.

**Q.** \_\_\_\_\_?

**A.** Inboard of the ailerons and close to the fuselage.

**Q.** \_\_\_\_\_?

**A.** They affect the amount of lift created by the wings.

**Q.** \_\_\_\_\_?

**A.** Downward to increase the lift.

**Q.** \_\_\_\_\_?

**A.** From the front of the wing at low speed.

**Q.** \_\_\_\_\_?

**A.** Trim tabs.

**Q.** \_\_\_\_\_?

**A.** The pilot can.

**Ex.5.7.** *Find the opposite for the following word combinations.*

- to deflect
- at high speed
- to increase
- to lower
- outboard
- balance
- forward

**Ex.5.7.** *Discuss the questions with a partner.*

1. What are the main control surfaces?
2. What does the rudder control?
3. What do elevators control?
4. Where is the fin?
5. What happens when the control stick is moved forward?
6. What happens when the control stick is moved backward?
7. Do ailerons control the movement of the airplane around the vertical axis or lateral axis?
8. When one aileron is raised, and the other lowers, does the airplane pull up or dive?
9. What are the secondary control surfaces?
10. What are the three types of aircraft motion around three separate axes?
11. What main control surface is used for
  - *rolling the aircraft?*
  - *pitching the aircraft?*
  - *yawing the aircraft ?*


## 6. Cockpit. Aircraft instruments

**Ex.6.1.** *Learn the new words and practice the pronunciation.*

English	Pronunciation	Russian
to adjust	[ə'dʒʌst]	регулировать, настраивать
to upgrade	[ˌʌp'ɡreɪd]	<u>изменять в соответствии с</u> <u>более</u>

		<u>высокими или современными требованиями</u>
<b>to allow</b> <i>Syn.</i> <b>to permit</b>	[ə'laʊ]	позволять, разрешать
<b>to develop</b>	[di'veləp]	развивать, совершенствовать
<b>to eliminate</b>	[i'limineɪt],[ə-]	устранять, исключать
<b>to employ</b>	[ɪm'plɔɪ em-]	предоставлять работу; нанимать
<b>to feature</b>	[ˈfi:tʃə]	являться характерной чертой, признаком;
<b>to rely (up)on smth</b>	[rɪ'laɪ]	полагаться на зависеть от ч-л.
<b>to simplify smth</b>	[ˈsɪmplɪfaɪ]	упрощать ч-л
<b>to utilize smth</b>	[ˈju:tɪlaɪz]	использовать, употреблять
<b>gauge, n</b>	[geɪdʒ]	измерительный прибор
<b>pertinent</b>	[ˈpɜːtɪnənt]	уместный; относящийся
<b>fly-by-wire system</b>		электродистанционная система управления
<b>values for N1/N2</b> N1 Low Pressure Rotor Speed (in %) N2 High Pressure Rotor Speed (in %)	[ˈvæljuː]	значение скорости ротора низкого /высокого давления в оборотах в минуту
<b>pilot workflow</b>	[ˈwɜːkfləʊ]	зд. процесс работы пилота
<b>to streamline cockpit</b>	[ˈstriːmlaɪn]	зд. оптимизировать

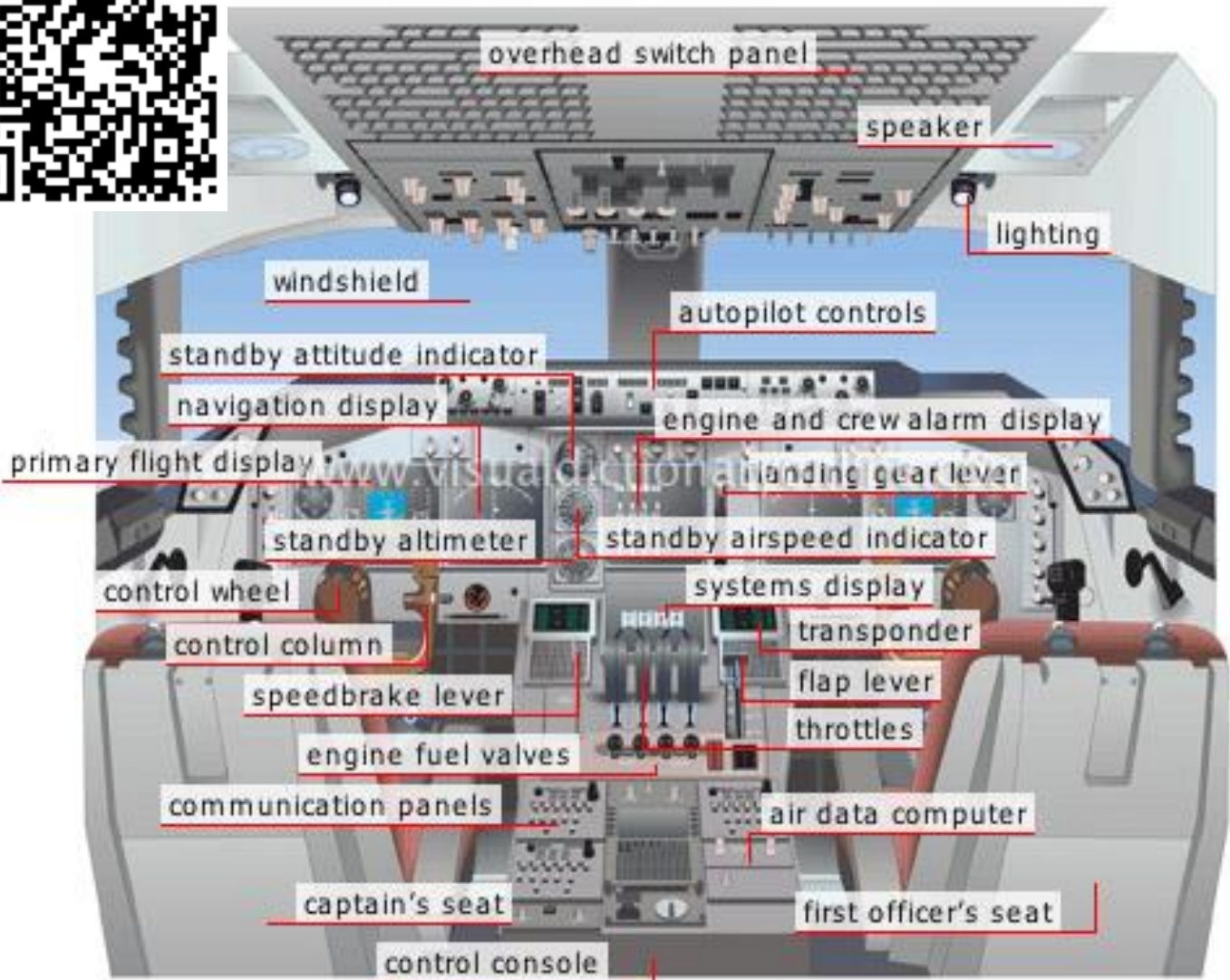
<b>layouts</b>		компоновку кабины
<b>the coxswain's station</b>		место рулевого в шлюпке
<b>enclosed</b>	[ɪn'kləʊzd]	закрытый
<b>control console</b>	[kən'səʊl]	пульт управления
<b>to refer to</b>	[rɪ'fɜ:]	называться

 **Ex.6.2.** Listen to recording "Cockpit" and fill in the gaps with the proper word combination.

*the front of      Formula 1      are enclosed*  
*the coxswain's station      flight instruments      enable*  
*appeared      on the ground      separates*

A cockpit or flight deck is the area, usually near ..... an aircraft, from which a pilot control the aircraft. Most modern cockpits ..., except on some small aircraft, and cockpits on large airliners are physically separated from the cabin. An aircraft is controlled both on the ground and in the air from the cockpit. As a term for the pilot's compartment in an aircraft the term 'cockpit' first ..... in 1914. After 1935 cockpit was also used informally to refer to the driver's seat of a car, especially a high performance one, and this is official terminology in ..... . The term is probably related to the sailing term for the ..... in a Royal Navy ship, and later the location of the ship's rudder controls.

The cockpit of an aircraft contains ..... on an instrument panel, and the controls that ..... the pilot to fly the aircraft. In most airliners, a door ..... the cockpit from the passenger compartment.



**Ex.6.3.** Complete the text about the glass cockpit with the verbs from the box below.

*adjusted*    *allows*    *developed*    *display*    *eliminate*    *employ*  
*features*    *focus*    *needed*    *relies on*    *simplifies*    *utilizes*

A glass cockpit is an aircraft cockpit that ..... electronic instrument displays. .... relatively recently, glass cockpits are highly upgrades from the traditional cockpits. Where a traditional cockpit ..... numerous mechanical gauges to ..... information, a glass cockpit ..... several computer displays that can be ..... to

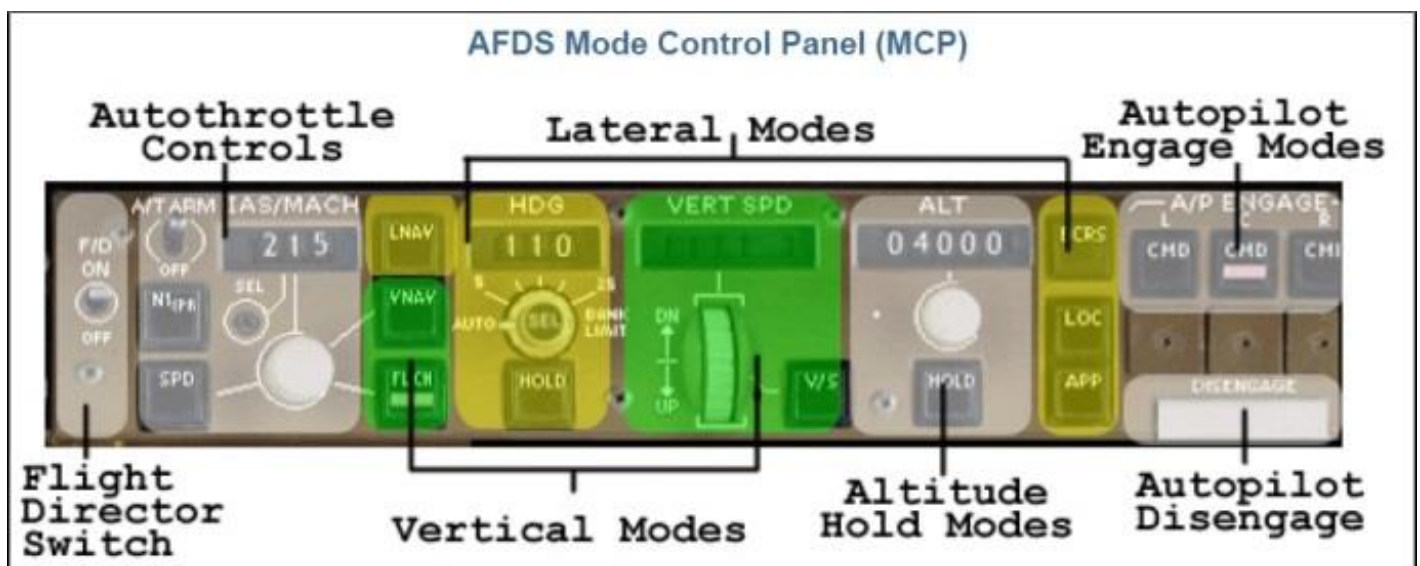
display flight information as ..... This ..... aircraft operation and navigation and ..... pilots to ..... only on the most pertinent information. They are also highly popular with airline companies as they usually ..... the need to ..... a flight engineer.

**Ex.6.4.** *Check you know these terms.*

English	Russian
MCP(ModeControlPanel)	Пульт управления режимами полета
FCU (Flight Control unit).	Блок управления полетом
PFD (PrimaryFlightDisplay)	Основной пилотажный дисплей
EICAS (Engine Indication and Crew Alerting System)	Система индикации работы двигателя и предупреждения экипажа
ECAM (Electronic Centralized Aircraft Monitor)	Электронная централизованная система контроля воздушного судна
FMS (Flight ManagementSystem)	Система управления полетом
LCD (Liquid-Crystal Display)	Жидкокристаллический экран
CRT (Cathode Ray Tube display)	Дисплей на электронно-лучевой трубке
Target Speed	Заданная скорость
Thrust mode	Режим тяги двигателя
Lateral Mode	Режим сноса
Pitch Mode	Режим поддержания тангажа
Target Altitude	Заданная высота
Attitude indicator	Авиагоризонт (индикатор пространственного положения)

Target Attitude Marker	Маркер заданной высоты
Current Altitude	Текущая высота
Vertical Altitude tape	Вертикальная лента высоты
Target Speed marker	Маркер заданной скорости
Compass rose	Шкала компаса (компасная роза)
Speed conversion reference	Обозначение скорости по Маху
Vertical speed gauge	Вариометр

**Ex.6.5.** Listen and read about some aircraft instruments. What are they designed for?



Aircraft instruments are devices for obtaining information about the aircraft and its environment and for presenting that information to the pilot. Their purpose is to detect measure, record, process and analyze the variables encountered in flying. They are mainly electrical, electronic, navigation or gyroscopic instruments.



**Ex.6.6.** *Work in groups. Skim the text and title the passages.***1.**

A mode control panel, usually a long narrow panel located centrally in front and of the pilot, may be used to control heading, speed, altitude, vertical speed, vertical navigation and lateral navigation. It may also be used to engage or disengage both the autopilot and the auto throttle. The panel as an area is usually referred to as the "glare shield panel." MCP is a Boeing designation (that has been informally adopted as a generic name for the unit/panel) for a unit that allows the selection and parameter setting of the different auto flight functions, the same unit on an Airbus aircraft is referred to as the FCU (Flight Control unit).

**2.**

A primary flight display or PFD is a modern aircraft instrument dedicated to flight information. It is usually located in a prominent position, either centrally or on either side of the cockpit. Much like multi-function displays, primary flight displays are built around an LCD or CRT display device. It includes a digitized presentation of the attitude indicator, air speed and altitude indicators (usually as a tape display) and the vertical speed indicator. It comprises some form of heading indicator and ILS/VOR deviation indicators. Therefore, representations of older six pack or "steam gauge" instruments are combined on one compact display, simplifying pilot workflow and streamlining cockpit layouts.

**3.**

A navigation display, which may be adjacent to the PFD, shows the current route and information on the next waypoint, current wind speed and wind direction. It may be pilot selectable to swap with the PFD.



**4.**

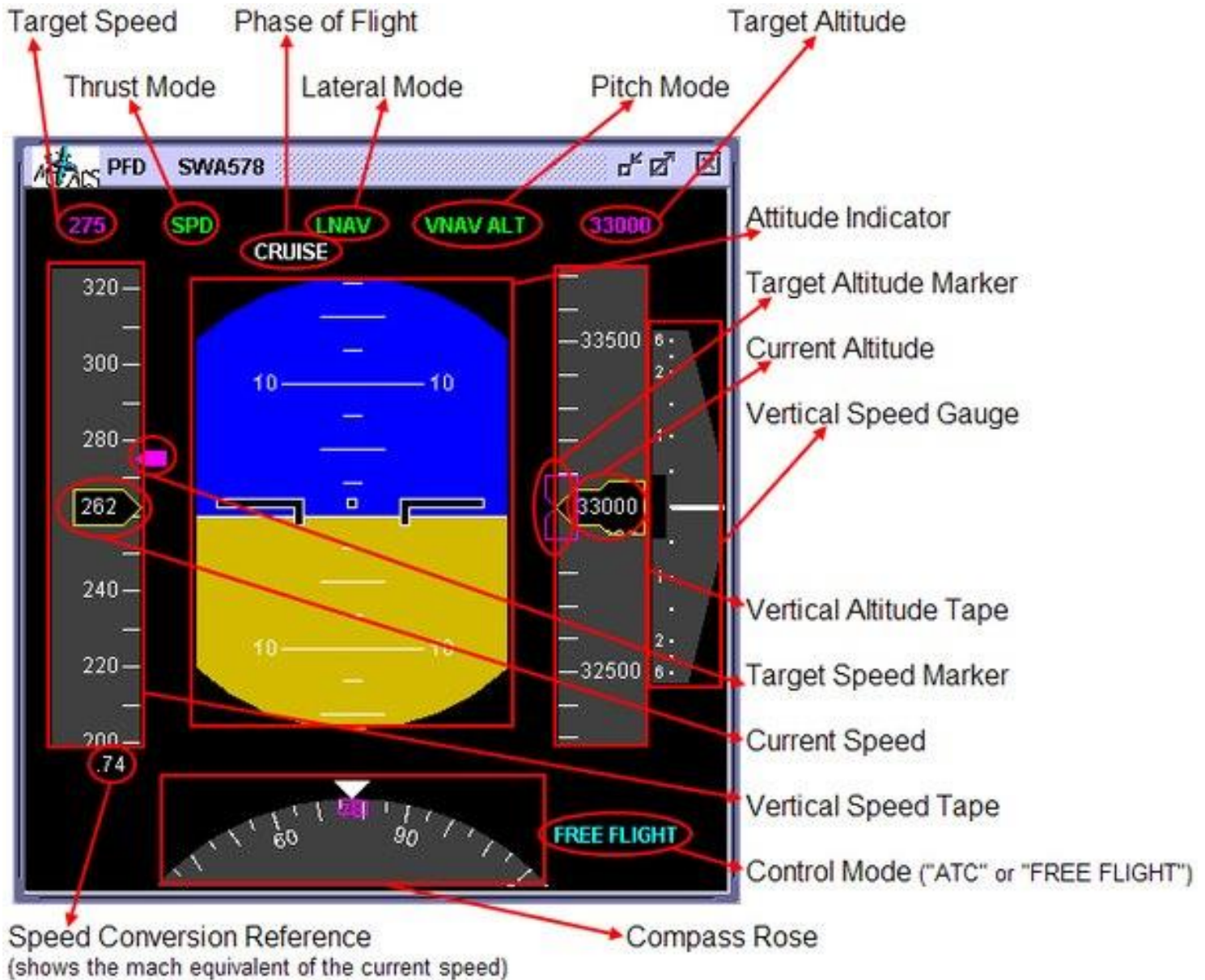
The Engine Indication and Crew Alerting System (used for Boeing) or Electronic Centralized Aircraft Monitor (for Airbus) will allow the pilot to monitor the following information: values for N1, N2, fuel temperature, fuel flow, the electrical system, cockpit or cabin temperature and pressure, control surfaces and so on. The pilot may select display of information by means of button press.

**5.**

Modern aircraft are equipped with the computers (Flight Management System), which coordinate speed, or flight level of the aircraft and its whereabouts, as well as the behavior of all aircraft systems. The flight management system /control unit allows pilot to enter and check following information : flight plan, speed control, navigation control, and so on.

**Ex.6.7.** Match the verbs with their synonyms.

<b>1</b>	obtain	<b>a</b>	calculate
<b>2</b>	present	<b>b</b>	evaluate
<b>3</b>	detect	<b>c</b>	handle
<b>4</b>	measure	<b>d</b>	disconnect
<b>5</b>	record	<b>e</b>	find
<b>6</b>	process	<b>f</b>	examine
<b>7</b>	analyze	<b>g</b>	choose
<b>8</b>	control	<b>h</b>	acquire
<b>9</b>	engage	<b>i</b>	harmonize
<b>10</b>	disengage	<b>j</b>	manage
<b>11</b>	select	<b>k</b>	show
<b>12</b>	coordinate	<b>l</b>	register
<b>13</b>	check	<b>m</b>	connect



**Ex6.8.** Match the instruments with their functions.

1	MCP	a	showing the current route and information on the next waypoint, current wind speed and wind direction
2	PFD	b	showing fuel temperature, fuel flow, as well as the electrical system, cockpit or cabin temperature and pressure
3	ND	c	controlling heading, speed, altitude, vertical speed, vertical navigation and lateral navigation; engaging or disengaging both the autopilot and the auto throttle
4	EICAS/ECAM	d	entering and checking data on the flight plan, speed control, navigation control, and so on
5	FMS	e	showing attitude, air speed, altitude, vertical speed, heading, and ILS/VOR deviation

**Ex.6.9.** Read the passages in more detail and complete the table below.

Device (unit )	Purpose (to V )

**Ex. 6.10.** Read the answers to some questions with a partner and discuss what you think the questions could be?

Q.\_\_\_\_\_?

A. To detect measure, record, process and analyze the variables encountered in flying.

Q.\_\_\_\_\_?

A. It stands for Mode control panel.

Q.\_\_\_\_\_?

A. It allows the selection and parameter setting of the different auto flight functions.

Q.\_\_\_\_\_?

A. In a prominent position, either centrally or on either side of the cockpit.

Q.\_\_\_\_\_?

A. Simplifies pilot workflow and streamlines cockpit layouts.

Q.\_\_\_\_\_?

A.The current route and information on the next waypoint, current wind speed and wind direction.

Q.\_\_\_\_\_?

A. By means of button press.

Q.\_\_\_\_\_?

A. No, they aren't .They are equipped with the computers

**Ex. 6.11.** Complete the table using the information from the article.

<b>Display name</b>	<i>ND</i>			
<b>What does the abbreviation stand for?</b>	<i>Navigation display</i>			
<b>What does each screen show to pilot?</b>	<i>waypoint, current wind speed and wind direction</i>			

**Ex.6.12.** Talk with a partner. Describe the cockpit in the picture. Take turns to describe what you can see.



**Ex. 6.13.** *.Discuss the questions with a partner:*

1. What is the cockpit?
2. What type of instruments does the cockpit of an aircraft contain?
3. Why does a door from the passenger compartment separate the cockpit?
4. What does the glass cockpit feature?
5. What is the difference between a glass cockpit and a traditional one?
6. Why did the glass cockpit become popular?
7. What are the aircraft instruments?
8. What are they used for?
9. What is MCP used for?
10. What does EICAS stand for?
11. What is its function?
12. What is the function of FMS?

## 7. Aircraft systems

**Ex.7.1.** *Listen and read about Aircraft systems and complete the table below. You can use your background knowledge.*

The main aircraft systems are Engine Control and Indication Systems; Fuel and Oil Systems; Hydraulic system; Environmental system including Pressurization System, Air-Conditioning System, Electrical System, Auto flight system, Equipment Cooling System; Ice and Rain protection system, Navigation system, Emergency System. Besides there is Fuel System itself apart of engines for the aircraft fuelling, fuel storage and distribution.

The major avionic systems fitted to a modern passenger aircraft are

- Aircraft Communication Addressing and Reporting System (ACARS)
- Electronic Centralized Aircraft Monitoring (ECAM)
- Electronic Flight Instrument System (EFIS)
- Engine Indication and Crew Alerting System (EICAS)

- Fly by Wire (FBW)
- Flight Management System (FMS)
- Global Positioning System (GPS)
- Inertial Reference System (IRS)
- Inertial Navigation System (INS)
- Traffic Alert Collision Avoidance System (TCAS)

System	Function

**Ex. 7.2** Put the main aircraft systems in the order they are mentioned in the recording.

Environmental Systems

Equipment Cooling System

Hydraulic System

Indication Systems

Navigation and Avionics Systems

Engine Control

Air-Conditioning System

Fuel and Oil Systems

Pressurization System



**Ex. 7.3.** Work with a partner. Check you know what the abbreviation stands for.

***TCAS, FMS, FBW, GPS, IRS, ACARS, ECAM, INS, EICAS.***

**Ex.7.3.** Discuss the questions with a partner.

1. What systems are there on board an aircraft?
2. What are the airborne computers responsible for?



## 8. Principle of flight

**Ex.8.1.** Listen and read the article about the principle of flight. What does this principle involve?

What makes flight possible? The physics involves what is known as *lift, thrust, drag and weight*.

Thrust, drag, lift, and weight are forces that act upon all aircraft in flight. Understanding how these forces work and knowing how to control them with the use of power and flight controls are essential to flight.

The aircraft wings provide the necessary lift. Air passes over and under the wings. Passing over the top surface of the wing, air must travel a greater distance and speeds up. The increase in speed creates an area of low pressure over the wings and over the aircraft, while a zone of higher pressure is created under the wings. It is the low pressure area which pulls the aircraft upward. Drag is caused by friction as air passes over and around the aircraft structure. Thrust is provided by the engines and propels the aircraft forward.

**Ex.8.2.** Fill in the following information about flight using the language contained in the above passage. See the pattern: (What makes it happen? What is responsible for? What causes...? What makes .....possible?)

What ----- possible?

It is ..... which causes lift.

It is ..... which causes drag.

Thrust .....by the aircraft's engines and the force which .....

**Ex.8.2.** Match the two halves of the sentences.

1	The aircraft wings provide	<b>a</b>	an area of low pressure over the wings and over the aircraft.
2	Passing over the top surface of the wing, air must travel	<b>b</b>	the aircraft upward.

3	The increase in speed creates	<b>c</b>	friction as air passes over and around the aircraft structure.
4	A zone of higher pressure is created	<b>d</b>	the necessary lift.
5	The low pressure area pulls	<b>e</b>	the engines and propels the aircraft forward.
6	Drag is caused by	<b>f</b>	under the wings.
7	Thrust is provided by	<b>g</b>	a greater distance and speeds up.

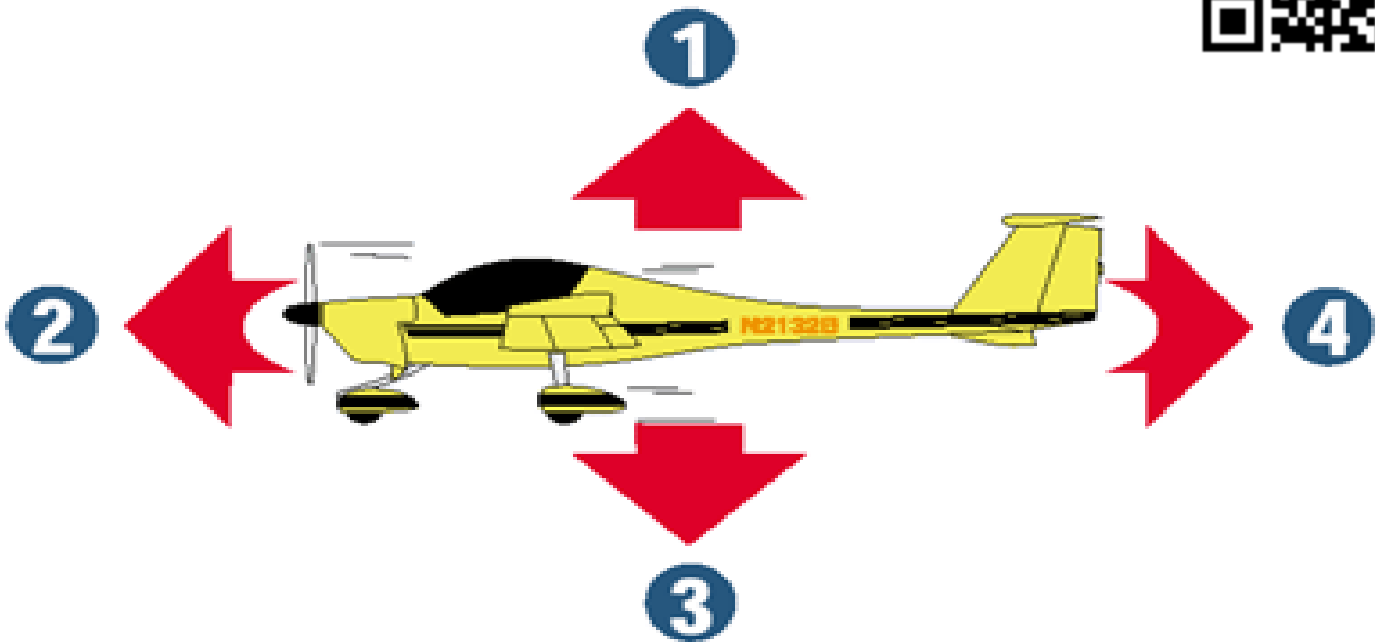
**Ex.8.4.** Match the definition with the term.

<b>Drag</b>	the combined load of the aircraft itself, the crew, the fuel, and the cargo or baggage. It pulls the aircraft downward because of the force of gravity. It opposes lift, and acts vertically downward through the aircraft's center of gravity (CG).
<b>Weight</b>	the forward force produced by the power plant/ propeller or rotor. It opposes or overcomes the force of drag.
<b>Lift</b>	a rearward, retarding force caused by disruption of airflow by the wing, rotor, fuselage, and other protruding objects. It opposes thrust, and acts rearward parallel to the relative wind.
<b>Thrust</b>	It opposes the downward force of weight; it is produced by the dynamic effect of the air acting on the airfoil.

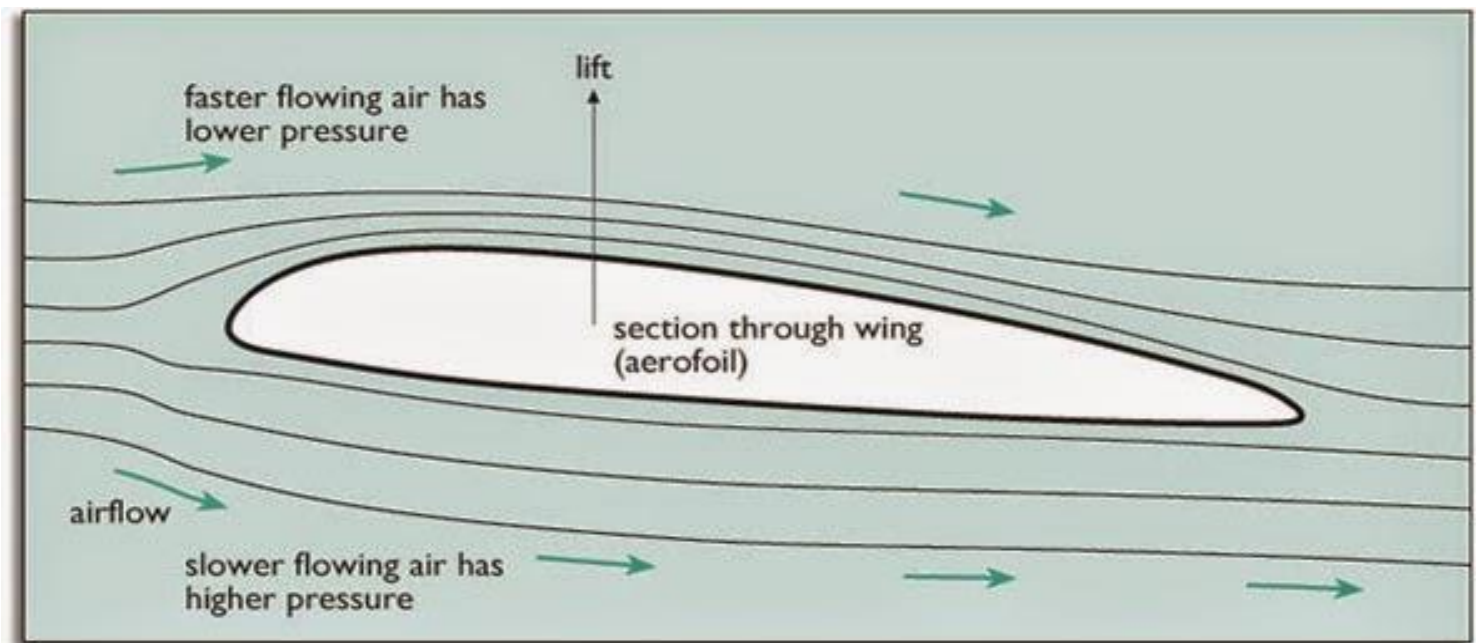




**Ex.8.5.** Label the picture below.



**Ex.8.6.** Work with a partner. Make turns to talk about the principle flight.



## UNIT III

### THE EFFECTS OF THE WEATHER ON AVIATION

1. Whatever the weather.
2. Weather hazards in aviation.
3. Weather information and aviation reports.

#### 1. Whatever the weather.

**Ex. 1.1.** Study the definition of «weather»:

**Weather** - conditions of atmospheric temperature, pressure, wind, moisture, cloudiness, precipitation and visibility affecting a specific place.

**Ex.1.2.** Learn the new words and practice the pronunciation.

English	Pronunciation	Russian
<b>precipitation</b> Syn. rainfall	[prɪsɪpɪ'teɪʃn]	осадки
<b>drizzle, n</b> <b>to drizzle, v</b> It is drizzling	['drɪzl]	мелкий дождь, моросить (о мелком дожде).  Моросит.
<b>haze</b> Ant: thick / dense fog	[heɪz]	лёгкий туман, дымка
<b>wet</b>	[wet]	мокрый, влажный;
<b>flooded</b>	[flʌdɪd]	затопленный; наводнённый
<b>fog</b> <b>dense / heavy / thick fog</b> <b>light fog</b> <b>shallow fog</b> Fog clears / lets up / lifts.	[fɒɡ]	туман  густой туман  лёгкий туман приземистый туман  Туман рассеивается.

<b>mist</b>	[mɪst]	(лёгкий) туман; дымка; мгла; пасмурность
<b>sleet, n</b>  <b>to sleet, v</b> <b>It is sleeting.</b>	[sli:t]	дождь со снегом; мокрый снег; ледяной дождь; крупа, гололёд  идти (о дожде со снегом) Идёт мокрый снег.
<b>slush</b>	[slʌʃ]	грязь, слякоть; жижа; снеговая каша;
<b>thunderstorm</b> <b>Syn: storm , disaster</b>	['θʌndəstɔ:m]	гроза
<b>lightning</b> <b>Lightning flashes</b> <b>Lightning strikes</b> <b>lightning strike</b>	['laɪtnɪŋ]	молния  Молния сверкает Молния ударяет удар молнии
<b>hurricane</b> <b>severe / violent hurricane</b> <b>the eye of a hurricane</b>	['hʌrɪkən ] [-keɪn]	ураган; тропический циклон  сильный ураган  центр урагана
<b>hail</b>	[heɪl]	град
<b>snow</b> <b>blanket of snow</b> <b>snowfalls</b> <b>snow melts</b>	[snəʊ]	снег снежный покров  снег идёт снег тает
<b>line squall</b>	[laɪn][skwɔ:l]	фронтальный шквал
<b>gust/</b> <b>strong gusts</b> <b>Syn: blast , blow</b>	[gʌst]	порыв (ветра)  сильные порывы
<b>gale</b>  <b>heavy / severe / strong gale</b> <b>sudden gale</b> <b>gale warning</b>	[geɪl]	шторм; буря; ветер от 7 до 10 баллов (порыв, движущийся со скоростью от 51 до 100 километров в час)  сильная буря  внезапный порыв ветра

		штормовое предупреждение
<b>damp</b>	[dæmp]	влажный, сырой
<b>shower</b>	[ˈʃaʊə]	ливень, ливневый дождь
<b>moist</b> Syn: humid, damp, slightly wet <b>moist summer</b>	[mɔɪst]	сырой; влажный, мокрый  Syn: humid, damp, slightly wet  дождливое лето
<b>moisture</b> Syn: humidity	[ˈmɔɪstʃə]	влажность, сырость; влага,  мокрота
<b>microburst</b> Syn: downburst	[ˈmaɪkrəʊˌbɜːst]	(грозовой) микровзрыв, мощный нисходящий поток воздуха; по достижении поверхности земли распространяется в разные стороны, вызывая резкое изменение скорости ветра)
<b>windshear</b>	[ˈwɪndˌʃiə]	сдвиг ветра

**Ex.1.2.** Learn the adjectives to describe weather. Work in pairs and divide the adjectives into groups: positive, negative, neutral. Use the dictionary if necessary.

**Weather may be:**

*Fine, marvelous, lovely, glorious, bright, bad, awful, nasty, dull, misty, foggy, damp, or moist, dry, frosty, stormy, windy, variable, flying, non-flying, forecasted, expected.*

**Ex.1.3.** Choose proper adjectives from the list to describe today's / yesterday's weather.

Use the example:

- B. What is the weather like today?  
 C. It's .....and .....  
 A. What was the weather like yesterday?  
 B. It was ..... but.....





**Ex.1.4.** *Make a list of weather phenomena and precipitation.*

## 2. Weather hazards in aviation

**Ex.2.1.** *Learn the new words and practice the pronunciation.*

English	Pronunciation	Russian
<b>to encounter with</b> <b>Syn.: to face with</b>	[ɪn 'kaʊntə]	ссталкиваться, столкнуться ч-л
<b>glazed</b>	[gleɪzd]	остекленный
<b>major</b> <b>Syn: chief , main</b>	['meɪdʒə]	более важный, значительный
<b>to circumnavigate smth</b>	[sɜ:kəm 'nævɪgeɪt]	обходить, обогнуть
<b>thunderstorm</b> <b>Syn: storm , disaster</b>	['θʌndəstɔ:m]	гроза
<b>hazard</b> <b>hazard (warning) lights</b> <b>to take hazards</b> <b>to be at / in hazard</b> <b>Syn: risk , danger</b>	['hæzəd]	риск, опасность аварийная сигнализация идти на риск быть под ударом, под угрозой риском.
<b>hazardous weather conditions</b>	['hæzədəs]	особо опасные явления погоды
<b>to avoid smth</b> <b>Syn: escape</b>	[ə'vɔɪd]:	избегать, остерегаться, Syn.: escape ,
<b>temperature</b>	['temp(ə)rətʃə]	температура

**Ex.2.2** Read the article and fill in the gaps with the proper word combination

<i>to fly</i>	<i>local</i>	<i>aircraft's landing gear</i>	<i>experience</i>
<i>wet</i>	<i>aviators</i>	<i>hazardous</i>	<i>ineffective</i>
<i>weather condition</i>		<i>icing</i>	<i>landings</i>
		<i>in flight</i>	
		<i>long distances</i>	
		<i>have occurred</i>	

If the sky is clear of clouds, if the winds are calm, if the air is cool and if there is no haze, the weather is Ceiling and Visibility OK. It is time \_\_\_\_\_! This is a rare condition of the atmosphere even in a \_\_\_\_\_ area. Much of the time when \_\_\_\_\_ fly, they encounter some type of weather condition that could be \_\_\_\_\_ to their flight, especially if they fly \_\_\_\_\_.

What are these weather hazards to aviation?

Basically, they include any \_\_\_\_\_ that produces an in-flight reduction of visibility, turbulence for the aircraft in flight, \_\_\_\_\_ on the aircraft itself or within its power plant while \_\_\_\_\_. An airplane moving on the ground can also \_\_\_\_\_ weather problems. \_\_\_\_\_ runways can cause an airplane's tires to hydroplane (slide on a film of water), making braking \_\_\_\_\_ and causing skidding. Wet runways can affect both takeoffs and \_\_\_\_\_. Similar incidents or accidents \_\_\_\_\_ when a runway was glazed with ice or covered in snow too deep for \_\_\_\_\_ to work properly.

**EX. 2.3.** Match the words with their definitions.

<b>1</b>	crosswind	<b>a</b>	low visibility (2-5 km) caused by water droplets suspended in the air
<b>2</b>	mist	<b>b</b>	a difference in wind speed and/or direction over a relatively short distance in the atmosphere
<b>3</b>	slush	<b>c</b>	water that falls from the clouds towards the ground, especially as rain or snow
<b>4</b>	wind shear	<b>d</b>	low visibility (less than 1 km) caused by water droplets

			suspended in the air
<b>5</b>	haze	<b>e</b>	the cloud of black, gray, or white gases and dust that is produced by burning something
<b>6</b>	precipitation	<b>f</b>	a wind blowing from directly in front, opposing forward motion
<b>7</b>	thunderstorm	<b>g</b>	frozen or partly frozen rain
<b>8</b>	smoke	<b>h</b>	a wind blowing across one's direction of travel
<b>9</b>	visibility	<b>i</b>	the boundary of an advancing mass of cold air
<b>10</b>	headwind	<b>j</b>	partly melted snow
<b>11</b>	fog	<b>k</b>	a wind blowing in the direction of travel of an aircraft
<b>12</b>	sleet	<b>l</b>	low visibility (1-2 km) caused by water droplets suspended in the air
<b>13</b>	tailwind	<b>m</b>	a storm with thunder and lightning and typically also heavy rain or hail
<b>14</b>	cold front	<b>n</b>	the distance one can see as determined by light and weather conditions

**Ex.2.4** *What are some examples of aviation hazards? Work in small groups and write down as many example as you can.*

\_\_\_\_\_

**Ex.2.5.** *Skim the text and title the passages.*

### 3.

A major weather problem is thunderstorm, which presents a variety of hazards to aircraft. Thunderstorm is a violent weather condition in which wind speed increases, rain or hail falls and there is lightning activity. It is attended by some form of precipitation and can cause trouble for aircraft in the form of turbulence, icing and poor visibility. The more severe thunderstorms produce hail and, in some cases, tornadoes. The thunderstorm is local in nature and is always produced by the growth of a cumulus cloud into a

cumulonimbus cloud.

A thunderstorm may be defined as any storm accompanied by thunder and lightning. Lightning is the flash of light produced by electrical discharges in a thunderstorm area.

Thunder is the sound sent out by rapidly

expanding gases along the lightning's trail. Lightning strikes can occur as a result of having to fly in that area. Damage to the airframe, instruments, radio communications and even pilot's vision may occur. Circumnavigating thunderstorm areas is the best way of avoiding this hazard.

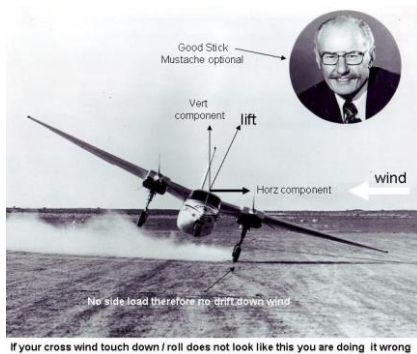


#### 4.

A pilot needs to know wind direction and speed as wind might affect flight negatively. En

route, the is to be great

results in cross wind especially



headwind may delay the arrival of flights and avoided if possible. The tailwind can be of a advantage as it increases the ground speed and reduction of fuel consumption. As for the it is extremely dangerous for an aircraft, on landing. An aircraft loses speed and might

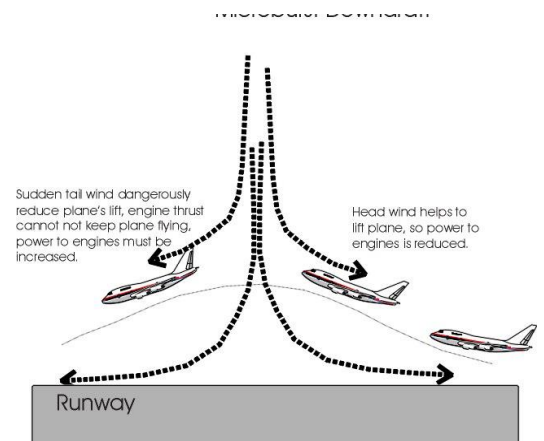
not get on the RW. What is more, it can cause a crash of the aircraft. A wind does not to be strong to become a hazardous condition. For example, a light tail wind that the pilot may have not noticed can significantly increase the required takeoff and landing distance and this can be problematic for heavy aircraft with limited runway length.

#### 5.

Wind shear is a sudden and unexpected change in wind speed and direction has contributed to many emergencies and accidents, especially when planes are close to the ground. Wind shear presents a serious danger as it is invisible and it might cause the aircraft to stall or undershoot the RW. Wind shear itself is a meteorological phenomenon occurring over a very small distance, but it can be associated with line squalls and cold



fronts. What is more, the additional hazard of turbulence is often associated with wind shear. Wind shear is also a danger for an aircraft making steep turns near the ground. The different airspeed experienced by each wing tip can result in an aerodynamic stall on one wing, causing a loss of control. Pilots can increase safety for the other aircraft by reporting conditions of wind shear on the approach to Air Traffic Control.



During the flight, the pilot can see and avoid many hazardous weather phenomena. By circumnavigating hurricanes, thunderstorms and areas of severe turbulence, the flight may proceed smoothly. Fortunately, the cruising altitudes of modern jet aircraft place the aircraft above the level of many weather conditions for the cruise portion of flight. However, there is one meteorological hazard known as clear air turbulence (CAT) that occurs at cruise altitudes and which is difficult to detect. It is often encountered in areas where there is jet stream activity. The turbulence, or wake turbulence, created by aircraft is a form of CAT, but all aviators know that it exists if they see the airplane that creates it. Wake turbulence has become more and more of a concern to light-aircraft pilots because it grows more severe as larger aircraft are built and flown. It results when air spills over and around the airframe and wingtips of an airplane.

There is some wake turbulence associated with all aircraft even the lightest ones. It is not dangerous until the aircraft creating it are large enough and heavy enough to produce sizable and strong swirling air currents called wingtip vortices.

Flight crewmembers should keep their seat harnesses on at all times. Passengers are also advised to keep seatbelts on when seated. The people on board most likely to have serious injury from CAT are cabin crew, who remain unstrained during most of the flight.

## 6.

The aircraft has to cover a long distance in the aerodrome surface before it finally becomes airborne. Snow, slush and ice, particularly combined with strong wind and heavy rain may present difficulties in maintaining control when taxiing, taking off and landing the aircraft. Snow, slush and ice on the ground may hide the edges of the taxiways and runways, making it much more difficult to keep the aircraft on the correct path. Standing water can seriously affect takeoff and landing. During takeoff, a flooded runway can have resistance to acceleration as if the aircraft had one engine in full reverse thrust. Failure to break through the water surface can result the aircraft aquaplaning off the side of the runway.

## 7.

Icing is a definite weather hazard to aircraft. The runway covered with even a thin amount of ice or frost can cause loss of directional and braking control. In takeoff and in flight, the threat of ice hazard is increased. It can greatly reduce lifting power and result in some problems during takeoff.



Winter brings on icing conditions; however, ice is present, or potentially present, somewhere in the atmosphere at all times no matter what the season. What is critical is the altitude of the freezing level, which may be around 15,000 feet during summer and perhaps as low as 1,000 feet above ground level (AGL) on warm winter days. Changeable temperature (from 0° to -10°) might cause icing of an aircraft and the RW. Icing and icy conditions often lead to airline accidents. Icing of wings is a common problem for an aircraft. If ice builds up during flight, it can lead to disastrous consequences. Correct precautions must be taken to ensure that a parked aircraft is safe and ready for flight. Deposits on the wings and airframe can affect the weight of the aircraft, the center of gravity and the freedom of movements of control

surfaces. They can also severe damage to the engine, that is why aircraft are de-iced before takeoff. Modern planes are designed to prevent ice buildup on wings, engines and tail. The larger, more complex aircraft are equipped to break or melt ice as it is formed. What is more, pilots can have special ice detectors in order to avoid icy areas. With the assistance of weather and flight service specialists during the flight planning stage, all pilots should be able to avoid flight through areas where icing is likely.

## 8.

Visibility is the distance at which an object or light can be clearly seen. It is important for all forms of traffic, especially for aviation. Visibility is often reduced by air pollution and high humidity. It may be reduced to zero if an airplane is flying within a cloud. Fog and smoke can reduce visibility to near zero, making flights extremely dangerous. The international definition of fog is visibility of less than 1 km; mist is visibility of between 1 and 2 km and haze from 2 to 5 km. Visibility of less than 100 meters or  $\frac{1}{16}$ <sup>th</sup> of a mile is usually reported as zero. Different types of fog pose a hazard to all aviation activities, and this includes up-to-date military and civilian aircraft if you cannot see the landing area or runway, it is not safe to land. Rain, especially intense rain, can reduce visibility to the hazard level. Heavy rain causes not only low visibility, but also the inability to brake quickly and the possibilities for landing accidents are increased. Fog, haze, smoke, dust, heavy rain and low cloud are all approach and landing hazard. Under these conditions, airports might be closed. If visibility or ceiling is below required landing minima, a controller does not clear a pilot to descend from transition level and gives instructions to go around. A captain may decide to divert to the alternate.



**Ex. 2.6.** *Fill in the blanks with the proper words*

- a) A thunderstorm may be defined as any storm accompanied by \_\_\_\_\_ and \_\_\_\_\_.
- b) \_\_\_\_\_ thunderstorm areas is the best way of avoiding this hazard.
- c) The tailwind can be of a great advantage as it increases the \_\_\_\_\_ speed and results in reduction of fuel \_\_\_\_\_ .
- d) \_\_\_\_\_ is also a danger for an aircraft making steep turns near the ground.
- e) The turbulence, or wake turbulence, created by aircraft is a form of \_\_\_\_\_, but all \_\_\_\_\_ know that it exists if they \_\_\_\_\_ the airplane that creates it.
- a) During takeoff, a \_\_\_\_\_ runway can have resistance to \_\_\_\_\_ as if the aircraft had one engine in full reverse thrust.
- b) Deposits on the wings and \_\_\_\_\_ can affect the weight of the aircraft, the center of gravity and the \_\_\_\_\_ of movements of \_\_\_\_\_.
- c) Heavy rain causes not only \_\_\_\_\_, but also the inability to \_\_\_\_\_ quickly and the possibilities for landing \_\_\_\_\_ are increased.

**Ex. 2.7.** *Work with a partner. Read the answers to some questions and discuss what you think the questions could be?*

Q. \_\_\_\_\_?

A. Thunderstorm

Q. \_\_\_\_\_?

A. It can cause trouble for aircraft in the form of turbulence, icing and poor visibility

Q. \_\_\_\_\_?

A. By the growth of a cumulus cloud into a cumulonimbus cloud.

Q. \_\_\_\_\_?

A. Damage to the airframe, instruments, radio communications and even pilot's vision may occur.

Q. \_\_\_\_\_?

A. The flash of light produced by electrical discharges in a thunderstorm area.

Q. \_\_\_\_\_?

A. Circumnavigating thunderstorm areas.

**Ex. 2.6.** Using the information about other weather hazards, continue pair work to make an interview.

I.
Q. _____?
A.
Q. _____?
A.
Q. _____?
A.
Q. _____?



**Ex.2.7.** Match the halves of the sentences:

1. Before departure a pilot obtains	a) it is invisible and it might cause the aircraft to stall .
2. Thunderstorm	b) a weather forecast giving him the weather conditions .
3. Windshear presents a serious danger as	c) a violent weather condition in which wind speed increases, rain or hail falls and there is lightning activity.
4. Freezing rain might cause	d) icing of an aircraft and RW surface.
5. The tailwind increases	e) the ground speed and results in reduction of fuel consumption.
6. If visibility or ceiling is below minima	f) often lead to airline accidents.
7. CAT occurs	g) at cruise altitudes and which is difficult to detect.
8. Icing and icy conditions	h) a controller does not clear a pilot to descend from transition level and gives instructions to go around.

**Ex.2.8.** Study the following information. Choose the correct word in the following sentences. Translate the sentences into Russian.

*The verb "to advise"-сообщать, информировать and the noun "the advice"совет, сообщение often cause some confusion. Similarly the verb "to affect /smb smth" – влиять, воздействовать на что либо /кого либо and the noun "the effect" -эффект, воздействие. (to have effect on smb/smth)*

- a.) Forecasters can *advise*/*advise* pilots of the weather conditions.  
\_\_\_\_\_
- b.) What *advise*/*advise* do pilots receive from forecasters?  
\_\_\_\_\_
- c.) What *affect*/*effect* could a low pressure area have on an area hundreds of miles away?  
\_\_\_\_\_
- d.) Does a low pressure area *affect*/*effect* an area hundreds of miles away?  
\_\_\_\_\_
- e.) Snowstorms *affect*/*effect* aerodromes to the extent that all planes are grounded.  
\_\_\_\_\_
- f.) What are the *affects*/*effects* of snowstorms on aerodromes?  
\_\_\_\_\_
- g.) What *affect*/*effect* did the turbulence have on the passengers?  
\_\_\_\_\_
- h.) Did the turbulence *effect*/*affect* the passengers?  
\_\_\_\_\_
- i.) Will you *advise*/*advise* me of the precipitation in that area?  
\_\_\_\_\_
- j.) I must receive *advise*/*advise* of the precipitation in that area.  
\_\_\_\_\_
- k.) The *affects*/*effects* of metal fatigue on aircraft can be very dangerous.  
\_\_\_\_\_
- l.) Metal fatigue *effects*/*affects* aircraft and can be very dangerous.  
\_\_\_\_\_

### 3. Weather information and aviation reports

**Ex.3.1.** Learn the new words and practice the pronunciation.

<i>English</i>	<i>Pronunciation</i>	<i>Russian</i>
<b>accurate</b> <b>accurate description</b> <b>Syn: correct, exact, precise</b>	[ˈækjərət]	верный,            правильный, точный точное описание
<b>forecast</b> <b>long-range forecast</b> <b>make a forecast</b>	[ˈfɔ:kɑ:st]	предсказание; прогноз,  долгосрочный прогноз прогнозировать
<b>weather forecast</b>		прогноз погоды
<b>to give the weather forecast</b>		передавать прогноз погоды
<b>essential</b>  <b>Syn: basic , necessary</b>	[ɪˈsen(t)ʃ(ə)l]	важнейший; необходимый; основной
<b>to obtain smth</b> <b>Syn: to get , to receive</b>	[əbˈteɪn]	получать; приобретать ч-л
<b>meteorologist</b>	[ˌmi:tɪ(ə)ˈrɒlədʒɪst]	метеоролог Syn: weatherman
<b>to provide smb with smth</b>	[prəˈvaɪd]	доставлять; обеспечивать (кого-л. /чем-л
<b>direction</b> <b>opposite direction</b>	[dɪˈrekʃ(ə)n ], [daɪ-]	направление  противоположное направление

<b>visibility</b> All planes were grounded because of poor visibility.	[ˌvɪzəˈbɪlətɪ]	видимость Всем самолётам было приказано идти на посадку ввиду плохой видимости
<b>cloud base (cover)</b> Syn. ceiling		нижняя граница (основание) облаков
<b>major</b> Syn: chief , main	[ˈmeɪdʒə]	более важный, значительный
<b>thunderstorm</b> Syn: storm , disaster	[ˈθʌndəstɔ:m]	гроза
<b>hazard</b> hazard (warning) lights to take hazards to be at / in hazard The job was full of hazards Syn: risk , danger	[ˈhæzəd]	риск, опасность аварийная сигнализация идти на риск быть под ударом, под угрозой Работа была сопряжена с большим риском.
<b>hazardous weather conditions</b>	[ˈhæzədəs]	особо опасные явления погоды
<b>to avoid smth</b> Syn: escape	[əˈvɔɪd]:	избегать, остерегаться, Syn: , escape ,
<b>temperature</b>	[ˈtemp(ə)rətʃə]	температура
<b>wind shear</b>	[ˈwɪnd,ʃiə]	сдвиг ветра
<b>outage</b>		остановка в работе, перерыв





**Ex.3.2.** Form as many words as possible from the following verbs:

- to inform
- to expect
- to provide
- to transmit
- to measure
- to observe
- to decide
- to predict



**Ex. 3.3.** Listen to the recording and fill in the blanks with the proper word combination:

<i>dangerous</i>	<i>essential</i>	<i>safety</i>	<i>observation</i>	<i>obtains</i>
<i>carefully</i>	<i>pilots</i>	<i>weather forecasts</i>	<i>current information</i>	
<i>destination</i>	<i>prediction</i>	<i>expected</i>		

Changing weather conditions can turn a routine flight into a potentially difficult or \_\_\_\_\_ situation. Accurate \_\_\_\_\_ are essential to aviation. As weather conditions affect the flight \_\_\_\_\_, meteorologists provide pilots and air traffic controllers with special aviation forecasts. Before departure, the pilot \_\_\_\_\_ a weather forecast giving him the weather conditions that are \_\_\_\_\_

\_\_\_\_\_ along the route of the flight and at the \_\_\_\_\_. Pilots must \_\_\_\_\_ monitor weather conditions not only at the airport are departing from, but also en route and at their destination.

Aviation weather forecast is \_\_\_\_\_ of what the weather is likely to be for a given route, area or aerodrome. A meteorological report is \_\_\_\_\_ of the actual weather at a specific time, either present or past. Each report provides \_\_\_\_\_ that is updated at different times. Some typical reports are METARs and PIREPs.

**Ex. 3.4.** *Work with a partner. Read the answers to some questions and discuss what you think the questions could be?*

Q. \_\_\_\_\_?

A. Changing weather conditions

Q. \_\_\_\_\_?

A. Because weather conditions affect the flight safety.

Q. \_\_\_\_\_?

A. Meteorologists do.

Q. \_\_\_\_\_?

A. At the airport of departure, en route and at the destination.

Q. \_\_\_\_\_?

A. Yes, it does.

Q. \_\_\_\_\_?

A. METARs and PIREPs.

**Ex.3.5.** *Fill in the text with proper words from the box below:*

<i>information</i>	<i>radio traffic</i>	<i>immediately</i>	<i>pre-flight</i>	<i>workload</i>	<i>broadcasts</i>
<i>contacting</i>	<i>monitor</i>	<i>is assigned</i>	<i>an identifier</i>	<i>alphabetical</i>	

During \_\_\_\_\_, pilots at larger airports \_\_\_\_\_ Automatic Terminal Information Service (ATIS) \_\_\_\_\_. Pilots listen to ATIS broadcasts before \_\_\_\_\_ control. This helps to reduce controllers' \_\_\_\_\_ and keeps \_\_\_\_\_ to a minimum. Each ATIS broadcast has \_\_\_\_\_ letter that is given at the end. Whenever an updated broadcast is made, a new identifier \_\_\_\_\_ in \_\_\_\_\_ order it allows control to know \_\_\_\_\_ whether a pilot has the very latest \_\_\_\_\_.

**Ex.3.6.** *Listen to the recording and answer the following questions.*

1. What information do ATIS broadcasts contain?
2. How are identifiers assigned to ATIS broadcasts?
3. What units are used to measure wind speed or direction?
4. What units are used to measure cloud cover?
5. What is the order in which pilots get information about weather conditions?
6. Why is it important to know the dew point?
7. What units are used to measure QFE and QNH?
8. When is the word “CAVOK” passed?
9. What does RVR stand for?

**Ex. 3.7.** *Work with a partner. Read the answers to some questions and discuss what you think the questions could be?*

Q. \_\_\_\_\_?

A. Before departure.

Q. \_\_\_\_\_?

A. With special aviation forecasts.

Q. \_\_\_\_\_?

A. To reduce controllers' workload and keeps radio traffic to a minimum.

Q. \_\_\_\_\_?

A. In knots or meters per second.

Q. \_\_\_\_\_?

## A. Runway Visual Range

Q. \_\_\_\_\_?

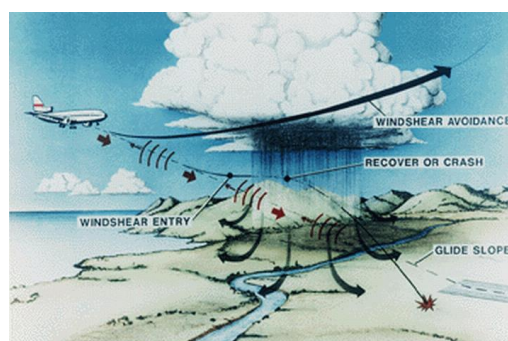
A. At touchdown, mid-point and stop end by the human observer method or by means of electronic equipment.

**Ex.3.7.** Give the synonyms to the following words. Pay attention to the prepositions:

accurate	
essential	
to affect smth	
to obtain smth	
current weather	
to include smth	
useful	
wind speed	
cloud base	
dangerous	

**Ex.3.8.** Listen and read the information below and make a list of weather reports.

Routine weather reports called METARs (“METAR”) is an abbreviation of the French words *météorologique Aviation régulière*, meaning routine aviation weather) give information about temperature, dew point, wind speed and direction, precipitation, cloud cover and heights, visibility and barometric pressure, which is crucial for accurate determining altitude. Pilots



usually report any unexpected weather phenomena, which they encounter, severe turbulence or icing, any condition they think may affect the safety of flight. Pilots en route routinely pass on weather



observations and reports of turbulence to controllers who in turn alert other pilots in the area to conditions.

**METAR** is the Aviation Routine Weather Report and is more or less standard around the world. The temperature is given in Celsius degrees. The atmospheric pressure however is reported in hectopascals everywhere, but the US where the atmospheric pressure is reported in inches of mercury. For aviation purposes the standard temperature and atmospheric pressure are 59° F (15°C) and 29.92 in. Hg (1013.2 hPa).

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KPIT 091955Z AUTO 22015G25KT 3/4SM R28L/2600FT TSRA OVC010CB
18/16 A2992 RMK SLP045 TO1820159
```

**SPECI** is an Aviation Selected Special Weather report for an aerodrome. It is generated whenever critical meteorological condition exists, e.g. windshear, microbursts. It is similar in presentation to METAR

**VOLMET** is a continuous broadcast on VHF/HF frequency that includes the actual weather reports, local forecast, a forecast trend for 2 hours following and significant weather of several aerodromes that produce meteorological reports within a given region.

**TAF** is an airport forecast. TAF is more or less standard around the world. TAF forecasts significant weather changes, temporary changes, probable changes and expected changes in weather conditions.

```
TAF KPIT 091730Z 091818 15005KT 5SM HZ FEW020
WS010/31022KT
FM1930 30015G25KT 3SM SHRA OVC015 TEMPO 2022 1/2SM
+TSRA OVC008CB
FM1015 18005KT 6SM -SHRA OVC020 BECMG 1315 P6SM NSW
SKC
```

Pilot reports (**PIREP**s) offer current weather conditions as reported by pilots who have just recently flown through an area. Pilots are encouraged to make these reports because they keep weather information updated and assist in warning pilots in preflight of potential weather hazards along their planned route. This report usually includes such information as height of cloud layers, inflight visibility, icing conditions and turbulence that sometimes confirms what is already known, but can also inform about newly developed.

**SIGMETs (WSs)** are broadcasted for hazardous weather that is considered of extreme importance to all aircraft. SIGMETs (acronym for "SIGNificant METeorological information") warn of the following weather hazards: severe icing, severe and extreme turbulence, dust storms, sandstorms or volcanic ash lowering visibility to less than 3 miles. A Convective SIGMET (WST) is issued for hazardous convective weather (such as tornadoes, thunderstorms, hail) and covers severe or great turbulence, severe icing, and low-level wind shear.

**Ex. 3.9.** Match the examples of weather forecasts and reports with their names:

a)

UA/OV GGG 090025/TM 1450/FL 060/TP C182/SK  
080 OVC/WX FV04SM RA/TA 05/WV 270030KT/TB  
LGT/RM HVY RAIN

b)

TAF  
KPIR 111130Z 1112/1212  
TEMPO 1112/1114 5SM BR  
FM1500 16015G25KT P6SM SCT040 BKN250  
FM120000 14012KT P6SM BKN080 OVC150 PROB30  
1200/1204 3SM TSRA BKN030CB  
FM120400 1408KT P6SM SCT040 OVC080  
TEMPO 1204/1208 3SM TSRA OVC030CB

c)

SFOR WS 100130  
SIGMET ROME02 VALID UNTIL 100530

OR WA  
 FROM SEA TO PDT TO EUG TO SEA  
 OCNL SEV CAT BTN FL280 AND FL350 EXPCD  
 DUE TO JTSTR.  
 CONDS BGNG AFT 0200Z CONTG BYD 0530Z .

**Ex. 3.9** Match the definitions with their meanings:

<b>meteorological report</b>	<b>a</b>	conditions that may affect the flight operation at a specific geographical area
<b>METAR</b>	<b>b</b>	observation of the actual weather at a specific time
<b>PIREP</b>	<b>c</b>	continuous broadcast on VHF/HF frequency that includes the actual weather reports
<b>VOLMET</b>	<b>d</b>	coded routine aviation weather report of an aerodrome
<b>SIGMET conditions</b>	<b>e</b>	prediction of what the weather is likely to be for a given route, area or aerodrome.
<b>weather forecast</b>	<b>f</b>	offer current weather conditions as reported by pilots who have just recently flown through an area.

**Ex.3.10.** Decode the following abbreviations and acronyms. What information do they include?

**PIREP, METAR, TAF, SIGMET, ATIS**

**Ex.3.11** Study the example of aviation information below. Can you decode it? What is it referred to?

A8211/08 NOTAMR A7573/08  
 Q) UUWV/QMAXX/IV/NBO/A/000/999/5558N03725E002  
 A) UUEE B) 0812231100 C) 0903272359  
 E) SHEREMETYEVO II CARGO AREA:  
 MANEUVERING PROCEDURE FOR B747-400 TYPE ACFT ESTABLISHED AS  
 FLW:  
 1. FOR ARRIVING ACFT: AFTER VACATING TWY 32 ACFT SHALL STOP AT  
 MARKED POINTS 1 AND 2 ON TAXIING GUIDE LINE.  
 THEN ACFT TAXIING CARRIED OUT FM POINT 1 TO STAND 1,  
 FM POINT 2 TO STAND 2 BY TOWING.  
 ACFT POSITION ON STANDS 1,2 - NOSE-IN TO MAIN TWY 2.  
 2. FOR DEPARTING ACFT:  
 ACFT TAXIING CARRIED OUT BY TOWING FM STANDS 1,2 TO POINT 4 ON  
 TWY  
 32, THEN ACFT TAXIING CARRIED OUT UNDER OWN ENGINES POWER.

**Ex. 3.12.** Compare your answer with the definition below:

**NOTAMs** are Notices to Airmen. They contain information of any aeronautical facilities, service, procedures or hazards any timely knowledge required for people concerned with flight operations: such as runway closures, obstructions in the approach and departure paths to airports, outages and operational hours of the facility.

**Ex.3.13.** Discuss the questions with a partner:

1. Where does a pilot get information about weather conditions?
2. Why is accurate weather forecast important for safe flying?
3. What is the difference between “weather forecast” and “weather report”?
4. What information does an ATIS/METAR/SIGMET/TAF message include?
5. What weather conditions are dangerous for flight? Why?
6. What unexpected phenomena can a pilot encounter in flights?
7. What is thunderstorm?





8. What types of wind do you know in aviation?
9. Is tail wind good for all stages of flight? Why? Why not?
10. What is CAT?
11. What effect does the turbulence have on the passengers?
12. How can head wind affect flying?
13. How does flight in general and especially landing depend on wind?
14. At what stages of flight does wind shear affect an aircraft most?
15. What are possible results of wind shear occurring?
16. Where can a pilot obtain information about wind shear?
17. What information about RW condition is necessary for a pilot?
18. What runway conditions may deteriorate ground movements?
19. How can runway surface conditions affect aircraft operation?
20. What runway conditions may deteriorate ground movements?
21. What might the reason for icing be?
22. At what stages of flight can icing be dangerous for flight?
23. What are possible consequences of icing?
24. What precautions can be taken to prevent ice formation?
25. Why is information about visibility important for flights?
26. How does visibility affect flights?
27. What weather phenomena influence visibility?
28. How can a controller assist a pilot in poor weather conditions?
29. What are perfect flying conditions?
30. What is NOTAM?

## UNIT IV

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### VISUAL AIDS TO NAVIGATION

1. Markings and signs
2. Airport lighting
3. PAPI



#### 1. Markings and signs

**Ex.1.1.** Learn the new words and practice the pronunciation.

<i>English</i>	<i>Pronunciation</i>	<i>Russian</i>
<b>surface marking</b>	[ 'sɜ: fɪs ] [ 'mɑ: kɪŋ ]	Аэродромная разметка
<b>solid/dashed</b>	[ 'sɒlɪd ] [ dæʃt ]	сплошной/прерывистый
<b>displayed</b>	[ dɪs'pleɪ ]	отображаемый
<b>longitudinal stripes</b>	[ ,lɒŋdʒɪ'tju: dɪn(ə)l ] [ straɪp ]	продольные полосы
<b>dimensions</b>	[ daɪ'men(t)ʃ(ə)n ]	размеры
<b>symmetrically</b>	[ sɪ'metrɪk(ə)li ]	симметрично
<b>paved taxiways</b>	[ 'peɪvd ]	мощёные(с покрытием) рулежные дорожки
<b>standardized lighting</b>	[ 'stændədaɪz ] [ 'laɪtɪŋ ]	зд. стандартное освещение
<b>to differentiate</b>	[ ,dɪf(ə)'ren(t)ʃeɪt ]	различать, проводить различие
<b>rotating beacon</b>	[ rəu'teɪt ] [ 'bi:k(ə)n ]	вращающийся маяк

<b>recognizable</b>	[ 'rekəgnaɪzəbl ]	легко узнаваемый; распознаваемый
<b>edge</b>	[ edʒ ]	кромка, край
<b>condenser-discharge sequenced flashing-light system</b>	[ kən'den(t)sə ] [ dɪs'tʃɑ:dʒ ] [ 'si:kwən(t)s ] [ 'flæʃɪŋ laɪt ] [ 'sɪstəm ]	система бегущих огней
<b>in sequence</b>	[ 'si:kwən(t)s ]	один за другим, последовательно
<b>precision approach path indicator (PAPI)</b>	[ prɪ'sɪʒ(ə)n ] [ ə'prəʊtʃ ] [ pɑ:θ ][ 'ɪndɪkeɪtə ]	индикатор точного захода на посадку
<b>to facilitate</b>	[ fə'sɪlɪteɪt ]	облегчать; способствовать;
<b>adverse visibility conditions</b>	[ 'ædvɜ:s ]	неблагоприятные условия видимости
<b>runway-end identification lights</b>	[ aɪ,dentɪfɪ'keɪʃ(ə)n ]	опознавательные огни конца ВПП
<b>to warn pilots of...</b>	[ wɔ:n ]	предупреждать; предостерегать; оповещать о ...
<b>stable descent path</b>		устойчивая траектория снижения
<b>to complete the flare</b>	[ kəm'pli:t ][ flæə ]	завершать выравнивание перед посадкой
<b>combined</b>	[ kəm'baɪnd ]	комбинированный, совместный

<b>obsolete</b>	[ 'ɒbs(ə)li:t ]	устаревший
<b>deleted</b>	[ di'li:t ]	вычеркнутый, удалённый
<b>marschaller</b>	[ 'mɑ:ʃ(ə)l ]	сигнальщик на перроне
<b>illuminated wands</b>	[ i'l(j)u:mineɪt ] [ wɒnd ]	светящиеся палочки (сигнальщика)

*Do not confuse the terms:*

**Marking** is symbol or group of symbols displayed on the surface of the movement area in order to convey aeronautical information.

**Marker** is an object displayed above ground level in order to indicate an obstacle or delineate a boundary.

**Ex. 1.2.** *Read the information about airport markings and make a list of markings.*

Visual aids to navigation consist of surface markings, signs, signals and lighting



on the aerodromes.

They provide direction and visual guidance assisting pilots in airport operations.

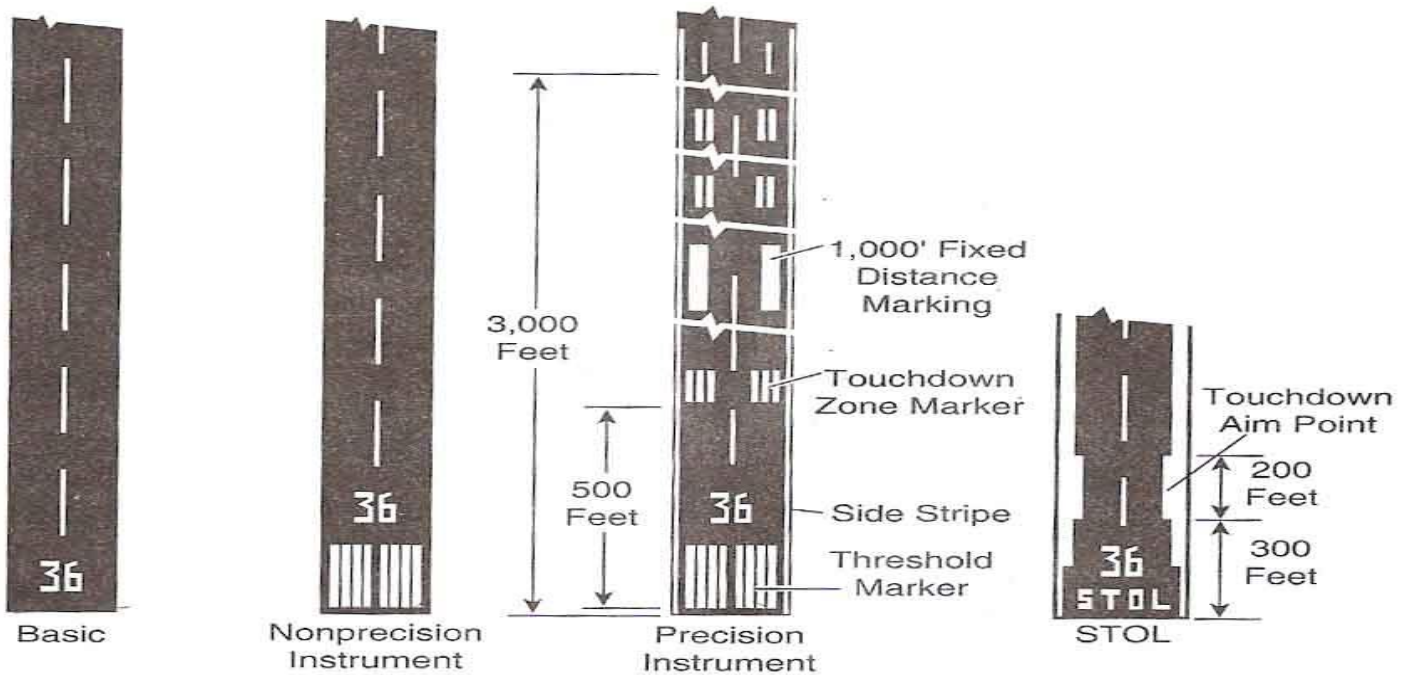
Runway markings vary

depending on the type of operations conducted at the airport. All airport markings are painted on the surface, markers are displayed above ground level, whereas some signs are vertical and some are painted on the surface.



The runway markings comprise single lines (solid/dashed) or rows of lines. *The picture* shows a runway that is approved as a precision instrument approach runway and some other common runway markings.

A basic VFR runway may only have centerline markings and runway numbers.



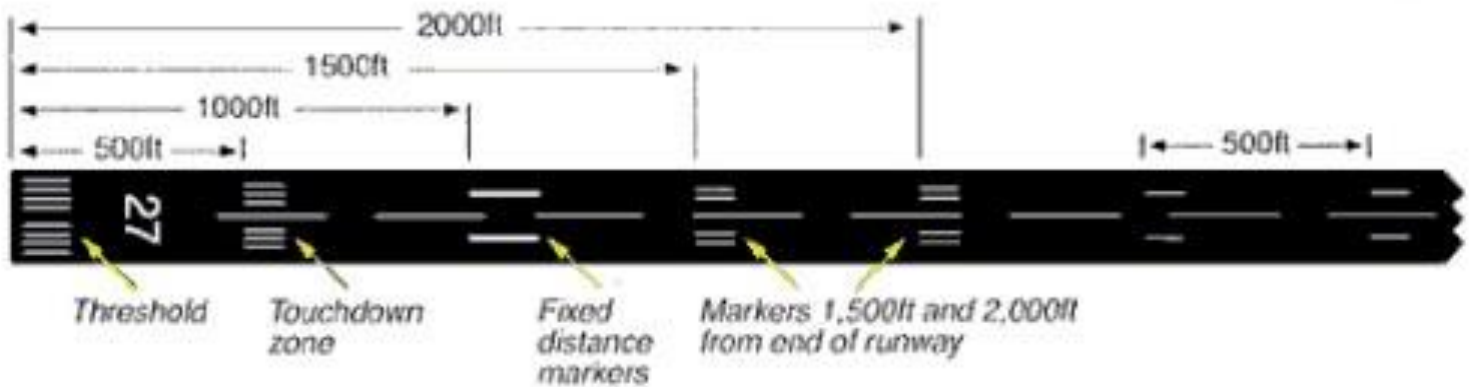
Since aircraft are affected by the wind during takeoffs and landings, runways are laid out according to the local prevailing winds. Runways are numbered in reference to magnetic north.

Certain airports have two or even three runways laid out in the same direction. These are referred to as parallel runways and are distinguished by a letter added to the runway number (e.g., runway 36L (left), and 36R (right)).

The runway threshold markings consist of a series of longitudinal stripes of uniform dimensions disposed symmetrically about the centerline of the runway. The

fixed distance marking may be provided together with touchdown zone markings.



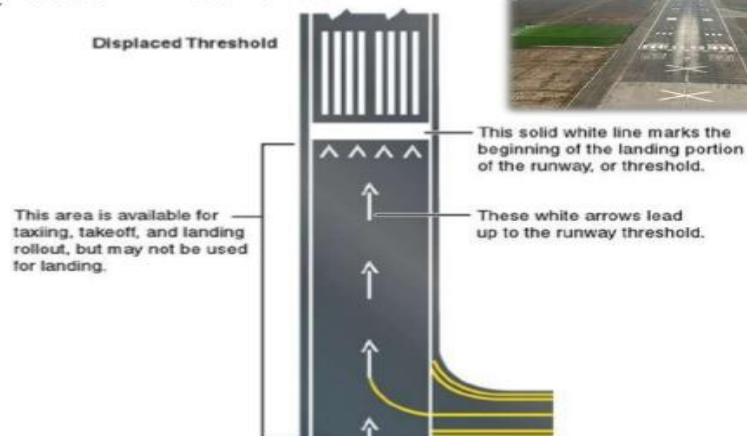


Another feature of some runways is a displaced threshold.

A threshold may be displaced because of an obstruction near the end of

## Runway Markings

- Displaced Threshold:



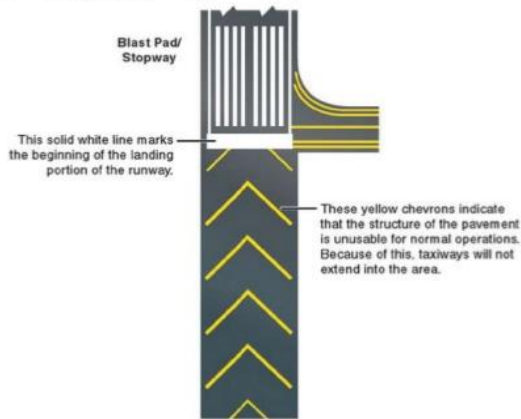
the runway. Although this portion of the runway is not to be used for landing, it may be available for taxiing, takeoff, or landing rollout.

Some airports may have a blast pad/stop way area. The blast pad is an area where a propeller or jet blast can dissipate without creating a hazard.

The **chevron marking** identifies paved blast pads, stop ways. The chevron marking is located on the blast pad and stop way that are aligned with and contiguous

## Runway Markings

- Blast Pad/Stopway Area:



to the runway end. Chevron markings are yellow.

The stop way area is paved in order to provide space for an aircraft to decelerate and stop in the event of an aborted takeoff. These areas cannot be used for takeoff or landing

**Ex.1.2.** *Work in pairs. Tell each other about the runway markings following the scheme below.*

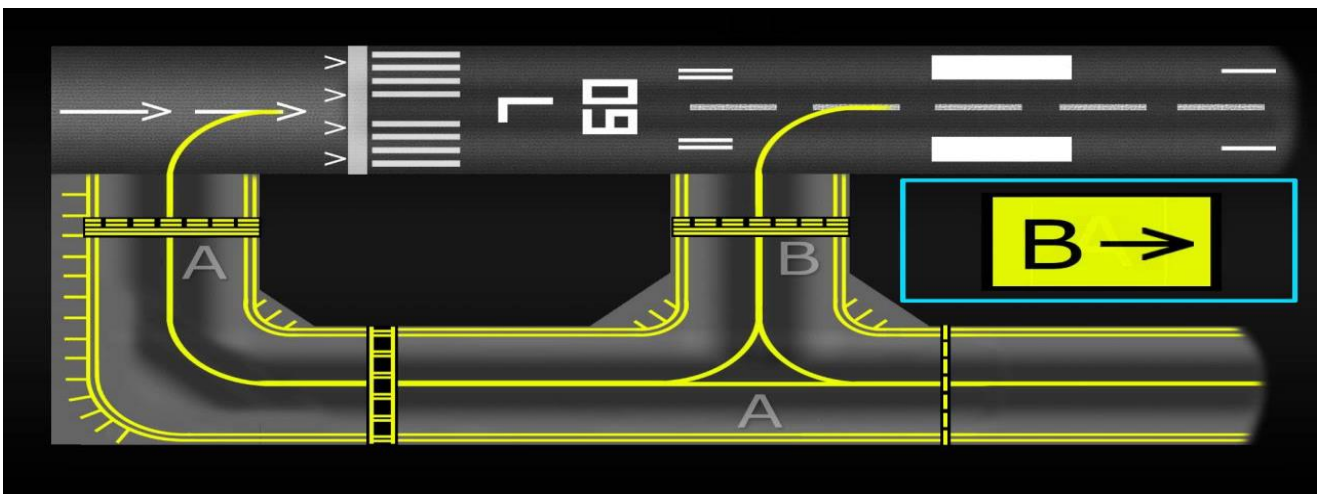
	<b>Purpose</b>	
<b>Runway Marking type</b>	<b>Form</b>	<b>Location</b>

## Taxiway Markings



The centerline markings are displayed not only on the runways but also on all paved taxiways.

Aircraft use taxiways to transition from parking areas to the runway. Taxiways are identified by a continuous yellow centerline stripe and may include edge markings to define the edge of the taxiway. This is usually done when the taxiway edge does not correspond with the edge of the pavement.



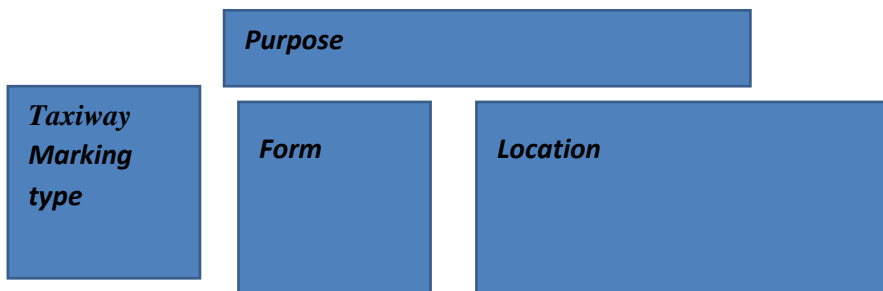
There are holding position markings at intersections of taxiways with runways. They consist of four yellow lines (two solid and two dashed). The solid lines are



where the aircraft is to hold. At some towered airports, holding position markings may be found on a runway. They are used when there are intersecting runways, and ATC issues instructions such as “cleared to land-hold short of runway 30.”



**Ex.1.3.** *Work in pairs. Tell each other about the taxiway markings following the scheme below.*



**Ex.1.4** *Read about the other markings, markers, and fill in the table below.*

<b>What? (marking/marker)</b>	<b>Where?</b>	<b>Why ?</b>	<b>Key verbs</b>

Some other markings found on the airport include **vehicle roadway markings, VOR receiver checkpoint markings, and non-movement area boundary markings.**



➤ **Vehicle roadway markings** are used

when necessary to define a pathway for vehicle crossing areas that are also intended for aircraft.

These markings usually consist of a solid white line to delineate each edge of the roadway. In lieu of the solid lines, zipper markings may be used to delineate the edges of the vehicle roadway.

➤ **VOR receiver checkpoint marking** consists of a painted circle with an arrow in the middle. The arrow is aligned in direction of the checkpoint azimuth. This allows pilots to check aircraft instruments with navigational aid signals



Figure 2-31. VOR Receiver Checkpoint Marking

## MOVEMENT/NON-MOVEMENT AREA BOUNDARY LINES



- Marks boundaries of the "Movement Area" and ramps.
- Dashed side = Movement Area
- Solid Side = Non-Movement Area
- Aircraft and vehicles operating in Non-Movement Areas are not necessarily in contact with ATC.

➤ **A non-movement area boundary marking** delineates a movement area under ATC. These markings are yellow and located on the boundary between the movement and non-movement area. They normally consist of

two yellow lines (one solid and one dashed).

**Markers** are used where lights are not provided and where lighting (or ground marking does not serve the purpose.



Typically, **edge markers** may be used to indicate the extremity of a taxiway where snow has fallen or to mark areas of bad ground on a grass aerodrome. **Boundary markers** are provided at an aerodrome where the landing area has no runway.

Runway Closure marker (portable)

**Ex.1.5.** *Work in pairs and discuss the questions:*

1. What do visual aids consist of?
2. How runways/taxiways are usually marked?
3. Why are markings on the aerodrome very important for the pilot?



**Ex.1.6. Read about airport signs:**

There are six types of signs that may be found at airports. The more complex the layout of an airport, the more important the signs become to pilot. These are some examples of signs, their purpose, and appropriate pilot action.




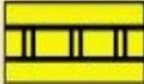












## **There are six types of Airport Signs:**

- **Mandatory Instruction Signs** – red background with white inscription. They denote an entrance to a runway (numbers), critical area (ILS), or prohibited area.
- **Location Signs** – black with yellow inscription and yellow border. It will not have any arrows. They identify a taxiway or runway location, to identify the boundary of the runway, or identify an instrument landing system (ILS) critical area.
- **Direction Signs** – yellow background with black inscription. They identify the designation of the intersection taxiway(s) leading out of an intersection.
- **Destination Signs** – yellow with black inscription and also contain arrows. They provide information on locating things, such as runways, terminals, cargo areas, and civil aviation areas.
- **Information Signs** – yellow background with black inscription. They provide pilot with information on things as areas that can not be seen from the control tower, applicable radio frequencies, and noise abatement procedures.
- **Runway Distance Remaining Signs** – black background with white numbers. The numbers indicate the distance of the remaining runway in thousands of feet.



**Ex.1.7.** *Work in pairs. Study the following signs and categorize them into groups:*

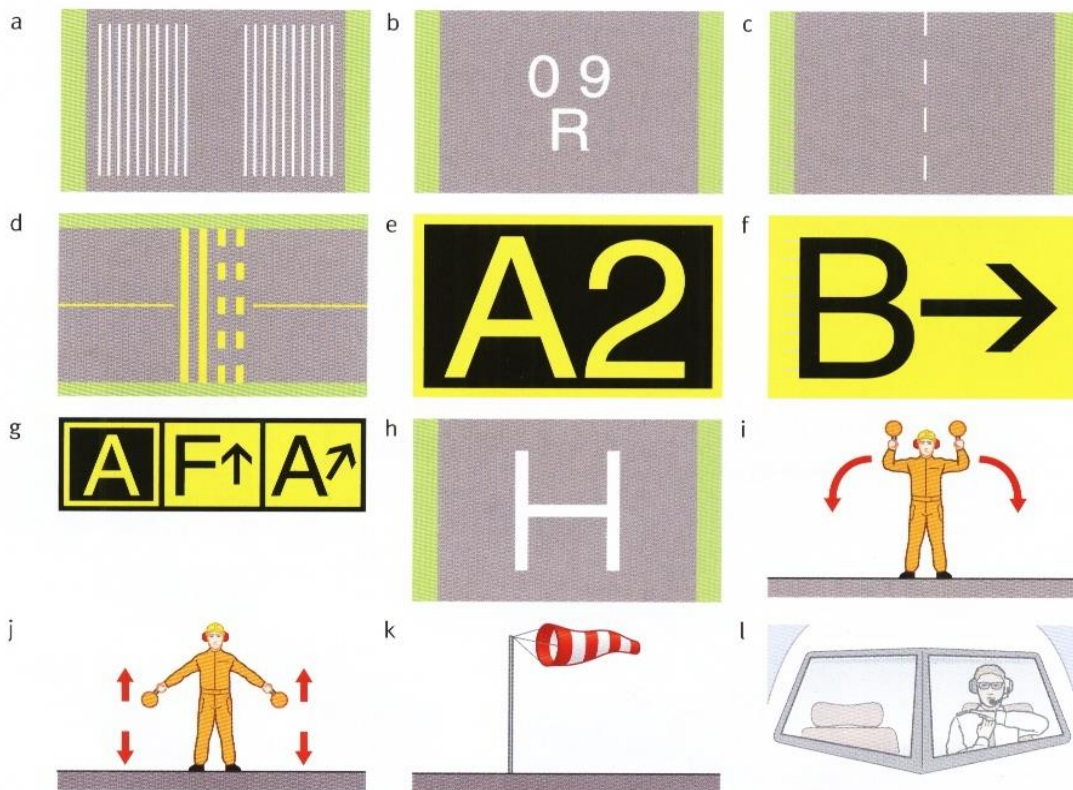
<b>Mandatory instruction sign</b> (знак обязательного исполнения)	
<b>Location sign</b> (указатель местоположения)	
<b>Direction sign</b> (указатель направления)	
<b>Destination sign</b> (указатель маршрута следования)	
<b>Information sign</b> (информационный указатель)	
<b>Runway Distance remaining sign</b> (указатель расстояния до конца ВПП)	

Type of Sign	Action or Purpose	Type of Sign	Action or Purpose
	<b>Taxiway/Runway Hold Position:</b> Hold short of runway on taxiway		<b>Runway Safety Area/Obstacle Free Zone Boundary:</b> Exit boundary of runway protected areas
	<b>Runway/Runway Hold Position:</b> Hold short of intersecting runway		<b>ILS Critical Area Boundary:</b> Exit boundary of ILS critical area
	<b>Runway Approach Hold Position:</b> Hold short of aircraft on approach		<b>Taxiway Direction:</b> Defines direction & designation of intersecting taxiway(s)
	<b>ILS Critical Area Hold Position:</b> Hold short of ILS approach critical area		<b>Runway Exit:</b> Defines direction & designation of exit taxiway from runway
	<b>No Entry:</b> Identifies paved areas where aircraft entry is prohibited		<b>Outbound Destination:</b> Defines directions to takeoff runways
	<b>Taxiway Location:</b> Identifies taxiway on which aircraft is located		<b>Inbound Destination:</b> Defines directions for arriving aircraft
	<b>Runway Location:</b> Identifies runway on which aircraft is located		<b>Taxiway Ending Marker:</b> Indicates taxiway does not continue
	<b>Runway Distance Remaining:</b> Provides remaining runway length in 1,000 feet increments		<b>Direction Sign Array:</b> Identifies location in conjunction with multiple intersecting taxiways

**Ex.1.8** Match the six types of airport signs with their description and functions.

<b>Sign</b>	<b>Description</b>	<b>Function</b>
<b>Mandatory Instruction</b>	1. yellow background with black inscription and arrows	a. identifying the designation of the intersection taxiways leading out of an intersection
<b>Location</b>	2. black background with white numbers	b. indicating areas that cannot be seen from the control tower, applicable radio frequencies, and noise abatement procedures
<b>Direction</b>	3. red background with white inscription	c. identifying a taxiway or runway location, the boundary of the runway, or an instrument landing system critical area
<b>Destination</b>	4. yellow background with black inscription	d. indicating the distance of the remaining runway in thousands of feet
<b>Information</b>	5. black background with yellow inscription and yellow border	e. denoting an entrance to a runway, critical area, or prohibited area
<b>Runway Distance Remaining Signs</b>	6. yellow background with black inscription	f. providing information on locating things, such as runways, terminals, cargo areas, and civil aviation areas

**Ex.1.9.** Match the following marking, signs and signals with the names below:



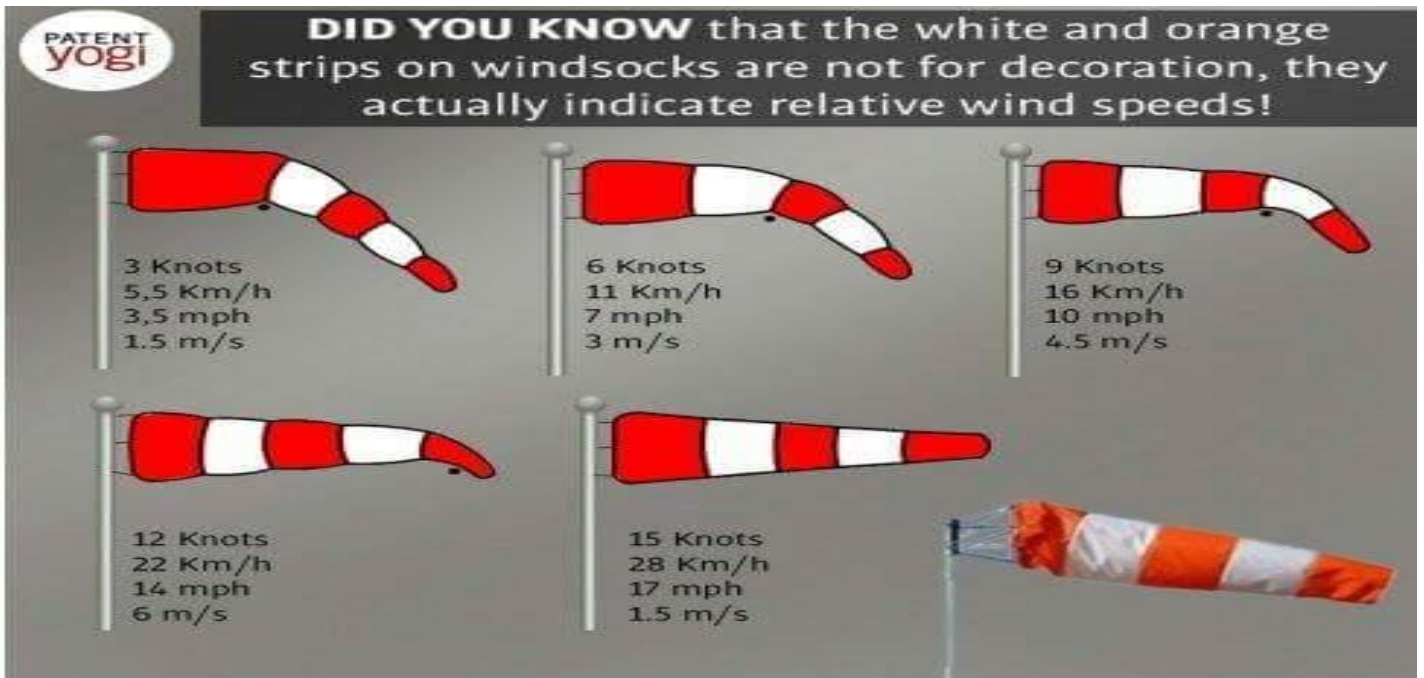
- |                                 |                                 |
|---------------------------------|---------------------------------|
| 1. centerline marking           | 7. reserved for helicopter      |
| 2. runway taxi holding position | 8. move ahead                   |
| 3. runway designator            | 9. taxiway a changing direction |
| 4. taxiway location sign        | 10. slow down                   |
| 5. direction sign               | 11. threshold marking           |
| 6. connect ground power         | 12. wind direction and speed    |

**Ex.1.10.** Look at the picture below and discuss the questions with a partner:



1. What is the name of the installation?
2. What is its function?
3. Is it a signal or a sign?
4. Where is it installed?

**Ex.1.11.** Check your ideas with the picture.



**Ex.1. 12.** Look at the picture below. What is this sign designed for and where is it installed?



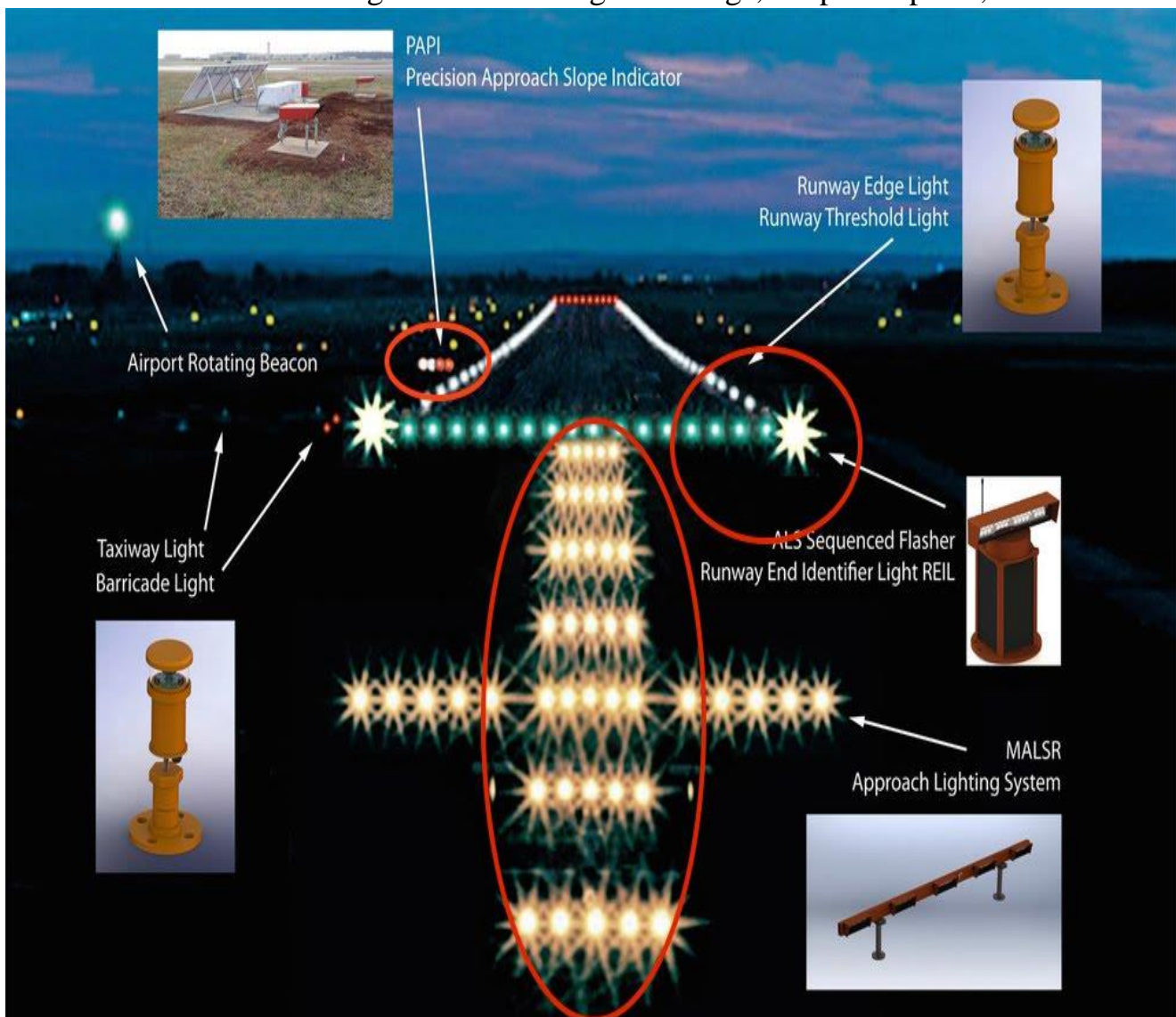




## 2. Airport lighting

### Ex.2.1. Read about airport lighting:

The majority of airports have some type of lighting for night operations. The variety and type of lighting systems depends on the volume and complexity of operations at a given airport. Airport lighting is standardized so that airports use the same light colors for runways and taxiways. Touchdown zone and runway centerline lighting facilitate landing under adverse visibility conditions. Runway-end identification lights (REIL) provide rapid and positive identification of the approach end of a runway. Blue edge lights on the taxiways and sometimes green centerline lights mark the route of taxiing. Red lights, the usual danger signal, warn pilots of the obstacles such as hangars and other high buildings, telephone poles, etc.



All this visual information assists the pilot to maintain a stable descent path down to the runway surface and complete the flare and landing. After landing, he follows the blue taxi lights along the taxiway to the apron and the service areas. At the service area a marshaller, with illuminated wands, directs the aircraft with signals to its proper position for unloading and, finally, signals pilot to cut down the engines.

**Ex. 2.2.** *Read the description of some airport lights and chose the appropriate name from the list below.*

- a) Approach light systems*
- b) Runway threshold and wing bar light*
- c) Runway edge lights*
- d) Runway threshold identification lights*
- e) Runway end lights*
- f) Runway center line lights*
- g) Runway touchdown zone lights*
- h) Stop way lights*
- i) Taxiway centerline lights*
- j) Taxiway edge lights*
- k) Runway guard lights*

1)..... provide means to transition from instrument flight to visual flight for landing. The system configuration depends on whether the runway is a precision or non-precision instrument runway. Some systems include sequenced flashing lights, which appear to the pilot as a ball of light traveling toward the runway at high speed. Approach lights can also aid pilots operating under VFR at night.

2).....located symmetrically about the runway centerline, in line with the threshold and approximately 10 m outside each line of runway edge lights. They should be

flashing white lights with a flash frequency between 60 and 120 per minute. The lights must be visible only in the direction of approach to the runway.

3)..... are for a runway intended for use at night or for a precision approach runway used by day or night. They are used on a runway for take-off with an operating minimum below an RVR of the order of 800 m by day. They are placed along the full length of the runway and are placed in two parallel rows

4).....designed for a runway equipped with runway edge lights, except on a non-instrument or non-precision approach runway where the threshold is displaced and wing bar lights are provided.

5).....provided for a runway equipped with runway edge lights. They are placed on a line at right angles to the runway axis as near to the end of the runway.

6).....provided on a precision approach runway. They are installed on a runway used for take-off with an operating minimum below an RVR of the order of 400 m. They are located along the centerline of the runway.

7).....provided in the touchdown zone of a precision approach runway. They extend from the threshold for a longitudinal distance of 900 m. The longitudinal spacing between pairs of barrettes is either 30 m or 60 m.

8).....used for a stop way at night. They are placed along the full length of the stop way and are in two parallel rows. These lights must be fixed unidirectional lights showing red in the direction of the runway.

9).....are on an exit taxiway, taxiway, de-icing/anti-icing facility and apron and provide continuous guidance between the runway center line and aircraft stands. They are installed on a taxiway used at night in runway visual range conditions of 350 m or greater, and particularly on complex taxiway intersections and exit taxiways.

10).....installed at the edges of a runway turn pad, holding bay, de-icing/anti-icing facility, apron, etc., used at night and on a taxiway not provided with taxiway center line lights and used at night.

11) The purpose of ..... is to warn pilots, and drivers of vehicles when they are operating on taxiways, that they are about to enter a runway.

**Ex.2.3.** Match the words with their meanings.

1.	complexity	a.	the aim that someone wants to achieve or something is intended to achieve
2.	sequenced	b.	feature of smth that makes it confusing or difficult to deal with
3.	spacing	c.	a piece of equipment that is provided at a place
4.	displaced	d.	happen or to be arranged in a particular order
5.	intended	e.	arranging objects , events or activities so that they are in a particular time or distance apart
6.	precision	f.	the process of controlling the flight in space
7.	facility	g.	to be out of one's position or space
8.	guidance	h.	having a plan to do smth
9.	purpose	i.	very exact or accurate

**Ex.2.4.** Read about airport lighting in more details and fill in the table below:

What (type of lighting)	Where?	Why ?	Key verbs

**Ex. 2.5.** Label the pictures of airport lights:



**Ex.2.6.** Work in pairs. Tell each other about the airport lighting following the scheme below.

*Purpose            Type of lightning            Location*



**Ex.2.7.** *Work in pair and discuss the questions:*

1. What does the aerodrome lightning provide?
2. When are the lights required?
3. What is the first light a pilot sees on approach?
4. What do red lights usually mean?
5. What is the function of the runway edge lights and approach lights?

### 3. PAPI

**Ex.3.2.** *Read about Precision Approach Path Indicator and fill in the table below:*

Where?	Why ?	Key verbs

**Precision Approach Path Indicator (PAPI)** is a visual aid that provides the pilot with a safe and accurate glide slope on final approach to the runway. In good visibility conditions, the guidance information can be used at ranges up to five miles by day and night. At night, the light bars can be seen at ranges of at least twenty miles. An earlier glideslope indicator system, the (VASIS) is now obsolete and was deleted from Annex 14 in 1995. The VASIS only provided guidance down to heights of 200 ft whereas PAPI provides guidance down to flare initiation (typically 50 ft). By reference to PAPI, combined with ILS, the pilot can bring an aircraft down safely almost to touchdown by day or night.

**Ex.3.3.** *Work in small groups and discuss the questions:*

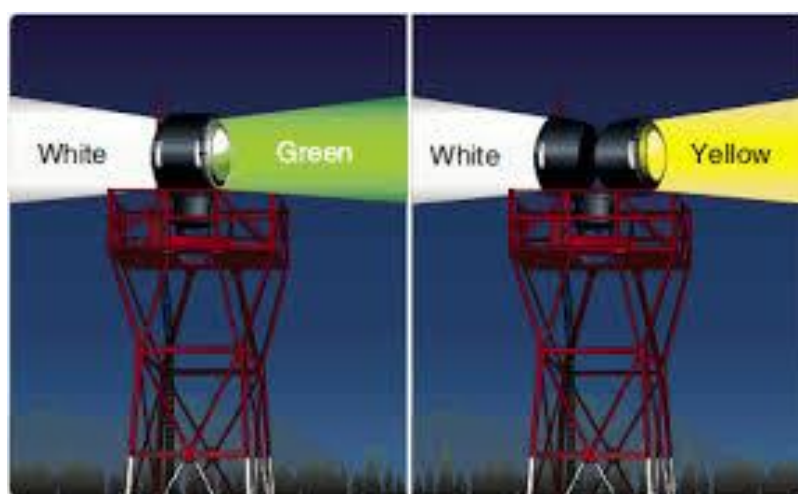
1. What is PAPI? What is its function?
2. What lights does the pilot follow on landing?
3. Who directs the aircraft to its proper position?

**Ex.3.4.** Read about aerodrome beacon and fill in the table below:

What? ( beacon type )	Where?	Why ?	Key verbs

Where operationally necessary an aerodrome beacon or an identification beacon is installed.

Airport beacons help a pilot identify an airport at night. The beacons are operated from dusk till dawn. Sometimes they are turned on if the ceiling is less than 1,000 feet and/ or the ground visibility is less than 3 statute miles (VFR minimums).



However, there is no requirement for this, so a pilot has the responsibility of determining if the weather meets VFR requirements. The beacon has a vertical light distribution to make it most effective from 1-10° above the horizon, although it can be seen well above or below this spread. The beacon may be an omnidirectional capacitor-discharge device, or it may rotate at a constant speed, which produces the visual effect of flashes at regular intervals. The combination of light colors from an airport beacon indicates the type of airport. Some of the most common beacons are:

- Flashing white and green for civilian land airports;
- Flashing white and yellow for a water airport;
- Flashing white, yellow, and green for a heliport; and
- Two quick white flashes alternating with a green flash identifying a military airport.

**Ex.3.5 .Continue the sentences:**

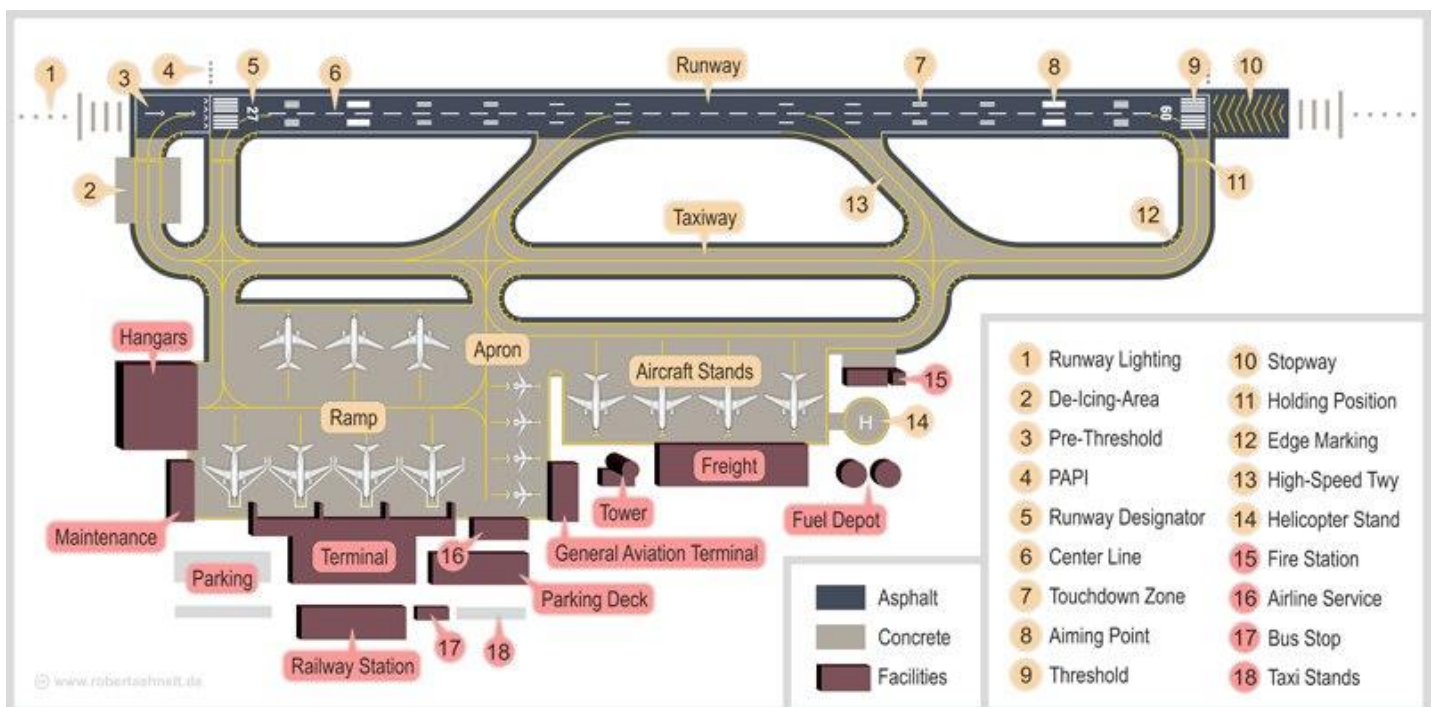
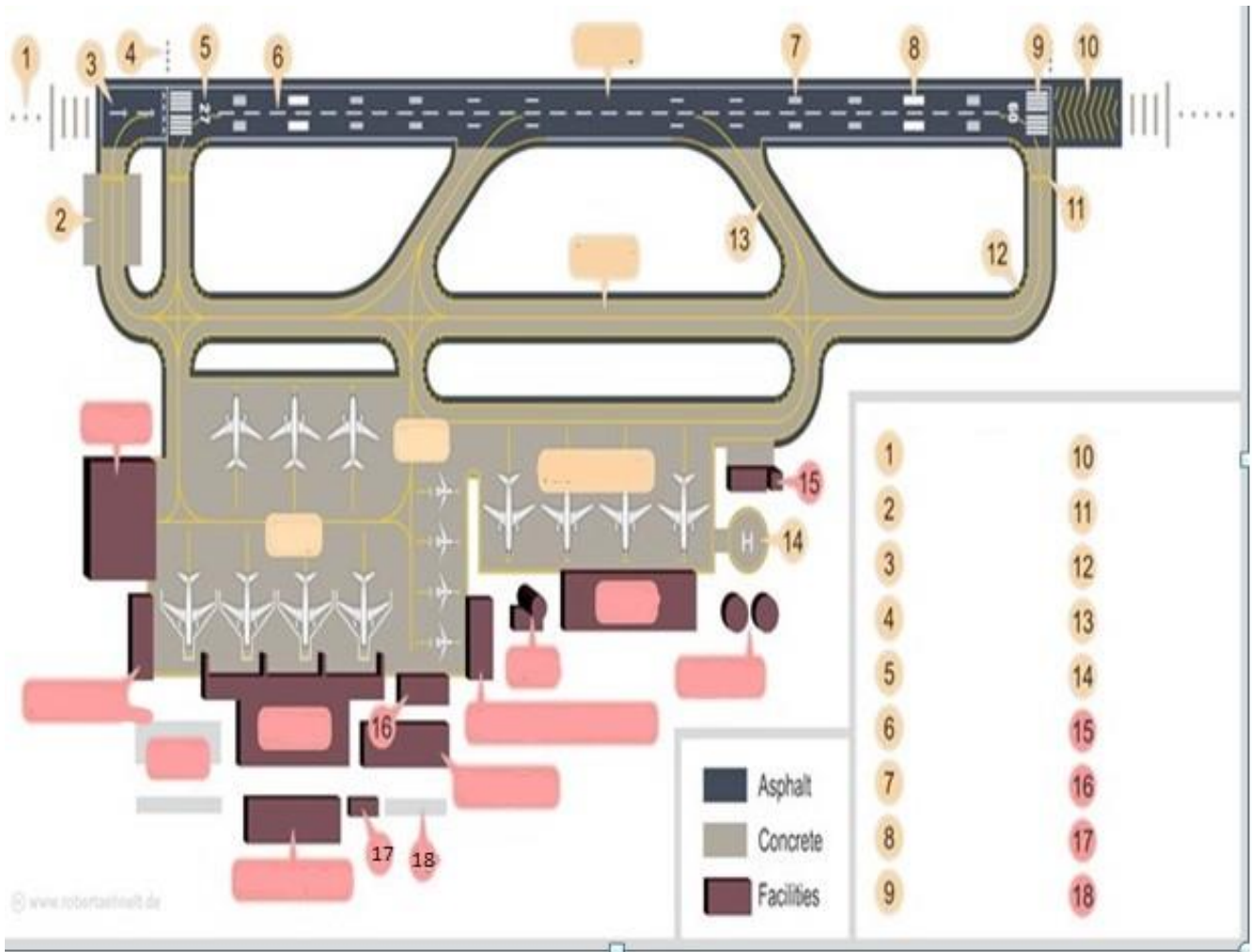
1. Airport beacons help a pilot....
2. The beacon has a vertical....
3. The beacon may be...
4. The beacon rotates at a constant.....
5. Civilian land airports are indicated ...
6. Water airports are indicated...
7. Military airports...

**Ex.3.6 . Match the lighting installations with their functions.**

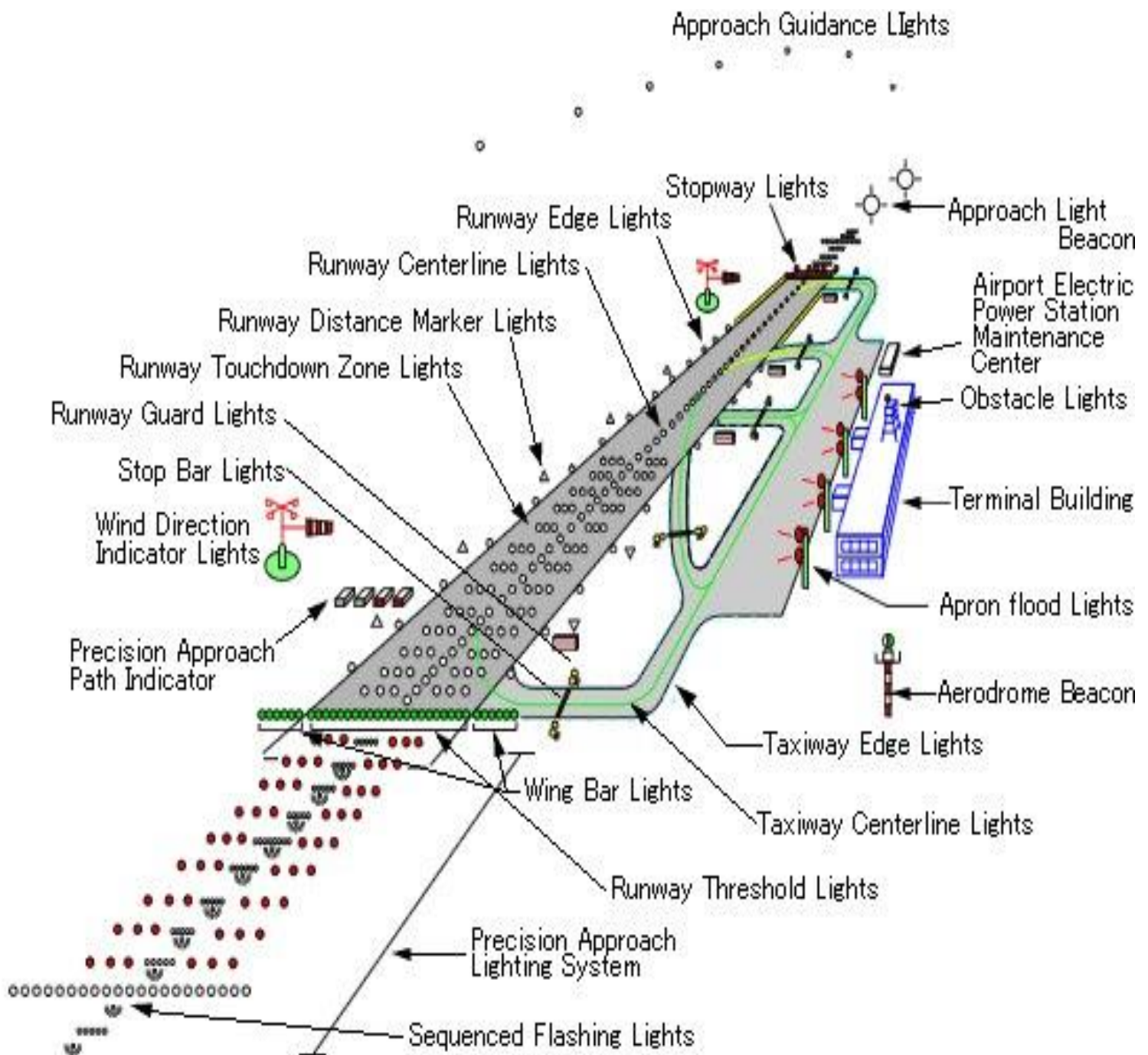
	<b>Installation</b>		<b>Function</b>
1	rotating beacons	<b>a</b>	facilitating rapid and positive identification of the approach end of a runway
2	condenser-discharge sequenced flashing-light system	<b>b</b>	indicating the correct glide path
3	approach lighting system	<b>c</b>	marking the route of taxiing
4	precision approach path indicator (PAPI)	<b>d</b>	marking the location of an airport
5	runway-end identification lights (REIL)	<b>e</b>	supporting the approach lights
6	blue edge lights on the taxiways / green centerline lights	<b>f</b>	warning pilots of different obstacles
7	red lights	<b>g</b>	providing the basic means for transition from instrumental flight to visual flight and landing



Ex.3.7 Label the picture below. Then check your answers.



**Ex.3.5** Make turns to speak on lighting on the aerodrome:



## UNIT 5

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### INSTRUMENT LANDING SYSTEM

#### 1. ILS Definition and Components

#### 2. ILS Categories

##### 1. ILS definition and its components

**Ex.1.1.** *Learn the new words and practice the pronunciation:*

<i>English</i>	<i>Pronunciation</i>	<i>Russian</i>
<b>navigational aid</b>		Навигационное средство
<b>installed</b>	[in'stɔ:ld]	установленный
<b>to function</b>	['fʌŋkʃ(ə)n]	работать, действовать
<b>to make landing</b>		выполнять посадку
<b>precise</b>	[pri'sais ]	точный
<b>equipment</b>	[ɪ'kwɪpmənt]	оборудование; оснащение;
<b>localizer</b>		курсовой посадочный радиомаяк
<b>radio beam</b>	['reɪdiəu] [bi:m]	узкий радио луч
<b>glide path (localizer)</b>	[glaid] [pɑ:θ]	глиссада, глиссадный радиомаяк
<b>angle of approach</b>	['æŋgləvə'prəʊf ]	угол (глиссады) захода на посадку
<b>indicator</b>	['ɪndɪkeɪtə]	указатель; индикатор
<b>centre line</b>		осевая разделительная линия,

		центровая линия
<b>approach</b> <b>to approach the airport</b>	[ə'prəʊtʃ]	заход, подход на посадку подлетать к аэропорту
<b>to overshoot</b>	[,əʊvə'ʃu:t]	проскочить (мимо цели)
<b>to go around</b>		уйти на второй круг
<b>fan marker=marker</b> <b>beacon</b>	['mɑ:kə]	маркерный радиомаяк с веерной диаграммой направленности антенны
<b>outer marker</b>	['mɑ:kə]	дальний [внешний] маркер(ный радиомаяк
<b>middle marker</b>		средний [промежуточный] маркер(ный радиомаяк)
<b>inner marker</b>		ближний маркер(ный радиомаяк)
<b>approximately</b>	[ə'prɒksɪmətli]	приблизительно, около, почти,
<b>required</b>	[rɪ'kwaɪəd]	необходимый; обязательный
<b>to alert the pilot</b>	[ə'lɜ:t]	предупреждать (об опасности)
<b>threshold</b>	['θreʃ(h)əʊld]	порог, торец (ВПП)
<b>lobe comparison</b>	[ləʊb kəm'pæns(ə)n]	сравнение диаграммы излучения (лепестков)
<b>guidance</b>	['gaɪd(ə)n(t)s]	(дистанционное) наведение; управление
<b>designated decision</b> <b>height</b>	['deziɡneɪt] [dɪ'sɪʒn][haɪt]	установленная высота принятия решения
<b>extended</b>	[ɪk'stendɪd], [ek-]	расширенный, продленный

Термин "глиссада" имеет два определения:

- GLIDEPATH (ICAO) — профиль снижения, определяемый для вертикального наведения в процессе конечного этапа захода на посадку.

- GLIDESLOPE (GS) (USA) — обеспечение вертикального наведения для ВС во время захода на посадку.

**Ex.1.2.** Listen and read about the Instrument Landing System and study the meaning of the terms in bold

The main navigational aid for pilots in landing is the Instrument Landing System.

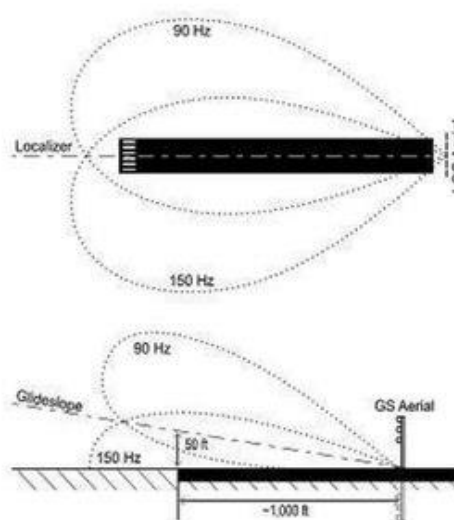
ILS is a **ground-based instrument approach system** that provides **precision guidance** to an aircraft approaching and landing on a runway.

The ILS functions with equipment in the aircraft and on the ground. ILS allows pilots to make precision landing, even in conditions of low visibility.

An ILS has three main elements: **the localizer, glide slope, marker beacons and approach lights.**




## HOW IT WORKS?

- **BASIC PRINCIPLE:** ILS works on basic principle of bearing by lobe comparison.
- **MAIN COMPONENTS REQUIRED BY ILS:**
- **Guidance information:** the localizer and glide slope.
- **Range information:** the outer marker (OM) and the middle marker (MM) beacons.
- **Visual information:** approach lights, touchdown and centerline lights, runway lights.



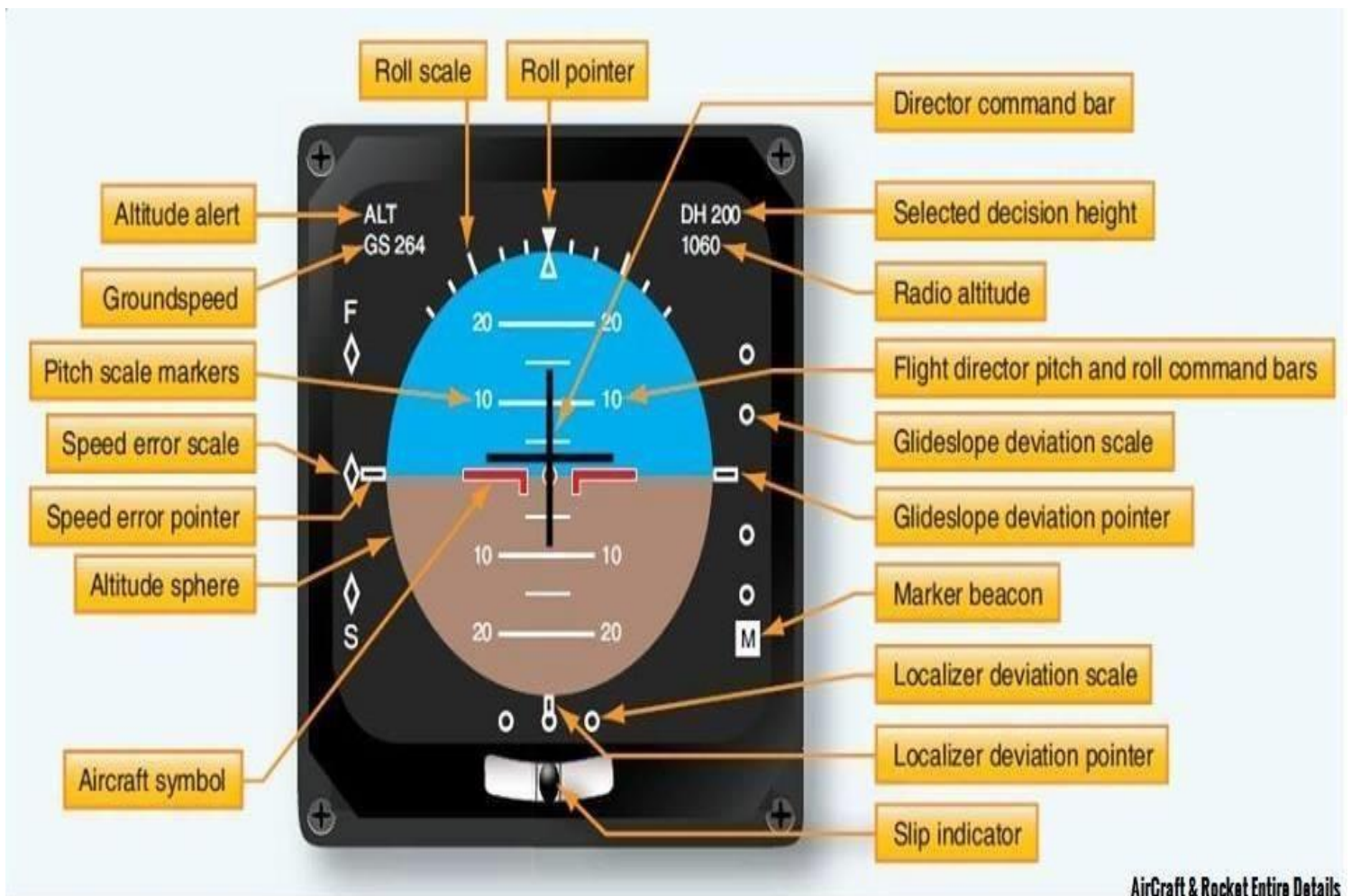
<b>LLZ</b>	<b>GS</b>
<p>The <b>localizer</b> provides the tracking guidance along the extended centerline of the runway (guidance in azimuth left or right of the extended centerline). It transmits a narrow radio beam. The localizer transmits on a frequency in the VHF(very high frequency) band</p>	<p>The <b>glide slope</b> provides vertical guidance towards the runway touchdown point (usually a slope of approximately 3 degrees to the horizontal or 1:20 vertical above or below the glideslope). The UHF (ultra high frequency) glide path transmitter, operating on one of the twenty ILS channels radiates the signals principally in the direction of the final approach.</p>

**Marker beacons (or fan markers)** provide accurate range fixes along the approach (usually **outer marker** and **middle marker**)

<b>OM</b> 	<b>MM</b> 	<b>IM</b> 
<p>The <b>outer marker</b> is situated from 4 to 6 miles from the threshold of the runway. It normally indicates a position at which an aircraft at the appropriate altitude on the localizer course will intercept the ILS glide path.</p>	<p>The <b>middle marker</b> is situated approximately half a mile from the threshold of the runway. It indicates a position at which an aircraft is approximately 3500 feet from the landing threshold. This will also be the position at which an aircraft on the glide path</p>	<p>The <b>inner marker</b> (installed only when required) is about 1,000 feet from the threshold of the runway. The inner marker, where installed, will indicate a point at which an aircraft is at a designated decision height on the glide path between</p>

	will be at an altitude of approximately 200 feet above the elevation of the touchdown zone.	the middle marker and landing threshold.
--	---	--

On the aircraft instrument panel, an ILS indicator shows the aircraft's position in relation to the center line of the runway and to the glide path.



The ILS can, therefore, guide the aircraft along the proper approach path down to a point where the pilot must be able to see the ground and be able to continue his approach to land. If he cannot see the ground at this point, he must decide to overshoot, go around and try to land again.

Since ILS approaches are often made in conditions of poor visibility or at night, visual approach lights leading towards the runway, runway lights, touchdown lights and centerline lights assist pilot on approach.



At an airport where ILS is not available, a VOR/DME approach may be possible. In this case the pilot will use the VOR to line up in the precise direction required but will have to calculate the best rate of descent through the information provided by the DME (which informs the pilot of the distance remaining to be covered.)

**Ex.1.3.** Match the information in A with the information in B to make up sentences using the verb to provide (Active or passive form).

A	B
Guidance information	approach lights, touchdown and centerline lights, runway lights.
Range information	the localizer and glideslope.
Visual information	the outer marker (OM) and the middle marker (MM)

**Ex.1.4.** Match the two halves of the sentences.

1.The localizer transmitter	a)of bearing by lobe comparison
2.ILS allows pilots to	b)from 4 to 6 miles from the threshold of the runway
3.Visual information is provided by	c) provides the pilot with course guidance to the runway centerline.
4.ILS indicator shows the	d)a VOR/DME approach may be possible.



aircraft's position	
5. At an airport where ILS is not available	e) approach lights, touchdown and centerline lights, and runway lights.
6. ILS works on basic principle	f) in relation to the center line of the runway and to the glide path.
7. If the pilot cannot see the ground at this point, he must	g) make precision landing, even in conditions of low visibility.
8. The outer marker is situated	h) decide to overshoot, go around and try to land again.

**Ex.1.5.** Listen to the recording and fill in the blanks:

The main----- aid for pilots in ----- the Instrument Landing System.

ILS is a ----- approach system that provides ----- guidance to an aircraft ----- and landing on a runway.

ILS functions with ----- in the aircraft and on the ground. ILS allows pilots to ----- precision landing, even in conditions of ----- visibility.

ILS works on basic principle of ----- by lobe -----.

An ILS has ----- elements: -----, -----, ----- and -----.

The ----- (LLZ) provides the ----- along ----- centerline of the runway. The localizer ----- on a frequency in the ----- band.

The glide slope provides ----- vertical guidance towards the runway. The UHF glide path transmitter ----- the signals principally in the direction of the ----- approach.

Marker beacons (or fan markers) provide ----- along the approach.

The outer marker is situated from ----- from the threshold of the runway. It ----- a position at which an aircraft at the ----- on the localizer course will ----- the ILS glide path.

The ----- is situated half a mile from the threshold of the runway.

These marker beacons ----- the pilot of his -----over these markers by causing a ----- on the aircraft ----- panel to flash on and off while he is over each marker.

On the aircraft instrument panel an ILS -----shows the aircraft's position in relation to the center line of the runway and to the ----- path.

The ILS ----- the aircraft along the proper approach path down to a point where the pilot must ----- the ground and be able to -----his approach to land. If he cannot see the ground at this point, he must decide to ----- .

Since ILS approach is often made in ----- or at night, visual information is -----by approach ----- leading towards the runway, runway lights----- and centerline lights.

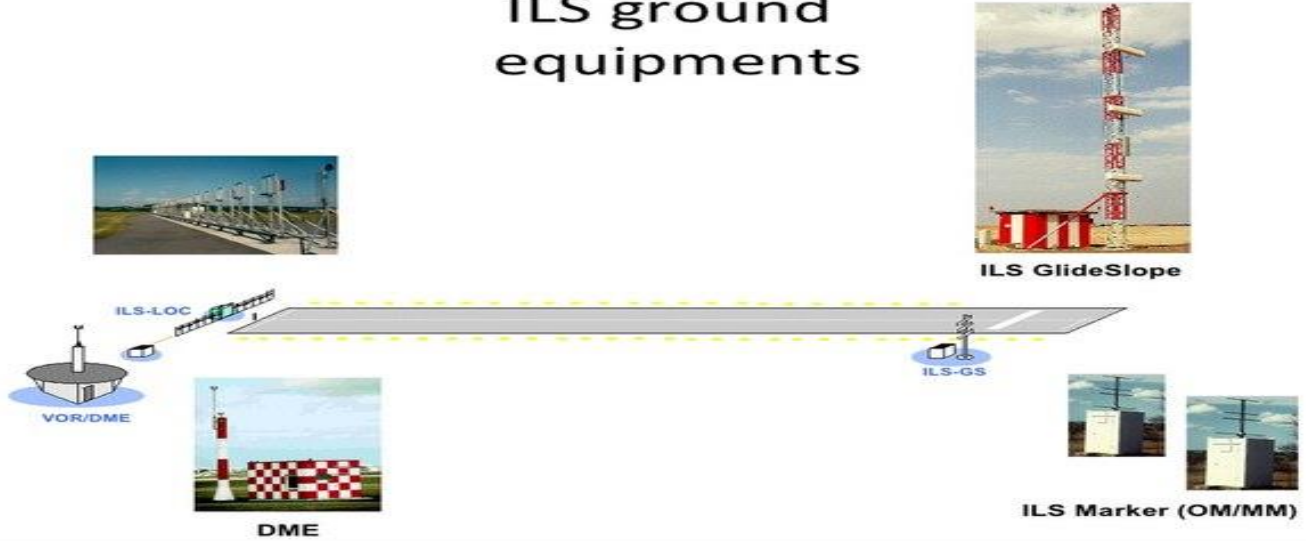
**Ex.1.6.** *Discuss the questions with a partner:*

1. What is ILS?
2. What is ILS designed for?
3. What kind of approach is it for?
4. What are the main components of ILS?
5. What guidance does the localizer provide?
6. What guidance does the glideslope /glide path/transmitter provide?
7. Where are they located?
8. How many fan markers does it include?
9. Where is an outer /middle marker situated?
10. Is the inner marker available at any airport?

**Ex.1.6.** Work with a partner and discuss the particularities of ILS. Person A should speak about the ILS components and Person B should speak about the way it functions. Use the information below.

**Person B**

**ILS ground equipments**

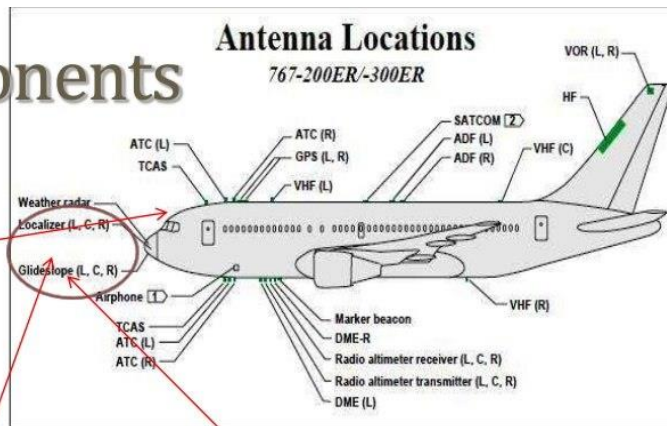


**Person A**

**ILS Components**



ILS Indicator inside the cockpit



Ground Localizer Antenna



Ground Glide Path Antenna

## 2. ILS CATEGORIES

**Ex.2.1.** Study the following information. What are the main features of ILS categories?

ILS are categorized according to their capability to provide for approach to a height above touchdown (HAT)/decision height (DH) and RVR (runway visual range).

**ILS Category I.** An ILS approach procedure which provides for approach to a height above touchdown of not less than 200 feet and with runway visual range of not less than 1,800 feet.

**ILS Category II.** An ILS approach procedure, which provides for approach to a height above touchdown of not less than 100 feet and with runway visual range of not less than 1,200 feet.

### ILS Category III:

**III A.**—An ILS approach procedure, which provides for approach without a decision height minimum and with runway visual range of not less than 700 feet.

### ICAO Criteria

Category	System minima	Decision Height	RVR requirement
CAT I	60 m (200 ft)	Not less than 200 ft	Not less than 550 m or ground visibility not less than 800 m
CAT II	30 m (100 ft)	Less than 200 ft but not less than 100 ft	Not less than 350 m **
CAT III A	Nil	Less than 100 ft or no DH	Not less than 200 m
CAT III B	Nil	Less than 50 ft or no DH	Not less than 50 m *
CAT III C	Nil	No DH	None
* JAR OPS specifies 75 m RVR minimum for CAT III B			

\*\* ICAO Annex 6, 8th Edition, July 2001. According to ICAO Annex 6, 9th Edition, July 2010 its 300 m

**III B.**—An ILS approach procedure, which provides for approach without a decision height minimum and with runway visual range of not less than 150 feet.

**III C.**—An ILS approach procedure, which provides for approach without a decision height minimum and without runway visual range minimum.

**Ex.2.2** *Fill in the missing information*

<b>Category</b>	<b>Height</b>	<b>Runway visual range</b>
Category I	HAT not less than 200 ft	
Category II		Not less than 1200 f
Category III A	No decision height	
Category III B		
Category III C		No RVR minimum



# AIR NAVIGATION RADIO AIDS

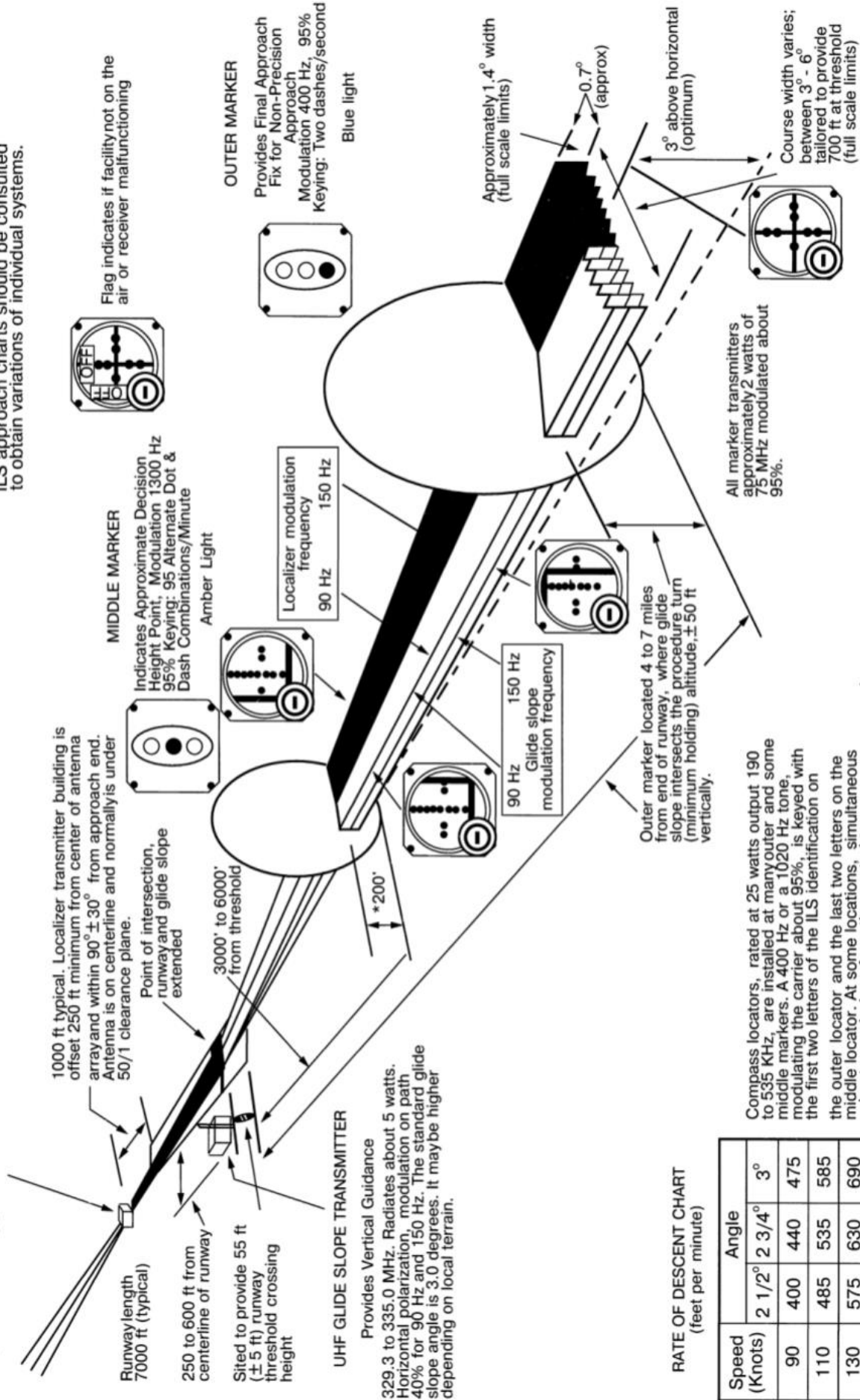
## ILS (FAA INSTRUMENT LANDING SYSTEM)

### STANDARD CHARACTERISTICS AND TERMINOLOGY

ILS approach charts should be consulted to obtain variations of individual systems.

#### VHF LOCALIZER Provides Horizontal Guidance

108.10 to 111.95 MHz. Radiates about 100 watts. Horizontal polarization. Modulation frequencies 90 to 150 Hz. Modulation depth on course 20% for each frequency. Code identification (1020 Hz, 5%) and voice communication (modulated 50%) provided on same channel.



RATE OF DESCENT CHART  
(feet per minute)

Speed (Knots)	Angle		
	2 1/2°	2 3/4°	3°
90	400	440	475
110	485	535	585
130	575	630	690
150	665	730	795
160	707	778	849

## UNIT 6

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### RADAR

1. Principle of Radar
2. Radar Systems.
3. Meteo Radars.
4. Modes and Codes

### 1. Principle of Radar

**Ex.1.1.** *Learn the new words and practice the pronunciation.*

<i>English</i>	<i>Pronunciation</i>	<i>Russian</i>
<b>Radio Detection And Ranging</b>	[ 'reɪdiəu ] [ dɪ'tek(j)ən reɪndʒ ]	радио обнаружение и дальнометрия (РЛС)
<b>object detection system</b>	[ 'ɒbdʒɪkt ] dɪ'tek(j)ən [ 'sɪstəm ]	система обнаружения объекта
<b>to determine</b>	[ dɪ'tɜːmɪn ]	определять, устанавливать
<b>range, n</b>	[ reɪndʒ ]	дальность (радиопередачи)
<b>altitude, n</b>	[ 'æltɪt(j)uːd ]	абсолютная высота полета
<b>guided missile</b>	[ gaɪd 'mɪsaɪl ]	управляемая ракета
<b>weather formation</b>		погодные образования
<b>terrain, n</b>	[ te'reɪn ]	территория, район физические особенности местности;
<b>transmitter, n</b>	[ trænz'mɪtə ], [ træns- ], [ trɑːn- ]	(радио)передатчик)

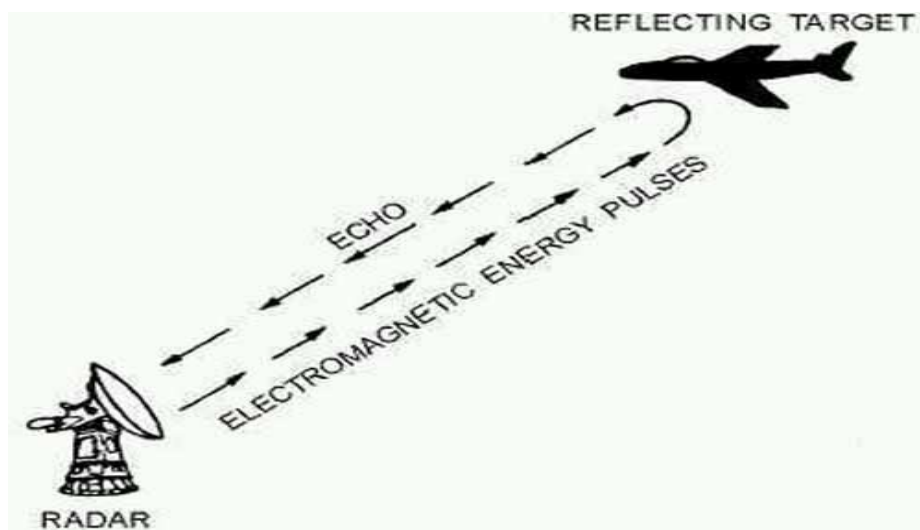
<b>to bounce off</b>	[ baun(t)s ]	подпрыгивать при посадке (о самолёте)
<b>to depend on/upon ...</b>	[ di'pend ]	зависеть от..., находиться в зависимости
<b>application</b>	[ ,æpli'keɪʃ(ə)n ]	применение, использование, употребление;
<b>basic design</b>	[ 'beɪsɪk ] [ di'zaɪn ]	основная модель
<b>initial</b>	[ i'niʃ(ə)l ]	исходный, первоначальный;
<b>primary radar</b>	[ 'praɪm(ə)rɪ ] [ 'reɪdɑː ]	радиолокатор, радар; радиолокационная установка
<b>Secondary surveillance radar( SSR)</b>	[ 'sek(ə)nd(ə)rɪ ] [ sɜː'veɪlən(t)s ]	вторичный обзорный радиолокатор
<b>in conjunction</b>	[ kən'dʒʌŋkʃ(ə)n ]	связывание, соединение
<b>synchronized surveillance picture</b>	[ 'sɪŋkrənaɪz ]	синхронизированная картина наблюдения
<b>to involve</b>	[ ɪn'vɒlv ]	вовлекать, включать включать в себя
<b>ground beacon</b>		наземный маяк
<b>to be connected with...</b>		быть связанным с...
<b>pulse, n</b> <b>to pulse, v</b>	[ pʌls ]	1) пульс; <i>тех.</i> импульс, толчок 2) <i>тех.</i> посылать импульсы
<b>burst of radio waves</b>	[ bɜːst ]	вспышка
<b>obstacle, n</b>	[ 'ɒbstəkl ]	помеха, преграда препятстви



		е
<b>to reflect</b>	[rɪ'flekt]	отражать ( <i>свет, тепло, звук</i> )
<b>to convert</b>	[kən'veɜ:t]	преобразовывать; превращать
<b>velocity</b>	[vɪ'lsəti]	скорость; быстрота
<b>to measure</b>	['meɪʒə]	измерять, мерить
<b>frequency shift</b>	'fri:kwən(t)sɪ ʃɪft	сдвиг частоты
<b>rotating antenna</b>		вращающаяся антенна
<b>bearing</b>	['beərɪŋ]	направление, азимут, пеленг
<b>transponder</b>		ответчик, радиомаяк-ответчик
<b>installed</b>	[ɪn'stɔ:l]	установленный
<b>in turns</b>		по очереди
<b>on squawk codes</b>	[skwɔ:k]	по режимам ответчика
<b>to enable</b>	['neɪbl],[en-]	разрешать, предоставлять возможность
<b>to track</b>	[træk]	1)прокладывать путь, намечать курс <i>прям.и перен.</i> 2)следить за целью
<b>to fall back</b>		отступать; прибегнуть к
<b>PPI</b> (plan-position indicator)		радиолокационный индикатор кругового обзора (радиолокационный ИКО)

**Ex.1.2.** Read about principle of radar.

The word «radar» stands for «**R**adio **D**etection **A**nd **R**anging». **RADAR** is an object detection system, which uses radio waves to determine the range, altitude, direction, or speed of objects. It can be used to detect aircraft,



ships, spacecraft, guided missiles, motor vehicles, weather formations, and terrain.

The principle of radar is very simple: the transmitter of the system sends radio wave towards the object (an aircraft, a ship). Radio wave bounces off the object and returns to the radar, so that the system knows the direction to the object, the distance to (which depends on the time the radio wave travelled to or from the object).

**Ex.1.3.** Read the answers to some questions. With a partner discuss what you think the questions could be?

Q. \_\_\_\_\_?

A. Radio Detection and Ranging.

Q. \_\_\_\_\_?

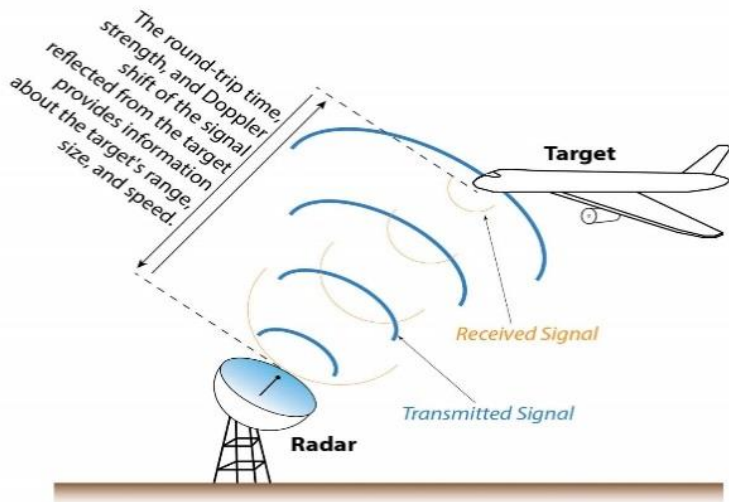
A. Radio waves.

Q. \_\_\_\_\_?

A. To detect aircraft, ships, spacecraft, guided missiles, motor vehicles, weather formations, and terrain.

Q. \_\_\_\_\_?





A. The transmitter does.

Q. \_\_\_\_\_?

A. No, it does not. It bounces off the object.

Q. \_\_\_\_\_?

A. Towards the object an aircraft, a ship.

## 2. Radar Systems.

**Ex.2.1.** Read about radar systems:

The application of radar in the air traffic control system consists of two basic designs. The initial type of radar, called primary radar, and the second one is the secondary radar. When the word “radar” used alone it usually includes both primary and secondary radar.

There are basically two types of radar-the primary radar and secondary radar.

Both radar systems work in conjunction to produce synchronized surveillance picture and involve a ground beacon that is connected to a radar screen.



A primary radar sends out a “pulse” or a burst of radio waves. This pulse uses air as its medium and travels through it pulse of an obstacle. Once the pulse hits an obstacle in its path, it is reflected back to the beacon. The beacon then calculates the time taken by the “echo” to travel back, converts this data into the distance between the beacon and obstacle and uses it to map the obstacle on the radar screen. The direction and velocity of the obstacle are also measured by checking “frequency shift” or the position of the rotating antenna of the beacon when the reflected echo is received.

Secondary surveillance radar (SSR) is a surveillance radar system, which is used in air traffic control, that not only detects and measures the position of aircraft i.e.

range and bearing, but also requests additional information from the aircraft itself such as its identity and altitude.

The system consists of two main components: transponder or transmitter-transponder that installed in the aircraft and the ground beacon (secondary surveillance radar) (SSR) installed in the ATC facilities.

The system works on the “interrogation” method in which the ground beacon sends an interrogation pulse to the transponder, which in turns replies with a pulse of its own. Transponders, however, work on squawk codes, which when given to radar controller, enables him or her to track the aircraft. Without the transponder code, a radar controller has to fall back to the primary radar, which works without a transponder.

Unlike primary radar systems, that measure only the range and bearing of targets by detecting reflected radio signals, SSR relies on targets equipped with a radar transponder that replies to each interrogation signal by transmitting a response containing encoded data. With SSR display, the controller sees aircraft returns on his PPI as two slashes, clearly distinguishing them from primary targets, which are single blips.

**Ex. 2.2.** *Read the answers to some questions with a partner and discuss what you think the questions could be?*

Q. \_\_\_\_\_?

A. Primary radar and secondary radar.

Q. \_\_\_\_\_?

A. It involves a ground beacon connected to a radar screen.

Q. \_\_\_\_\_?

A. It is reflected back to the beacon.

Q. \_\_\_\_\_?

A. The direction and velocity are.

Q. \_\_\_\_\_?


A. Secondary surveillance radar

Q. \_\_\_\_\_?

A. On the “interrogation” method.

Q. \_\_\_\_\_?

A. On the PPI as two slashes.

 **Ex.2.3.** *Listen to the recording about how primary radar work and put the sentences in the correct order.*

- The beacon converts the data into the distance between the beacon and obstacle.
- Once the pulse hits an obstacle in its path, it is reflected back to the beacon.
- The direction and velocity of the obstacle are also measured by checking “frequency shift” or the position of the rotating antenna of the beacon when the reflected echo is received.
- The pulse uses air as its medium and travels through its pulse to an obstacle.
- The beacon then calculates the time the “echo” takes to travel back.
- A primary radar sends out a “pulse” or a burst of radio waves.
- The beacon uses the data to map the obstacle on the radar screen.

### 3. Meteo Radars.

**Ex.3.1.** *Listen and read about meteo radar:*

Meteo radars in aviation are used to find whether there are poor weather areas on the aircraft’s course or near the aerodrome. The system use the same principle of primary radar: the transmitter emits radiation into the air. The masses of steam and storm clouds reflect these radio waves, then return to the weather radar antenna, so that that the pilots and controllers have the schematic of the storm activity near the aircraft and aerodromes.

**Ex. 3.1.** *Read the answers to some questions with a partner and discuss what you think the questions could be?*

Q. \_\_\_\_\_?

A. Meteoradars are.

Q. \_\_\_\_\_?

A. The masses of steam and storm clouds do.

Q. \_\_\_\_\_?

A. The schematic of the storm activity near the aircraft and aerodromes.

.  
.

Q. \_\_\_\_\_?

A. The direction and velocity are.

Q. \_\_\_\_\_?

A. Secondary surveillance radar

Q. \_\_\_\_\_?

A. On the “interrogation” method.

Q. \_\_\_\_\_?

A. On the PPI as two slashes.



## 4. Modes and codes

**Ex. 4.1.** *Read the main statements and try to find more information about modes and codes. ?*

The SSR system provides for six modes; only two modes are used in civil aviation:

- Mode A for civil and military identification.
- Mode C for automatic pressure altitude information.

Monopulse secondary surveillance radar (MSSR), Mode S, TCAS and ADS-B are similar modern methods of secondary surveillance.

**Ex. 4.3.** *Discuss the questions with a partner.*

1. What does the word «radar» mean ?
2. What is radar used for?
3. What is primary radar? What information does it provide?
4. How does the radar function?
5. What does SSR stand for?
6. What information does the SSR provide?
7. What are the differences between primary radar and SSR?
8. What is the purpose of a meteorological radar in aviation?
9. How does the meteoradar work?
10. How does the radar assist the pil

# SECTION II



# WATCH THE VIDEO





## UNIT 1.VIDEO TASK



### Why I Love My Job as an Airline Pilot [https://www.youtube.com/watch?v=LEul\\_SV8LWI](https://www.youtube.com/watch?v=LEul_SV8LWI)

#### *Before you watch*

Ex.1. *Work in pairs. Discuss the questions.*

1. What makes people become pilots?
2. What are the advantages and disadvantages of being a pilot?

**2. You are going to watch a video about Daniel Bailey, an airline pilot from the US. Look at the pictures showing Mr. Bailey and his working environment and try to predict what he will talk about:**

1. the type of airline he works for
2. his experience of working as a pilot
3. the aspects that he likes most in his job

#### *While you watch*



**3. While watching, check your answers in Ex. 2.**

**4. Say if the statements below are true or false.**

1. Mr. Bailey works for a small airline.
2. He flies the Boeing 747-200.
3. He used to fly the Boeing 737 and the Boeing 727.
4. He has worked as a pilot for 12 years.
5. He tried a lot of different things before becoming a pilot.

6. He says that having an entry level job in aviation means having good pay and beneficial schedule.
7. He says that it does not matter how long you have worked for the same company.
8. What motivates him in his job is the fact that he enjoys it and has responsibility for other people.
9. One of the things that he likes about his job is that it gives him the opportunity to travel.
10. What he does not like about his job is that he has too much time off.

***After you watch***

**5. Work in pairs. *Student A* is an apprentice who wants to work for a Russian airline company but he/she lacks money and experience. *Student B* has just come back from the United Kingdom after training at Bristol Flying Centre. Look at the information on the cards below and spend a few minutes preparing what you are going to say.**

**Student A:** You are from Russia and you are worried about your future job prospects. You would like to work for an airline company, but you haven't got a special license. Your friend has just come back from the United Kingdom where he/she got a commercial pilot license at Bristol Flying Centre. Ask him/her about his/her experience.

**Student B:** You have just come back home from the United Kingdom after finishing a training course at Bristol Flying Centre. Your friend is worried about his/her future job prospects and would like to go to the UK to do a training course too but it is very expensive for him/her. You need to convince him/her that he/she should go to this centre.

**6. Work in groups. Discuss the questions.**

1. Would you like to work for Aeroflot or Air China? Why/why not?
2. What other airlines would you consider working for?
3. What countries and cities are leaders in aviation? What fields of aviation do they specialize in? Surf the Internet and fill in the chart below:

Country	Fields of aviation the country specializes in
Germany	
Russia	
India	
China	



## UNIT 2.VIDEO TASK

### A Day in the Life of a Pilot

<https://www.youtube.com/watch?v=-xpD5OXmygk>

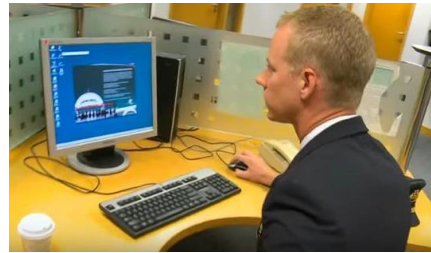
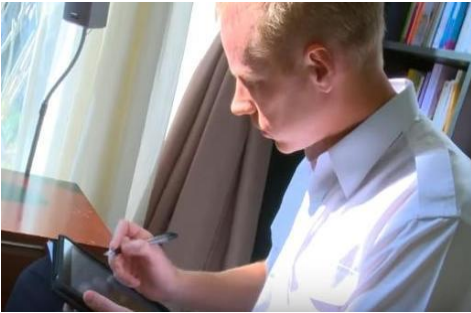


*Before you watch*

*1. Work in pairs. Discuss the questions.*

1. What kind of schedule do pilots have?
2. What kind of tasks do pilots do?

*2. You're going to watch a video about one day in the life of Cathay Pacific Senior First Officer Richard Clausen. Look at the pictures. Where do you think he is? What is he doing?*



*While you watch*

**3. While watching, check your answers in Ex. 2.**

**4. Decide if the statements below are true or false.**

1. Richard is thirty two years old.
2. He has been flying for ten years.
3. He flies the Airbus.
4. He begins preparations four hours before the flight.
5. The first thing he does is download some documents and check the weather.
6. He tries to keep fit.

7. When he was a young boy, his father would buy him toy planes.
8. As a child, he often talked to pilots.
9. He says it is important to be determined if you want to go into aviation.
10. He always flies with the same crew.
11. He likes the fact that he works in a busy environment.
12. The aircraft in the video has two computers protecting the crew and the passengers.
13. Pilots at Cathay train continuously in order to know how to deal with emergencies.

**5. Answer the following questions.**

1. What do the five Ps Richard mentions stand for?
2. Who are Dennis and Evan? What are they responsible for?
3. Why does Richard mention Big Brother

**After you watch**

**6. Work in pairs. *Student A* is a pilot at Pulkovo Airport. *Student B* Russian journalist who is preparing an article about pilots and air traffic controllers for the Aviation Week magazine. Look at the information on the cards below and spend a few minutes preparing what you are going to say.**

<p><b>STUDENT A:</b> <b>PILOT</b> Use the following prompts and your own ideas to speak about:</p> <ul style="list-style-type: none"> <li>• why you decided to become a pilot;</li> <li>• how long you have been working as a co-pilot;</li> <li>• what your typical working day is like;</li> <li>• what you find the most difficult in</li> </ul>	<p><b>STUDENT B: JOURNALIST</b> Think about the questions you are going to ask Student B. You need to find out about:</p> <ul style="list-style-type: none"> <li>• why he decided to become a pilot;</li> <li>• how long he has been working as a co-pilot/captain;</li> <li>• about his typical working day;</li> <li>• what he finds the most difficult in his</li> </ul>
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<p>your work;</p> <ul style="list-style-type: none"> <li>• some unusual situations you have faced at work;</li> <li>• _____ _____;</li> <li>• _____ _____.</li> </ul> <p><i>(additional points)</i></p>	<p>work;</p> <ul style="list-style-type: none"> <li>• about unusual situations he has faced at work;</li> <li>• _____ _____;</li> <li>• _____ _____.</li> </ul> <p><i>(2 more questions)</i></p>
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## UNIT 3.VIDEO TASK



### Cockpit differences. Boeing 737 /Airbus 320

- 1) <https://www.youtube.com/watch?v=c06S8rCwOnI>
- 2) <https://www.youtube.com/watch?v=nYA6uWF86CY>

#### *Before you watch*

##### *1. Work in pairs. Discuss the questions.*

- What are the basic differences between these aircraft types?
- Why are these types of aircraft are so frequently discussed ?

#### *While you watch*

*You are going to watch a video about the two aircraft types. While watching, check your answers in Ex. 1*

##### *2. Watch the video again. Fill in the table*



Type		
Cockpit features		
Handling particularities		
Pros and cons		

***Ex.3. Watch the video again and fill in the gaps.***

1. The Boeing 737 classic has most of its instruments \_\_\_\_\_, as you can see here, but there are \_\_\_\_\_ electronic flight instrument displays.
2. So, welcome to Airbus A320. The first thing you may notice is the \_\_\_\_\_.
- 3.. The throttles on the 737 can be \_\_\_\_\_ as well as \_\_\_\_\_.
4. Contrary to the Boeing, the throttles are not moved by the \_\_\_\_\_. They can only be moved \_\_\_\_\_.
5. If you have a fault in \_\_\_\_\_, you may have no thrust at all and you may be stuck with an \_\_\_\_\_ running.
6. On the Airbus A320, as you can see, most of the switches are \_\_\_\_\_.
7. This is good because you can immediately see if a button is in a \_\_\_\_\_ position or a good position by just \_\_\_\_\_ at a light.
8. On the Boeing 737 we control the aircraft \_\_\_\_\_. You can see it. And on the Airbus you have a \_\_\_\_\_.
9. The stabilizer trim, which helps us control the aircraft on the Boeing is controlled manually by \_\_\_\_\_ a switch. The Airbus has \_\_\_\_\_.
10. If we have a failure on the 737, we have to use a paper book called \_\_\_\_\_.
11. Another thing you have to do on the 737 after an engine failure is \_\_\_\_\_ by yourself, trim the aircraft \_\_\_\_\_.

12. When you have a bigger failure on the Airbus, you have a second way of having a \_\_\_\_\_.

13. Now on the Airbus, when you have an engine failure, when asymmetric thrust, the aircraft \_\_\_\_\_ everything by itself.

14. What makes a Boeing really a very desirable airplane is its \_\_\_\_\_.



## UNIT 4.VIDEO TASK

### 1. Microburst

**microburst** /maɪkrəʊˌbɜːst/ - a sudden, powerful, localized air current, especially a downdraught.

*Before you watch*

**1. Work in pairs. Discuss the questions.**

1. What atmospheric phenomenon is a microburst similar to?
2. How can microbursts be classified?
3. Why do microbursts pose a great danger to pilots?

**2. Match the words with their opposites.**

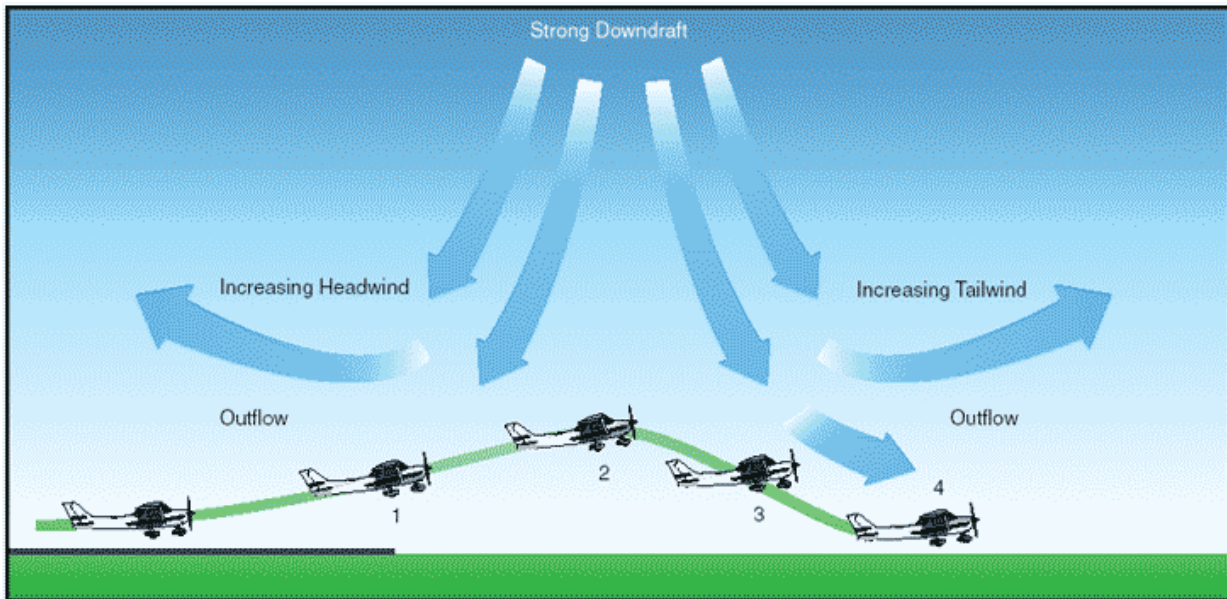
bright	dry
freezing	darkness
tailwind	light
wet	smooth
sunlight	cool
rough	clear
warm	dull
heavy	scorching
overcast	headwind



*While you watch*

3. You are going to watch a video about [a microburst](#), a sudden, powerful, localized air current, especially a downdraught. While watching, check your answers in Ex. 1 and Ex. 2.

4. Watch the video again. Describe what happens to the aircraft in positions 1, 2, and 3.



*After you watch*

6. Discuss what other weather and atmospheric phenomena you know and what problems they can cause to pilots and aircraft.



## UNIT 5.VIDEO TASK

### 2. Airport Markings





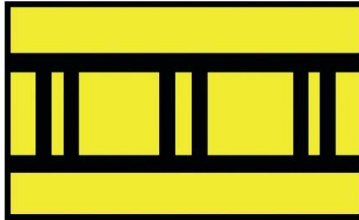

<https://www.youtube.com/watch?v=MrrL92AH23A>

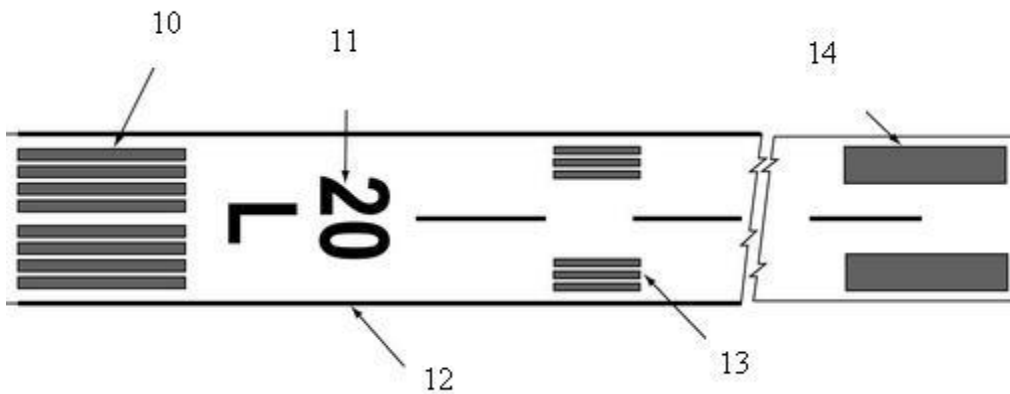
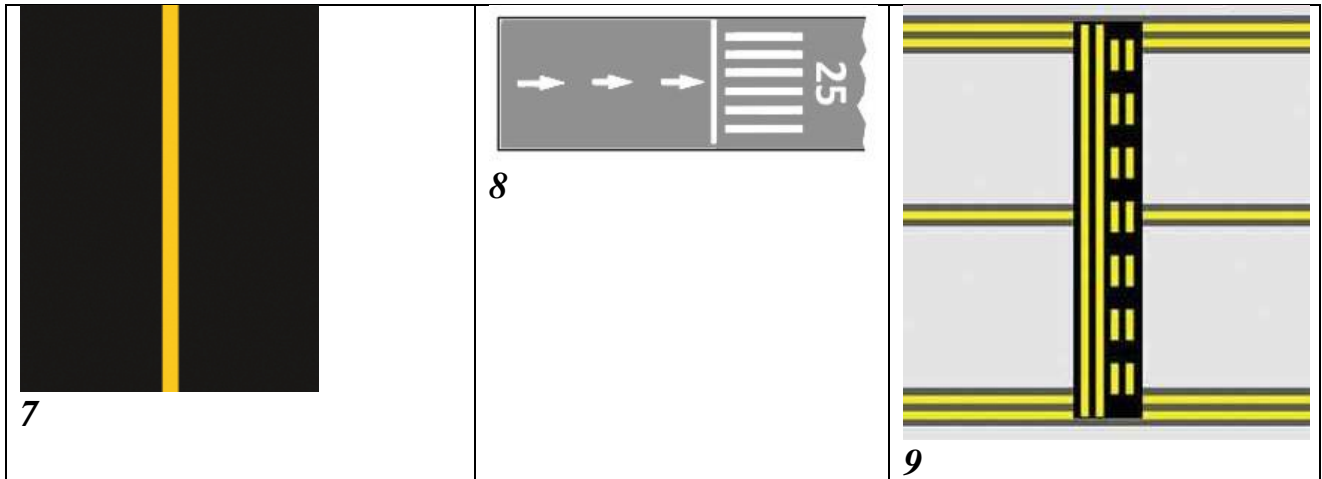
*Before you watch*

*1. Work in pairs. Discuss the questions.*

1. Why are airport signs and markings so important?
2. What do you know about the methods of identifying runways and taxiways?

*2. Match the markings given below with their meanings or names.*

		
<p>1</p>	<p>2</p>	<p>3</p>
		
<p>4</p>	<p>5</p>	<p>6</p>



- a. dashed line
- b. side stripe
- c. aiming point
- d. runway holding position
- e. closed runway / taxiway
- f. ILS critical area
- g. double line
- h. threshold
- i. touchdown zone
- j. enhanced taxiway centreline
- k. designation
- l. solid line
- m. chevron markings

*n. displaced threshold*

***While you watch***

***3. Watch a video about different types of airport markings and check your answers in Ex. 1 and Ex. 2.***

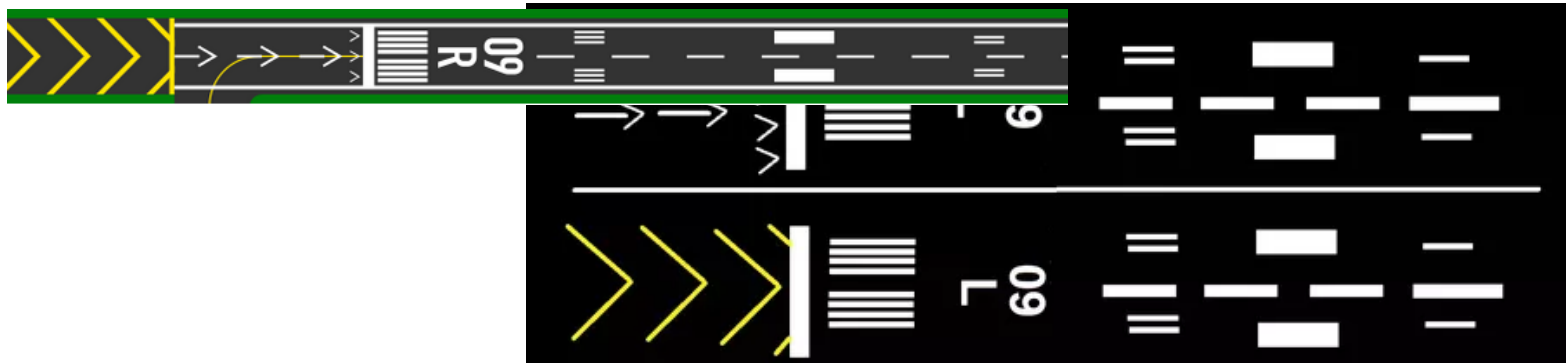
***4. Watch the video again and fill in the gaps.***

1. Each runway is identified with \_\_\_\_\_ painted on \_\_\_\_\_.
2. When labelling the runways, the magnetic heading of the runway is \_\_\_\_\_ to the \_\_\_\_\_.
3. The runway name is pronounced with \_\_\_\_\_.
4. \_\_\_\_\_ center stripes are painted on runways to aid pilots with \_\_\_\_\_ when \_\_\_\_\_ and \_\_\_\_\_.
5. Additional markings can identify the \_\_\_\_\_, the \_\_\_\_\_, the \_\_\_\_\_ and the pilot's \_\_\_\_\_.
6. Additional stripes are used as distance markers each \_\_\_\_\_.
7. Runways that are undergoing \_\_\_\_\_, are currently unsafe or have been \_\_\_\_\_ are marked with yellow Xs.
8. A displaced threshold is marked with white \_\_\_\_\_.
9. At larger airports, taxiways will have a \_\_\_\_\_ stripe to mark the \_\_\_\_\_ of the taxiway and \_\_\_\_\_ lines to mark the \_\_\_\_\_ of the taxiways.
10. When approaching runway holding position markings, you must have \_\_\_\_\_ to cross the \_\_\_\_\_ if you are on the side with solid lines.

11. Holding markings for ILS critical areas consist of \_\_\_\_\_ lines stretching the \_\_\_\_\_ of the taxiway connected together with pairs of \_\_\_\_\_ lines.

*After you watch*

**4. Work in pairs. Take turns describing the runways depicted below.**





Video-2



## UNIT 6.VIDEOTASK

<https://www.youtube.com/watch?v=MrrL92AH23A>

## ILS

<https://www.youtube.com/watch?v=PziW3iKF5GI>



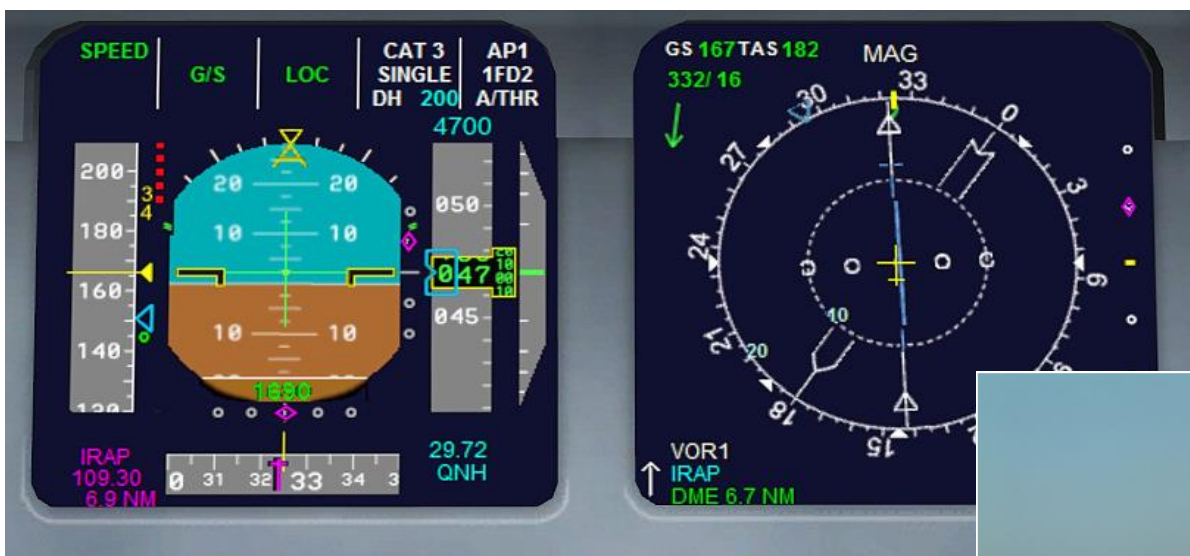
*Before you watch*

1. *Work in pairs. Discuss the questions.*

- What does ILS stand for?
- What are the ILS components?
- What kind of assistance does it provide?

2. *Match the components given below with their names.*

- Glide path antenna
- Marker beacon
- Localizer antenna
- Marker beacon light in the cockpit
- Navigation display





*While you watch*

*3. Watch a video about ILS operation and check your answers in Ex. 1 and Ex. 2.*



*4. Watch the video again and fill in the gaps.*

- a.* Instrument landing system is a \_\_\_\_\_, which provides \_\_\_\_\_ to an aircraft approaching and landing on the runway.
- b.* It provides safe landings during \_\_\_\_\_, such as reduced visibility due to rain, fog or blowing snow.
- c.* The ground equipment comprises \_\_\_\_\_, called as the localizer and the glide slope and three marker beacons.
- d.* Localizer is \_\_\_\_\_ normally located beyond the \_\_\_\_\_ of the runway.
- e.* A glide slope station is \_\_\_\_\_ sided on the one side of the runway \_\_\_\_\_, approximately \_\_\_\_\_ meters away.
- f.* The ILS is typically equipped with \_\_\_\_\_ to assist pilots to \_\_\_\_\_ their location on \_\_\_\_\_.

- g.* The middle marker indicates a position \_\_\_\_\_ feet from the runway threshold.
- h.* When the aircraft passes outer beacon overhead, a vertical radio signal activates rapidly flashing blue light on the \_\_\_\_\_.
- i.* This system enables pilot to \_\_\_\_\_ the runway with the assistance of the \_\_\_\_\_.

**5. Complete the table below :**

<b>Equipment</b>	<b>LLZ</b>	<b>GS</b>	<b>OM</b>	<b>MM</b>	<b>IM</b>
<i>location</i>					
<i>purpose</i>					
<i>assistance</i>					

***After you watch***

- 1. Work in pairs. Take turns describing the ILS operation.**

***You can watch another video.***

***Video-2***

***<https://www.youtube.com/watch?v=FeELh0kMSIA>***





## UNIT 7.VIDEOTASK



### Radars and transponders

[https://www.youtube.com/watch?v=XdJF5\\_\\_2IZQ](https://www.youtube.com/watch?v=XdJF5__2IZQ)

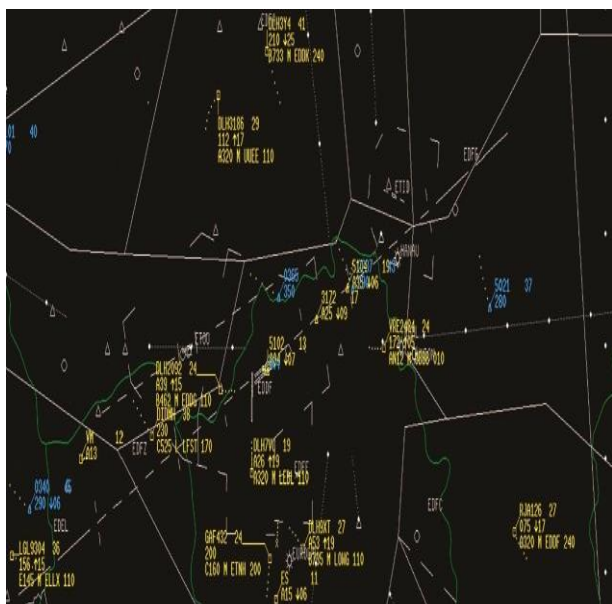
*Before you watch*

**1. Work in pairs. Discuss the questions.**

- What does RADAR stand for?
- What do you know about the methods of tracking the aircraft?
- What is transponder?

**2. Match the pictures given below with their description or names.**

- Primary Surveillance Radar coordinates within the terminal area with further data transmission to ATC centers. It consists of an antenna unit mounted on a tower and a shelter housing the instrumentation.
- The primary-secondary airdrome surveillance radar AORL-1AS is intended for operation in airports with congested traffic or average intensity of flights.
- Simulated radar screen.
- Traffic Displayed on civilian ATC radar.





*While you watch*

**3. Watch a video about radars and transponders and check your answers in Ex. 1 and Ex. 2.**

**4. Watch the video again and fill in the gaps.**

- a. Two types of radar systems used to air traffic controllers in providing \_\_\_\_\_ and \_\_\_\_\_ services to pilot.
- b. The primary radar system transmits \_\_\_\_\_, and then listens for these pulses to be reflected back and \_\_\_\_\_.
- c. The range of the radar return is determined by \_\_\_\_\_ between the transmission and r\_\_\_\_\_ the radar return.
- d. The data from the radar is processing by computer and \_\_\_\_\_ on the radar display.
- e. Primary radar may also be \_\_\_\_\_ or affected by precipitation or another \_\_\_\_\_.
- f. Secondary radar operates by \_\_\_\_\_ on board airplane called transponders.
- g. Code \_\_\_\_\_ is a standard code used by all aircraft flying at VFR.
- h. Many pilots switch their transponder to “\_\_\_\_\_” while changing codes in order to make sure that one of these codes will not \_\_\_\_\_ to air traffic control.

- i. When the pilot presses the “\_\_\_\_\_” button on the transponder, it sends the ident signal to the \_\_\_\_\_ radar system.

*After you watch*

**5. Summarize your ideas to complete the table below:**

<i>Type of radar</i>		
<i>location</i>		
<i>function /principle</i>		
<i>assistance</i>		
<i>advantages</i>		
<i>disadvantages</i>		
<i>codes to remember</i>		

**4. Work in pairs. Take turns talking about radar system and its function.**

**Video-2**

<https://www.youtube.com/watch?v=H4skJviQIMo>





## Listening Scripts

### UNIT 1

#### THE FLIGHT CREW MEMBERS' RESPONSIBILITIES



##### Ex. 2.

The aircraft is usually operated by two, three, or four pilots, depending on the type of aircraft and length of the journey. The captain has complete responsibility for the safe and efficient operation of the aircraft, including its crew.

The crew of any passenger aircraft consists of the First Officer (co-pilot) and the Captain (Pilot in Command). They remain in the flight deck (cockpit) during flight. Pilots carry out a range of tasks; many tasks are shared between the Captain and First Officer.

The role of the Pilot in Command is indeed to be in command. He is responsible for the smooth and professional handling of the aircraft.

You should know your aircraft well and know how to operate it efficiently according to the established standard operating procedures.

The tasks generally include:

- Providing accurate information about the route, weather, passengers, and aircraft;
- Analyzing the flight plan, including the route and flying altitude;
- Supervising the loading and fueling of the aircraft;
- Ensuring that all safety systems are working properly;
- Briefing the cabin crew before the flight;
- Communicating with Air Traffic Control prior to takeoff, in-flight, and when landing;
- Ensuring that noise regulations are followed during takeoff and landing;
- Reading and interpreting instruments and controls data;
- Communicating with passengers using the Public Address (PA) system.

The co-pilot must be familiar with all of the captain's duties. He must be extremely proficient in engine operation, and know what to do to keep the airplane flying smoothly. He must have thorough knowledge of cruising control data, and know when and how to apply these data. He is also an engineering officer aboard, and must maintain a complete log of performance data. He must be proficient in the operation of all radio equipment located in the pilot's compartment.

Some airliners also have a navigator, a radio operator, and a flight engineer. They

are also crew members. The navigator's job is to direct the flight from departure to destination and back. He must know the exact position of the airplane at all times. The pilot and the navigator study the weather they might encounter and weather conditions at alternate airfields, and the pilot decides on the proper course of action. If there is doubt regarding the position of the airplane, the pilot and the navigator must analyze the situation and decide upon the best action to take.

A qualified flight engineer must know his airplane, its engines, and its equipment thoroughly. He must work closely with the co-pilot, checking engine operation, fuel consumption, and the operation of all equipment. He should have general knowledge of radio equipment, and must be able to assist in tuning transmitters and receivers.

There is a lot of radio equipment in today's aircraft. There is one man in particular who knows all about this equipment – the radio operator. He must provide communication with Air Traffic Control.

It is difficult to overestimate the importance of each crew member on board, as they ensure the safety of their flights. Passengers' lives depend on them.

## UNIT 2

### PILOT'S DUTIES

### CAPTAIN'S DUTIES

#### Ex.2.

I joined Air France in 1978, after passing the ENAC entrance exam and preparatory course. I started out as a co-pilot for a few years before being made captain. I've been a captain for 18 years now. I have piloted numerous types of aircraft ranging from the Caravel to the Boeing 777, which I fly today.

To begin my mission, I have to clock in, 1h 45m before the scheduled flight departure time.

The second phase concerns flight preparation, an important phase which involves determining the amount of fuel to carry, which is a hugely important decision.

The third phase involves meeting the crew. The crew is comprised of the co-pilot, first officer, and cabin crew. Together, we discuss the particularities of the upcoming flight.

The next phase is our arrival at the aircraft, one hour in advance, so we can welcome passengers approximately 40 minutes before the scheduled take-off.

Aside from piloting the aircraft, my mission concerns piloting a team which possesses a whole range of skills. The primary skills are those of the captain and first

officer or co-pilot. The co-pilot has more or less the same skills as the pilot, and his experience will one day allow him to become a captain.

The chief purser also has an important role to play. He or she supervises the team of flight attendants on board and liaises with the captain. While the captain's mission is to coordinate his skills with those of the first officer, flight attendants are under the supervision of the chief purser, who looks after the passengers' comfort and safety.

It is a group effort. As captain, I am the one who makes the final decision in all situations, using my various skills to make the most suitable choices. The captain's job is to transport the passengers from point A to B in optimum safety conditions, ensuring that they arrive at their destination on time. Punctuality is fundamental, and good customer-relations skills are equally important in ensuring that all passengers have a pleasant time on board our aircraft and arrive at their destination feeling relaxed.

The main downside is the unstable lifestyle. Some people find it easier than others. This might mean getting up early or staying up very late for a night flight, or having to fly on Sunday or a public holiday. There are no distinctions made between working days. It's about spending a lot of time away from home. It's adopting strict discipline to avoid being tired, such as avoiding drinking before a flight or cutting back on the parties and social occasions. These are the sorts of challenges flying presents, as opposed to other professions that offer a much more stable lifestyle.

I like the diversity my job provides. There's constant variety: the different places we visit, the diverse people we meet, and the fact that no two flights are the same due to the weather conditions, the technical flight aspects, and the passengers we're transporting.

We constantly face new situations and experience new things in this profession.

#### **Ex.6.**

Airline pilots carry passengers and cargo on either domestic or international flights. Pilots are generally employed for scheduled passenger services, chartered passenger services, freight services, and business aviation.

The best and most important feature on any airplane is a well-trained, highly motivated, and professional pilot. Flying today's complex aircraft in congested and complicated airspace is a challenging task even for experienced pilots. Therefore, the primary task of a pilot is to operate aircraft safely and efficiently.

Pilots' duties include much more than simply boarding and flying the airplane. Pilots must check weather conditions and plot a safe route. They must then file the flight plan with Air Traffic Control. They must thoroughly study the weather data and flight plan before pushing back from the gate.

During preflight checks, pilots must thoroughly check the aircraft to ensure that all

systems are operating properly and all equipment is functioning properly.

During the flight, pilots must monitor its progress and maintain communications with Air Traffic Control facilities on the ground. After the flight, they complete the necessary paperwork for the flight and close out the flight documents.

### **Ex.11.**

The Pilot in Command is indeed in command of the aircraft. This means not only being responsible for the smooth and professional handling of the aircraft, but also being in control of the situation in general.

You should know your aircraft well and know how to operate it efficiently according to the established standard operating procedures. You should plan each flight thoroughly and be well-rested prior to flight.

Arrive early for each flight if possible, and plan at a professional pace, making use of the resources available. Do not allow distractions to interfere unduly with your planning.

After planning the flight, you will likely need to organize and supervise the fueling of the airplane, and then the loading of the baggage and the boarding of the passengers.

## III. Crew coordination

### **Ex.3.1.**

Crew coordination is the term used to describe the organization and distribution of tasks associated with a particular flight in a multi-crew cockpit environment.

In a two-pilot cockpit, the tasks should be systematically organized and distributed so that one pilot has the primary task of handling the aircraft. This person is known as the Pilot Flying (PF), and he is supported and monitored by the Pilot Not Flying (PNF). Each person's duties should be clearly defined either by the standard operating procedures or by the Pilot in Command, with the workload being fairly evenly divided between the two.

There must be systematic cooperation between the PF and PNF, with an open flow of information in both directions. The tasks being performed by one must be monitored by the other, in both normal and abnormal situations. Vital tasks, such as running through checklists, are usually performed together.

## THE EFFECTS OF THE WEATHER ON AVIATION

### Ex.2.3.

Accurate weather forecasts are essential to aviation. Before taking off, a pilot obtains a weather forecast which gives him the weather conditions which are expected along the route of the flight and at the destination. As weather conditions affect the aircraft in flight, meteorologists provide pilots and air traffic controllers with special aviation forecasts.

During pre-flight, pilots at larger airports monitor Automatic Terminal Information Service (ATIS) broadcasts. These broadcasts give information about weather conditions, which runways are active, and any notices to airmen (NOTAM) with details of local hazards, closed runways, and so on. Pilots listen to ATIS broadcasts before contacting control. This helps to reduce controllers' workload and also keeps radio traffic to a minimum. Each ATIS broadcast has an identifier letter which is given at the end of the broadcast. Whenever an updated broadcast is made, a new identifier is assigned in alphabetical order. This allows control to know immediately whether or not a pilot has the very latest information.

A basic weather report follows a standard format.

First comes the wind speed and direction, usually in knots or meters per second, then the visibility – in meters when less than 5,000m, and in kilometers when 5,000m or greater.

The next item is the weather: rain, fog, mist, haze, snow, etc.

Then the cloud base is passed. Cloud cover is measured in oktas and conveyed to a pilot as follows: sky clear; 1-2 oktas as few; 3-4 oktas as scattered; 5-7 oktas as broken, and 8 oktas as overcast.

Information regarding thunderstorms is conveyed in a fourth section.

Air temperature is given in degrees Celsius.

The dew point is also important because if the two figures are close together there is a chance for fog.

QFE and QNH are conveyed in hectopascals.

When the weather conditions meet particular criteria – visibility of 10 km or more, no precipitation, no thunderstorm or shallow fog, no cloud below a level of 1500 m and no CB at any level – the word “CAVOK” is passed.

In foggy conditions Runway Visual Range, or RVR, is passed. This signifies how far the pilot is likely to be able to see along the runway. Measurement only begins when



the meteorological report gives a general visibility of 1,500 m or less, and the pilot decides whether or not it is within the limits known as “company minima” (a pilot’s minima of a certain airline company) for landing or takeoff. RVR is measured at touchdown, mid-point, and stop end by the human observer method or by means of electronic equipment.

Information about wind shear is also included in the ATIS broadcast.

### **3. Major weather problems in aviation**

#### **Ex.3.1.**

Thunderstorms comprise a major weather problem, as they present a variety of hazards for an aircraft. Aircraft will avoid thunderstorms, which can cause delays as routes are closed due to storm activity.

A pilot needs to know wind direction and speed as wind can negatively affect a flight.

When a plane is en route, a headwind may delay its arrival at its destination, and should be avoided if possible. A tailwind, however, can be of great advantage as it increases ground speed and results in reduction of fuel consumption. Crosswinds are extremely dangerous for an aircraft, especially when landing. An aircraft can lose speed, and might not land on the runway. This can even cause the aircraft to crash. Winds vary with altitude and location.

Wind shear is a sudden and unexpected change in wind speed and direction. It has contributed to many emergencies and accidents, especially when planes are close to the ground. Wind shear presents a serious danger, as it is invisible and might cause the aircraft to stall or undershoot the RW. Wind shear itself is a meteorological phenomenon occurring over a very small distance, but it can be associated with line squalls and cold fronts. Moreover, the additional hazard of turbulence is often associated with wind shear. Wind shear is also a danger for an aircraft making steep turns near the ground. The different airspeed each wing tip experiences can result in an aerodynamic stall on one wing, causing a loss of control.

As a result of the accidents in the 1970s and 1980s, in 1988 the U.S. Federal Aviation Administration mandated that all commercial aircraft be equipped with on-board wind shear detection systems. Since 1995, the number of major civilian aircraft accidents caused by wind shear has dropped to approximately one every ten years.

There are also some hazardous weather phenomena which can seriously affect runway condition, such as heavy precipitation (snow, rain, freezing rain, and sleet),

changeable temperature, ice, etc. Ice and snow can make braking and taxiing difficult or impossible if severe enough. Freezing rain might cause icing of an aircraft and runway surface. It reduces braking action and could potentially cause sliding off the runway, or an undercarriage problem which can lead to a serious incident or accident.

Another major hazard to aircraft is poor braking action, which may occur when the runway is icy, or if it is coated with snow or slush.

Temperature can greatly influence safe flying. Changeable temperature (from 0° to -10°) could potentially cause icing of an aircraft and the runway. Icing and icy conditions often lead to accidents. Icing of the wings is a common problem for an aircraft. It is potentially very dangerous, as even a small amount of ice or frost can greatly reduce lifting power and result in problems during takeoff. If ice builds up during flight, the consequences can be catastrophic, which is why aircraft are de-iced prior to takeoff. Modern planes are designed to prevent ice buildup on their wings, engines, and tail. Additionally, pilots may have special ice detectors in order to avoid icy areas.

Pilots usually report any unexpected weather phenomena they encounter, which may include severe turbulence, icing, or any other condition they think may affect flight safety.

In meteorology, visibility is the distance at which an object or light can be clearly seen. It is important for all forms of traffic, especially for aviation. Visibility is often reduced by air pollution and high humidity. Various weather stations report these phenomena as haze or mist. Fog and smoke can reduce visibility to near zero, making flights extremely dangerous. Heavy rain causes not only low visibility, but the inability to brake quickly. The international definition of fog is visibility of less than 1 km; mist denotes visibility of between 1 and 2 km, and haze denotes visibility of between 2 and 5 km. Visibility of less than 100 meters or 1/16th of a mile is usually reported as zero. Under these conditions, airports might close. If visibility or ceiling is below minima, a controller won't clear a pilot to descend from transition level; instead, he gives instructions to go around. A captain sometimes decides to seek an alternative.

#### 4. Weather reports and flying conditions

##### **Ex.4.1.**

Changing weather conditions can turn a routine flight into a potentially difficult or dangerous situation. Pilots carefully monitor weather conditions not only at the airport they depart from, but also en route and at their destination. Routine weather reports are called METARs. METAR is an abbreviation of the French words Météorologique

Aviation Régulière, meaning routine aviation weather. Such reports give information about temperature, dew point, wind speed and direction, precipitation, cloud cover and heights, visibility, and barometric pressure, which is crucial for accurately determining altitude. Pilots en route routinely pass on weather observations and reports of turbulence to controllers, who in turn alert other pilots in the area to these conditions.

## **PIREP, METAR, TAF, SIGMET, ATIS, NOTAM**

### **Ex.4.3.**

When an airplane takes flight, the type and intensity of the weather determine the Federal Aviation Regulations (FARs), the Federal Laws, used for that flight. Conditions where the ceiling is higher than 1,000 feet and visibility is greater than three miles are known as Visual Meteorological Conditions (VMC), and Visual Flight Rules (VFR) are used. Conditions where the ceiling is lower than 1,000 feet and/or visibility is less than three miles are known as Instrument Meteorological Conditions (IMC) and Instrument Flight Rules (IFR) apply. The ceiling is the height above the Earth's surface of the lowest layer of clouds or obscuring phenomena that is reported as "broken," "overcast," or "obscuration," but is not classified as "thin" or "partial." Most scheduled airline flights follow IFR. IFR procedures and regulations allow licensed pilots to fly using only the aircraft instrument panel. Even when nothing can be seen through the windows of the cockpit, an IFR-rated pilot can complete a flight from start to finish. This means that planes can fly in most weather conditions. However, some weather poses such a threat to the safety of an aircraft that a pilot will not fly.

Wind shear is a sudden and unexpected change in wind speed and direction, which has contributed to many emergencies and accidents, especially when planes are close to the ground; freezing conditions can cause a buildup of ice on a plane, which can lead to potentially dangerous complications; very strong winds, especially when blowing across the runway, can make takeoff and landing extremely dangerous, if not impossible; heavy rain can cause water to build up on runways, making them slippery and hazardous.

## **UNIT 4**

### **AIRCRAFT**

### **Ex.1.2.**

An aircraft (airplane, aeroplane, plane) is a vehicle which is able to fly in the air

and carry goods, passengers, or weapons. Airplanes, helicopters, hot-air balloons, airships, and gliders are all aircraft. They are dirigibles supported by the dynamic action of the air upon their aerodynamic surfaces, or airfoils, to develop the necessary supporting force.

### Ex.3.2.

#### **Airbus 300-600R.**

The Airbus 300-600R is a short, medium- to long-range aircraft, with two Pratt & Whitney turbofan engines attached to the wings. The aircraft has two aisles with 10 seats across. The cabin is 4.5 meters wide, with a maximum seating capacity of 278. The cabin is divided into business class (24 seats) and economy class (254 seats). The wingspan of the A300-600R is 44.84 meters and the fuselage is 54.08 meters long. It has a range of 4,997 nautical miles with a full passenger load. The cruising altitude of this aircraft is 12,300 meters. The maximum takeoff weight is 170,500 kg. The A300-600R has four cabin doors and cargo compartment doors at the front and back of the aircraft. It also has two emergency exits above each wing.

#### **McDonnell Douglas MD-80.**

The McDonnell Douglas MD-80 is a short- to medium-range aircraft. It has a single aisle. The two Pratt & Whitney turbofan engines are mounted on the rear of the fuselage below the T-tail. These aircraft have a maximum seating capacity of 147 in economy class. There is no business class. The cabin is 2.24 meters wide, with 5 seats across.

The wingspan is 32.87m, and the fuselage is 45.06m long. The aircraft can fly at 860 km/h at an altitude of 11,300m with a range of 2,360 nautical miles. The maximum takeoff weight is 67,812 kg.

The MD-80 has one passenger cabin door on the left side, and a central staircase in the tail. It has three cargo compartment doors and two galley service doors, one at the back and one at the front. There are four emergency exits.

### **Ex.4.3.**



The parts of an aircraft are generally divided into three categories.

The airframe is comprised of the mechanical structure and associated equipment.

The propulsion system (if it is powered) is comprised of the engine or engines and

associated equipment.

Avionics are comprised of the electrical flight control and communication systems.

### **Ex.4.3. Airframe**

The airframe of an aircraft is its mechanical structure. The main parts of the airframe are the fuselage, wing, stabilizing tail or empennage, and undercarriage.

**Fuselage.** The fuselage is an aircraft's main body section containing the crew cockpit or flight deck, and any passenger cabin or cargo hold. In a single- or twin-engine aircraft, it will often also contain the engine or engines. The fuselage also serves to position control and stabilization surfaces in specific relationships to lifting surfaces required for aircraft stability and maneuverability.

**Wing.** The wings of an aircraft produce lift. Most early fixed-wing aircraft were biplanes, having wings stacked one above the other. Most types nowadays are monoplanes, having one wing on each side.

**Undercarriage.** The undercarriage, or landing gear, is the structure that supports an aircraft when it is not flying and allows it to taxi, take off and land. Wheels are most commonly used, but skids, floats, or a combination of these and other elements can also be used, depending on the landing surface. Many aircraft have undercarriages that retract into the wings and/or fuselage to decrease drag during flight. Flying boats are supported on water by their fuselage or hull, and hence have no undercarriage beyond small stabilizing floats. Amphibians have a similar floating hull, as well as a retractable wheeled undercarriage, allowing them to take off from and land on both land and water.

### **Ex.4.4. Propulsion system. Engines**

An aircraft engine, or power plant, produces thrust to propel an aircraft. Reciprocating engines and turboprop engines work in combination with a propeller to produce thrust. Turbojet and turbofan engines produce thrust by increasing the velocity of air flowing through the engine. All of these power plants also drive the various systems that support the operation of an aircraft.

Aircraft use several different kinds of engines, but they can all be classified into two major categories: propeller-driven piston engines which are still common today on light general aviation planes and jet engines used by most modern aircraft now. Many aircraft house the engines within the fuselage itself. Most large planes, however, have their engines mounted in separate pods hanging below the wing or sometimes attached to the fuselage. These pods are called nacelles. Planes also have an auxiliary power unit (APU), a

small turbine for alternate power to support aircraft systems on the ground and in flight.

### **Ex.4.5. Avionics**

The avionics comprise the flight control systems and other electronic equipment, including the cockpit instrumentation, radar, and communication systems.

**Stabilizing and control surfaces.** Different control surfaces are used to control the aircraft around each of the three axes. Flight control surfaces are hinged or movable airfoils which are used by the pilot to control the direction, altitude and speed of the airplane.

**Primary control surfaces.** The three basic control surfaces are the ailerons, the elevators and the rudder. The rudder controls the yawing movement of the airplane around its vertical axis. In this way, the rudder turns the airplane to the left or to the right. This type of motion is called “yaw”. To do its job efficiently, the rudder needs the assistance of another flight control, called ailerons. The ailerons are located at the trailing edge close to the wing tips and designed to control the airplane in “roll” by their different movement.

Lowering or raising the ailerons makes the airplane bank to the left or to the right and move around its longitudinal axis. So before executing any turn, the pilot first banks the plane and only then uses pedals to rotate the rudder in the needed direction. To change the altitude of the flight, the pilot uses the elevator, the control for making the plane climb or dive by raising or lowering the tail.

When the control stick (or yoke) is moved forward, the elevators lower, and the plane dives. When the control stick is moved backward, the elevators go up, and the airplane pulls up. The plane moves around its lateral axis. This type of motion is called “pitch”.

### **Ex.4.5. A. Secondary control surfaces.**

Airplanes have a set of secondary flight control surfaces that may include devices such as flaps, slats, trim tabs, spoilers, and speed brakes. Flaps are usually located along the trailing edge of both the left and right wing, typically inboard of the ailerons and close to the fuselage. Flaps are similar to ailerons in that they affect the amount of lift created by the wings.

However, flaps only deflect downward to increase the lift produced by both wings

simultaneously. Flaps are most often used during take off and landing to increase the lift the wing generates at a given speed. This effect allows a plane to take off, or land at a slower speed. Flaps on the leading-edge, often called leading-edge slats, are usually extended from the front of the wing at low speed to change the way the air flows over the wing, therefore increasing lift. Trim tabs may be located on the elevator, rudder and aileron. These tabs all share the same purpose. They are used to adjust the flight path of an airplane more precisely. The pilot can set the deflection of the trim tabs that create basic control deflection surfaces automatically.

## 6. Cockpit. Aircraft instruments

### Ex.6.1.

A cockpit or flight deck is the area, usually near the front of an aircraft, from which the pilot controls the aircraft. With the exception of some small aircraft, most modern cockpits are closed off. Cockpits on large airliners are also physically separated from the cabin. An aircraft is controlled both on the ground and in the air from the cockpit. The term 'cockpit' first appeared as a term for the pilot's compartment in an aircraft in 1914. After 1935, 'cockpit' was also used informally to refer to the driver's seat of a car, especially a high performance one, and became official terminology in Formula One. The term is probably related to the sailing term for the coxswain's station in a Royal Navy ship, and later the location of the ship's rudder controls.

The cockpit of an aircraft contains flight instruments on an instrument panel, and the controls which enable the pilot to fly the aircraft. In most airliners, a door separates the cockpit from the passenger compartment.

### Ex.6.7. Aircraft instruments

Aircraft instruments are basically devices for obtaining information about the aircraft and its environment and for presenting that information to the pilot. Their purpose is to detect, measure, record, process and analyze the variables encountered in flying. They are mainly electrical, electronic, navigation or gyroscopic instruments.

#### **MCP**

A mode control panel, usually a long narrow panel located centrally in front of the pilot, may be used to control heading, speed, altitude, vertical speed, vertical navigation and lateral navigation. It may also be used to engage or disengage both the autopilot and the auto throttle. The panel as an area is usually referred to as the "glare shield panel."

MCP is a Boeing designation (that has been informally adopted as a generic name for the unit/panel) for a unit that allows for the selection and parameter setting of the different auto flight functions. The same unit on an Airbus aircraft is referred to as the FCU (Flight Control Unit).

## **PFD**

The primary flight display is usually located in a prominent position, either centrally or on either side of the cockpit. It will in most cases include a digitized presentation of the attitude indicator, air speed and altitude indicators (usually as a tape display) and the vertical speed indicator. It will in many cases include some form of heading indicator and ILS/VOR deviation indicators. In many cases an indicator of the engaged and armed autoflight system modes will be present along with some form of indication of the selected values for altitude, speed, vertical speed and heading. It may be pilot selectable to swap with the ND.

## **ND**

A navigation display, which may be adjacent to the PFD, shows the current route and information on the next waypoint, current wind speed and wind direction. It may be pilot selectable to swap with the PFD.

## **EICAS/ECAM**

The Engine Indication and Crew Alerting System (used for Boeing) or Electronic Centralized Aircraft Monitor (for Airbus) will allow the pilot to monitor the following information: values for N1, N2 and N3, fuel temperature, fuel flow, the electrical system, cockpit or cabin temperature and pressure, control surfaces and so on. The pilot may select which information is displayed by pressing certain buttons.

## **FMS**

Modern aircraft are equipped with computers (the Flight Management System) which thoroughly coordinate speed, or the flight level of the aircraft and its whereabouts, as well as the behavior of all aircraft systems. The flight management system / control unit may be used by the pilot to enter and check for the following information: flight plan, speed control, navigation control, and so on.

### **Ex.6.8. A primary flight display.**

A primary flight display or PFD is a modern aircraft instrument dedicated to flight information. Much like multi-function displays, primary flight displays are built



around an LCD or CRT display device. Representations of older "steam gauge" instruments are combined on one compact display, simplifying pilot workflow and streamlining cockpit layouts.

Here are some terms you should know:

- Target Speed;
- Thrust Mode;
- Phase of Flight;
- Lateral Mode;
- Pitch Mode;
- Target Altitude;
- Attitude Indicator;
- Target Altitude Marker;
- Current Altitude;
- Vertical Speed Gauge;
- Vertical Altitude Tape;
- Target Speed Marker;
- Current Speed;
- Vertical Speed Tape;
- Control Mode ("ATC" or "FREE FLIGHT");
- Compass Rose;
- Speed Conversion Reference

## 7. Basic aircraft systems.

### Ex.7.1. Basic aircraft systems

The main aircraft systems are the Engine Control and Indication Systems; Fuel and Oil Systems; Hydraulic System; Environmental Systems, including Pressurization System, Air-Conditioning System, Equipment Cooling System; Navigation and Avionics Systems, and Emergency System. Additionally, apart from the engines, there is a Fuel System for the aircraft fuelling, fuel storage and distribution.

## 8. The principle of flight

### Ex.8.1. The principle of flight

What makes flight possible? The physics involves what is known as *lift*, *thrust*, *drag* and *weight*. The aircraft wings provide the necessary lift. Air passes over and under the


wings. Passing over the top surface of the wing, air must travel a greater distance and speeds up. The increase in speed creates an area of low pressure over the wings and over the aircraft, while a zone of higher pressure is created under the wings. The low pressure area pulls the aircraft upward. Drag is caused by friction as air passes over and around the aircraft structure. Thrust is provided by the engines and propels the aircraft forward.

## UNIT 5

### VISUAL AIDS FOR NAVIGATION

#### 4. Markings and signs

##### Ex. 1.1.

 Visual navigation aids consist of surface markings, signs, signals and lighting on the aerodromes. The markings are comprised of single lines (solid or dashed) or rows of lines. The system of markers is generally provided at all international aerodromes. The system of day markers includes runway centerline markings and touchdown zone markings.

The centerline markings are displayed not only on the runways but also on all paved taxiways. There are holding positions markings at intersections of taxiways with runways.

The runway threshold markings consist of a series of longitudinal stripes of uniform dimensions disposed symmetrically about the centerline of the runway. The fixed distance marking may be provided together with touchdown zone markings.

##### Ex.1.4. There are six types of airport signs:

-**Mandatory Instruction Signs** - red background with white inscription. They denote an entrance to a runway (numbers), critical area (**ILS**), or prohibited area.

-**Location Signs** - black with yellow inscription and yellow border. It will not have any arrows. They identify a taxiway or runway location, identify the boundary of the runway, or identify an instrument landing system (ILS) critical area.

-**Direction Signs** - yellow background with black inscription. They identify the designation of the intersection taxiways leading out of an intersection.

-**Destination Signs** - yellow with black inscription and also contain arrows. They provide information on locating things, such as runways, terminals, cargo areas, and civil

aviation areas.

-**Information Signs** - yellow background with black inscription. They provide the pilot with information on things such as areas that cannot be seen from the control tower, applicable radio frequencies, and noise abatement procedures.

-**Runway Distance Remaining Signs** - black background with white numbers. The numbers indicate the distance of the remaining runway in thousands of feet.



### Ex.2.1.

Airports use standardized lighting to provide direction and identification to all air and ground crews. To assist pilots in differentiating at night between airport runways and major roads, airports have rotating beacon lights. These beacons usually flash green and white lights to indicate a civilian airport. These beacons are visible from the air long before the entire airport is recognizable. Military identification beacons flash red.

#### Some standard lighting installations are:

- rotating beacons to mark the location of an airport,
  - condenser-discharge sequenced flashing-light system which is a series of brilliant blue-white bursts of light flashing in sequence along the approach lights,
  - approach lighting system to provide the basic means for transition from instrumental flight to visual flight and landing,
  - precision approach path indicator, or PAPI, which provides visually the same information that a glide-slope unit of an ILS provides electronically in form of red and white lights to indicate the correct glide path.
- touchdown zone and runway centerline lighting to facilitate landing under adverse visibility conditions,
- runway-end identification lights (REIL) to facilitate rapid and positive identification of the approach end of a runway,
  - blue edge lights on the taxiways and sometimes green centerline lights marking the route of taxiing.
  - Red lights, the usual danger signal, warn pilots of the obstacles such as hangars and other high buildings, telephone poles, etc.

All of this visual information assists the pilot in maintaining a stable descent path down to the runway surface and completing the flare and landing.

## UNIT 6

### INSTRUMENT LANDING SYSTEM

#### ILS definition and its components

##### Ex.1.1.

The main navigational aid for pilots in landing is the Instrument Landing System.

ILS is a **ground-based instrument approach system** that provides **precision guidance** to an aircraft approaching and landing on a runway.

The ILS functions using equipment in the aircraft and on the ground. ILS allows pilots to make precision landings, even in conditions of low visibility.

An ILS has three main elements: **the localizer, glide slope, marker beacons and approach lights.**

**Marker beacons (or fan markers)** provide accurate range fixes along the approach (usually **outer marker** and **middle marker**)

On the aircraft instrument panel, an ILS indicator shows the aircraft's position in relation to the center line of the runway and to the glide path.

The ILS can, therefore, guide the aircraft along the proper approach path down to a point where the pilot must be able to see the ground and be able to continue his approach to land. If he cannot see the ground at this point, he must decide to overshoot, go around and try to land again.

Since ILS approaches are often made in conditions of poor visibility or at night, visual information is provided by approach lights leading towards the runway, runway lights, touchdown lights and centerline lights.

At an airport where ILS is not available, a VOR/DME approach may be possible. In this case the pilot will use the VOR to line up in the precise direction required but will have to calculate the best rate of descent through the information provided by the DME (which informs the pilot of the distance remaining to be covered.)

#### 2. ILS CATEGORIES

##### Ex.2.1.

ILS are categorized according to their capability to provide for approach to a height above touchdown (HAT)/decision height (DH) and RVR (runway visual range).

**ILS Category I.** An ILS approach procedure which provides for approach to a height above touchdown of not less than 200 feet and with runway visual range of not less than 1,800 feet.

**ILS Category II.** An ILS approach procedure which provides for approach to a height above touchdown of not less than 100 feet and with runway visual range of not less than 1,200 feet.

**ILS Category III:**

**III A.**—An ILS approach procedure which provides for approach without a decision height minimum and with runway visual range of not less than 700 feet.

**III B.**—An ILS approach procedure which provides for approach without a decision height minimum and with runway visual range of not less than 150 feet.

**III C.**—An ILS approach procedure which provides for approach without a decision height minimum and without runway visual range minimum.

## 2.

The word «radar» stands for «**R**adio **D**etection **A**nd **R**anging». **RADAR** is an object detection system which uses radio waves to determine the range, altitude, direction, or speed of objects. It can be used to detect aircraft, ships, spacecraft, guided missiles, motor vehicles, weather formations, and terrain.

The principle of radar is very simple: the transmitter of the system sends radio waves towards the object (an aircraft, a ship). Then the radio wave bounces off the object and returns to the radar so that the system knows the direction to the object, and the distance, which depends on the time the radio wave travelled to or from the object.

## II. Radar Systems.

### Ex.2.1.

The application of radar in the air traffic control system consists of two basic designs: the initial type of radar, called primary radar, and the second type (secondary radar). When the word “radar” is used alone, it usually indicates both primary and secondary radar.

Both radar systems work in conjunction to produce a synchronized surveillance picture and involve a ground beacon that is connected to a radar screen.

A primary radar sends out a “pulse”, or a burst of radio waves. This pulse uses air as its medium and travels through its pulse to an obstacle. Once the pulse hits an obstacle in its path, it is reflected back to the beacon. The beacon then calculates the time the “echo”

takes to travel back, converts this data into the distance between the beacon and obstacle and uses it to map the obstacle on the radar screen. The direction and velocity of the obstacle are also measured by checking “frequency shift” or the position of the rotating antenna of the beacon when the reflected echo is received.

Secondary surveillance radar (or SSR) is a surveillance radar system, which is used in air traffic control, that not only detects and measures the position of aircraft i.e. range and bearing, but also requests additional information from the aircraft itself such as its identity and altitude.

The system consists of two main components: transponder or transmitter (transponder that is installed in the aircraft), and the ground beacon (secondary surveillance radar) installed in the ATC facilities.

The system works on the “interrogation” method in which the ground beacon sends an interrogation pulse to the transponder, which in turns replies with a pulse of its own. Transponders, however, work on squawk codes, which, when given to radar controller, enables him or her to track the aircraft. Without the transponder code, a radar controller has to fall back to the primary radar, which works without a transponder.

Unlike primary radar systems, which measure only the range and bearing of targets by detecting reflected radio signals, SSR relies on targets equipped with a radar transponder that replies to each interrogation signal by transmitting a response containing encoded data. With SSR display, the controller sees aircraft returns on his PPI as two slashes, clearly distinguishing them from primary targets which are single blips.

### III. Meteo Radars

#### Ex.3.1.

Meteo radars in aviation are used to find whether there are poor weather areas on the aircraft’s course or near the aerodrome. The system uses the same principle of primary radar: the transmitter emits radiation into the air. The masses of steam and storm clouds reflect these radio waves, which return to the weather radar antenna, so that that the pilots and controllers have the schematic of the storm activity near the aircraft and aerodromes.

## **Internet-resources**

### **<https://www.pplir.org/magazine>**

Сайт содержит информацию об экспериментальной аппаратуре, использующейся на разных типах воздушных судов. Описание экспериментальных моделей и их характеристик.

### **<http://aviationweek.com/>**

Сайт содержит самую последнюю информацию о мире авиации, конференциях, разработках новых моделей ВС гражданской авиации, насущные вопросы авиационного мира, транспортной концепции, интенсивно развивающейся авиационной индустрии.

### **<http://aviation.about.com/>**

Сайт содержит полезную поэтапную информацию для будущих пилотов. В статьях и видеороликах содержится необходимые данные о личных профессиональных качествах, состоянии здоровья, документах, необходимые пилотам, о которых должен знать будущий профессионал зарубежном. Кроме того содержится информация об аэрокосмической отрасли.

### **<https://www.thebalance.com/aviation-4074050>**

Содержит достаточно легкий для осознания материал о мире авиации, последних разработках нового направления квадрокоптеров, авиационных технологиях 21 века.

### **<http://www.firstflight.com/glossary/>**

Содержит весьма полезный материал от радиопереговоров между пилотом и диспетчером, информацию передаваемую ATIS и их расшифровок в письменном виде, до учебной литературы, которые можно скачать в открытых электронных ресурсах. Объяснение о полетах при боковом ветре и т.д., рекомендации опытных пилотов по вопросам взлетов и посадок. Процедура полета в ночное время суток. Содержит полный глоссарий определений, аббревиатур, необходимую документацию. Каждый будущий пилот и профессионал может найти здесь весьма нужную информацию по своей профессиональной деятельности.

### **<http://www.avweb.com/>**

Сайт содержит новостную информацию о мире авиации.

### **<https://www.flightradar24.com/>**

Глобальный открытый электронный ресурс содержащий отслеживание полетов, работающий в режиме реального времени. Содержит радиопереговоры реальных бортов. Данный сайт важен не только для пилотов, но и для

диспетчерского состава. Удобство данного ресурса заключается в том, что его можно загрузить на любой существующий гаджет и пользоваться 24 часа.

**<https://skyvector.com/>**

Весьма полезный сайт включающий всю необходимую информацию о всех аэропортах мира, карты, названия, позывные, навигационные данные, расстояния, барометрическое давление, частоты, диапазоны и т.д.

**<http://www.liveatc.net/topfeeds.php>**

Содержит радиотелефонные переговоры пилотов и диспетчеров из разных стран. Данные обновляются часто. Содержатся примеры уровней Level 1, Level 2, Level 3, Level 4, Level 5 - разговоров, оценивающиеся по стандартам ИКАО. Имеется аудиоархив переговоров.

### **Дополнительный материал:**

**<http://grizzlyweb.com/links/aviation.asp>**  
**<http://gaviationr.tumblr.com/>**  
**<http://www.globalaviationresource.com/>**  
**<http://aviationknowledge.wikidot.com/>**  
**<http://www.pilotmix.com/get-listed>**  
**<http://www.pilsch.gatech.edu/aviation.html>**  
**<http://www.teacherplanet.com/node/252>**  
**[http://www.bruceair.com/aviation\\_resources/](http://www.bruceair.com/aviation_resources/)**  
**<http://www.aviationvibes.com/>**  
**<http://www.100ll.com/>**  
**<http://www.aircraftpartnership.com/>**  
**<http://www.theairdb.com/country/>**  
**<http://www.allexperts.com/>**  
**<http://forums.flightinfo.com/>**  
**<http://www.avitop.com/>**  
**<http://www.crewstart.com/>**  
**<http://www.expercraft.com/>**  
**[http://www.faa.gov/airports/resources/advisory\\_circulars/](http://www.faa.gov/airports/resources/advisory_circulars/)**  
**<http://science.howstuffworks.com/>**  
**<http://www.luchtzak.be/>**  
**<http://www.pilotfriend.com/>**  
**<http://www.pilotscafe.com/>**  
**<http://www.plane-mad.com/>**  
**<http://www.safe-skies.com/resources>**  
**<http://studentpilot.com/main/articles/aviation-articles>**  
**<http://www.thaitechnics.com/>**  
**<http://skyblueradio.com/>**



<http://www.thirtythousandfeet.com/>  
<http://www.wingsoverkansas.com/category/video/>  
<http://www.aviationbrowser.com/aviation-library>  
<http://www.smartcockpit.com/>  
<https://www.lib.purdue.edu/libraries/avtech>  
<https://www.conklindd.com/>  
<http://www.ellejet.com/aviation-library.php>  
<http://www.aspireaviation.com/analysis/>  
<http://www.aspireaviation.com/analysis/>  
<http://www.flyingmag.com/avionics>  
<http://www.ato.ru/content/iata-consulting/>  
<https://www.linkedin.com/company/aviation-information/>  
<https://www.myvocabulary.com/word-list/aviation-and-airplanesvocabulary/>

### **Answer key for Video tasks**

#### **Unit 2 Why I Love My Job as an Airline Pilot**

**Ex.4.** Say if the statements below are true or false.

1. FALSE
2. FALSE
3. TRUE
4. FALSE
5. TRUE
6. FALSE
7. FALSE
8. TRUE
9. TRUE
10. FALSE

#### **Unit 3 A Day in the Life of a Pilot**

**Ex.4.** Say if the statements below are true or false.

1. FALSE	9. TRUE
2. FALSE	10. FALSE
3. TRUE	11. TRUE
4. FALSE	12. FALSE
5. TRUE	13. TRUE
6. TRUE	
7. FALSE	
8. TRUE	



## Answer key - Listening

<b>UNIT 1</b> <b>THE FLIGHT CREW MEMBERS' RESPONSIBILITIES</b>	<b>UNIT 2</b> <b>PILOT'S DUTIES CAPTAIN'S DUTIES</b>	<b>UNIT 3</b> <b>Aviation Weather</b>
<p>Listen to the text 1.</p> <p>Ex.1.1. Match the two halves of the sentences.</p> <p>1 - f 2 - i 3 - g 4 - b 5 - h 6 - a 7 - j 8 - e 9 - c 10 - d</p> <p>3. Match the words with their definitions.</p> <p>1 - g    9 - d 2 - k    10 - c 3 - e    11 - h 4 - n    12 - j 5 - a    13 - l 6 - i    14 - f 7 - b    15 - m 8 - o</p>	<p>Ex.2. Complete the sentences with the words from the recording.</p> <p>1 - clock in 2 - comprised 3 - particularities 4 - skills 5 - supervision 6 - decision 7 - distinctions 8 - due to 9 - face</p> <p>Ex.6.</p> <p>Ex.1. Choose the correct word in each pair.</p> <p>1. performing, domestic, international 2. feature, highly motivated 3. congested, complicated 4. primary, operate 5. include 6. conditions 7. file 8. ensure, equipment 9. monitor, facilities 10. complete</p> <p>Ex. 2. Match the words with their definitions.</p> <p>1 - h 2 - e</p>	<p>Ex. 2. Match the two halves of the sentences.</p> <p>1 - c 2 - h 3 - j 4 - a 5 - d 6 - g 7 - a 8 - e 9 - f 10 - i</p> <p>EXERCISE 3. Match the words with their definitions.</p> <p>1 - h 2 - l 3 - j 4 - b 5 - a 6 - c 7 - m 8 - e 9 - n 10 - f 11 - d 12 - g 13 - k 14 - i</p>

	<p>3 – a 4 – i 5 – c 6 – b 7 – j 8 – g 9 – d 10 – f</p> <p><b>EXERCISE 1.</b> Complete the sentences with the words from the recording.</p> <ol style="list-style-type: none"> <li>1. in command of</li> <li>2. responsible for, in control of</li> <li>3. according to</li> <li>4. prior to</li> <li>5. early for, use of</li> <li>6. interfere unduly with</li> </ol> <p><u>III. Crew coordination</u></p> <p>Ex.3.1.</p> <p><b>EXERCISE 2.</b> Match the words with their definitions.</p> <p>1 – e 2 – g 3 – f 4 – a 5 – c 6 – b 7 – d</p>	
<p><b>UNIT 4</b> <b>AIRCRAFT</b> <b>EXERCISE 1.</b> Match the words with their definitions. 1 – h</p>	<p><b>UNIT 5</b> <b>TYPES OF AIRPORT SIGNS</b> <u>There are six types of airport signs.</u> <b>EXERCISE 1.</b> Match</p>	<p><b>UNIT 6</b> <b>ILS DEFINITIONS AND ITS COMPONENTS</b> <u>2. ILS CATEGORIES</u> Ex.2.1.</p>

<p>2 – e 3 – a 4 – j 5 – c 6 – i 7 – b 8 – d 9 – g 10 - f</p> <p><b>Propulsion systems</b></p> <p><b>EXERCISE 1. Match the two halves of the sentences.</b></p> <p>1 – g 2 – e 3 – a 4 – h 5 – b 6 – c 7 – d 8 - f</p> <p><b>EXERCISE 2. Match the control surfaces, the types of motion they create, and the verbs used to describe these types of motion.</b></p> <p>rudder – turning to the left or right / rotation around the vertical axis –yaw aileron – banking / rotation around the front-to-back axis –roll elevator – climbing or diving/ rotation around the side-to-side axis – pitch</p> <p><b><u>6. Cockpit. Aircraft instruments</u></b></p> <p><b>EXERCISE 1. Match</b></p>	<p><b>the six types of airport signs with their descriptions and functions.</b></p> <p>Mandatory Instruction Signs – 3, e Location Signs – 5, c Direction Signs – 4 or 6, a Destination Signs – 1, f Information Signs - 4 or 6, b Runway Distance Remaining Signs – 2, d</p> <p><b>EXERCISE 2. Match the lighting installations with their functions.</b></p> <p>1 – d 2 – e 3 – g 4 – b 5 – a 6 – c 7 – f</p>	<p><b>EXERCISE 1. Match the ILS categories with different heights above touchdown and runway visual ranges.</b></p> <p>I – 3, e II – 5, d III A – 1, 2 or 4, b III B – 1, 2 or 4, c III C– 1, 2 or 4, a</p>
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**the instruments with their functions.**

1 – c

2 – e

3 – a

4 – b

5 – d

**EXERCISE 2. Match the verbs with their synonyms.**

1 – h

2 – k

3 – e

4 – a

5 – l

6 – c

7 – b

8 – j

9 – m

10 – d

11 – g

12 – i

13 – f

### 7. Basic aircraft systems

**EXERCISE 1. Put the main aircraft systems in the order they are mentioned in the recording.**

Key

1 Engine Control

2 Indication Systems

3 Fuel and Oil Systems

4 Hydraulic System

5 Environmental Systems

6 Pressurization System

7 Air-Conditioning System

8 Equipment Cooling System

9 Navigation and Avionics Systems

<p><b>8. The principle of flight</b>  <b>EXERCISE 1. Match the two halves of the sentences.</b>  <b>Key</b>  1 – d  2 – g  3 – a  4 – f  5 – b  6 – c  7 – e</p>		
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## Рисунки

1. Section 2 Picture 1 -  
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2. Picture  
[https://yandex.ru/images/search?p=2&text=%D0%9F%D0%B8%D0%BB%D0%BE%D1%82%D1%8B%20%D0%B2%20%D0%BD%D0%B0%D1%83%D1%88%D0%BD%D0%B8%D0%BA%D0%B0%D1%85&img\\_url=https%3A%2F%2Fst2.depositphotos.com%2F1504385%2F8333%2F%2F950%2Fdepositphotos\\_83338608-stock-photo-airline-pilot-on-board.jpg&pos=82&rpt=simage](https://yandex.ru/images/search?p=2&text=%D0%9F%D0%B8%D0%BB%D0%BE%D1%82%D1%8B%20%D0%B2%20%D0%BD%D0%B0%D1%83%D1%88%D0%BD%D0%B8%D0%BA%D0%B0%D1%85&img_url=https%3A%2F%2Fst2.depositphotos.com%2F1504385%2F8333%2F%2F950%2Fdepositphotos_83338608-stock-photo-airline-pilot-on-board.jpg&pos=82&rpt=simage)
3. [https://yandex.ru/images/search?p=2&text=%D0%B7%D0%B0%20%D0%BA%D0%BE%D0%BC%D0%BF%D1%8C%D1%8E%D1%82%D0%B5%D1%80%D0%BE%D0%BC&img\\_url=https%3A%2F%2Fwww.workitdaily.com%2Fwp-content%2Fuploads%2F2011%2F02%2Ftop-5-key-word-sources-for-your-personal-brand.jpg&pos=108&rpt=simage](https://yandex.ru/images/search?p=2&text=%D0%B7%D0%B0%20%D0%BA%D0%BE%D0%BC%D0%BF%D1%8C%D1%8E%D1%82%D0%B5%D1%80%D0%BE%D0%BC&img_url=https%3A%2F%2Fwww.workitdaily.com%2Fwp-content%2Fuploads%2F2011%2F02%2Ftop-5-key-word-sources-for-your-personal-brand.jpg&pos=108&rpt=simage)
4. [https://yandex.ru/images/search?p=6&text=%D0%BF%D0%B8%D0%BB%D0%BE%D1%82%D1%8B%20%D1%87%D0%B8%D1%82%D0%B0%D1%8E%D1%82%20flight%20plan&img\\_url=https%3A%2F%2Fthumb.tqn.com%2F15ZTPw5R1-qN5U0--laVHh-aInk%3D%2F3867x2578%2Ffilters%3Afill\(auto%2C1\)%2FGettyImages-163221634-57a252155f9b589aa920926e.jpg&pos=265&rpt=simage](https://yandex.ru/images/search?p=6&text=%D0%BF%D0%B8%D0%BB%D0%BE%D1%82%D1%8B%20%D1%87%D0%B8%D1%82%D0%B0%D1%8E%D1%82%20flight%20plan&img_url=https%3A%2F%2Fthumb.tqn.com%2F15ZTPw5R1-qN5U0--laVHh-aInk%3D%2F3867x2578%2Ffilters%3Afill(auto%2C1)%2FGettyImages-163221634-57a252155f9b589aa920926e.jpg&pos=265&rpt=simage)



## GLOSSARY OF ACRONYMS AND ABBREVIATIONS

<b>AAL</b> Above Airfield Level	<b>ft</b> feet	<b>OVC</b> Overcast
<b>A.C.</b> alternating current	<b>FU</b> Smoke ( <i>fumée</i> )	<b>P</b> More than (METAR)
<b>a/c</b> aircraft	<b>FZ</b> Freezing	<b>PAPI</b> Precision Approach Path Indicator
<b>ACARS</b> Aircraft Communications Addressing and Reporting System	<b>G</b> Gusting	<b>PF</b> Pilot Flying
<b>ACC</b> Area Control Centre	<b>GPU</b> Ground Power Unit	<b>PFD</b> Primary Flight Display
<b>ADF</b> Automatic Direction Finder	<b>GPWS</b> Ground Proximity Warning System	<b>PIREP</b> Pilot Report
<b>AFIS</b> Aerodrome Flight Information Service	<b>GR</b> Hail ( <i>grêle</i> )	<b>PNF</b> Pilot Not Flying
<b>AGNIS</b> Azimuth Guidance for Nose-In Stand	<b>G/S</b> Glideslope	<b>psi</b> pounds per square inch
<b>ALAR</b> Approach and Landing Accident Reduction	<b>HDG</b> Heading	<b>QFE</b> altimeter setting for aerodrome level
<b>amsl</b> above mean sea level	<b>HP</b> High Pressure	<b>QFU</b> magnetic orientation of runway
<b>APP</b> Approach	<b>hPa</b> hectoPascal	<b>QNH</b> altimeter setting amsl
<b>APU</b> Auxiliary Power Unit	<b>HZ</b> Haze	<b>RA</b> Rain; Resolution Advisory; Radio Altimeter
<b>ASAP</b> as soon as possible	<b>IAF</b> Initial Approach Fix	<b>RH</b> Right-Hand
<b>ASI</b> Air Speed Indicator	<b>IAP</b> Instrument Approach Procedure	<b>RMP</b> Radio Management Panel
<b>ATA</b> Actual Time of Arrival	<b>IAS</b> Indicated Air Speed	<b>RNAV</b> Area Navigation
<b>ATC</b> Air Traffic Control	<b>IC</b> Ice Crystals	<b>RT/RTF</b> Radiotelephony
<b>ATCO</b> Air Traffic Control Officer	<b>IDG</b> Integrated Drive Generator	<b>RVR</b> Runway Visual Range
<b>ATD</b> Actual Time of Departure	<b>IFR</b> Instrument Flight Rules	<b>RVSM</b> Reduced Vertical Separation Minima
<b>ATIS</b> Automatic Terminal Information Service	<b>ILS</b> Instrument Landing System	<b>RWY</b> Runway
<b>BC</b> Patches, banks ( <i>bancs</i> )	<b>IMC</b> Instrument Meteorological Conditions	<b>SCT</b> Scattered
<b>BKN</b> Broken	<b>in.Hg</b> inches of Mercury	<b>SH</b> Showers
<b>BR</b> Mist ( <i>brume</i> )	<b>INS</b> Inertial Navigation System	<b>SID</b> Standard Instrument Departure
<b>CAT III</b> Category 3 (ILS)	<b>kt(s)</b> knots	<b>SN</b> Snow
<b>CAVOK</b> Ceiling And Visibility OK	<b>LDA</b> Landing Distance Available	<b>SQ</b> Squall
<b>CFIT</b> Controlled Flight Into Terrain	<b>LH</b> Left-Hand	<b>SS</b> Sandstorm
<b>CRM</b> Crew Resource Management	<b>LLZ</b> Localizer	<b>SSR</b> Secondary Surveillance Radar
<b>CRS</b> Course	<b>LOC</b> Localizer; Locator	<b>STAR</b> Standard Terminal Arrival Route
<b>CVR</b> Cockpit Voice Recorder	<b>LOFT</b> Line Oriented Flight Training	<b>TA</b> Transition Altitude; Traffic Advisory
<b>DH</b> Decision Height	<b>LP</b> Low Pressure	<b>TAF</b> Terminal Aerodrome Forecast
<b>DME</b> Distance Measuring Equipment	<b>LT</b> Local Time	<b>TCAS</b> Traffic Alert and Collision Avoidance System
<b>DU</b> Dust; Display Unit	<b>m</b> metres	<b>TDZ</b> Touchdown Zone
<b>DZ</b> Drizzle	<b>MAP</b> Missed Approach Point	<b>TMA</b> Terminal Control Area
<b>EFIS</b> Electronic Flight Instrument System	<b>mb</b> millibars	<b>T/O</b> Take-off
<b>EGPWS</b> Enhanced Ground Proximity Warning System	<b>MCDU</b> Multipurpose Control and Display Unit	<b>TS</b> Thunderstorm
<b>EGT</b> Exhaust Gas Temperature	<b>MCDU</b> Multipurpose Control and Display Unit	<b>TWR</b> Tower
<b>elev</b> elevation	<b>MDA</b> Minimum Descent Altitude	<b>TWY</b> Taxiway
<b>ER</b> Extended Range	<b>METAR</b> Aviation Routine Weather Report	<b>U/S</b> Unserviceable
<b>ETA</b> Estimated Time of Arrival	<b>MLG</b> Main Landing Gear	<b>UTC</b> Coordinated Universal Time
<b>ETD</b> Estimated Time of Departure	<b>MSA</b> Minimum Safe Altitude	<b>VA</b> Volcanic Ash
<b>ETOPS</b> Extended Twin Operations	<b>N1</b> Engine LP compressor speed	<b>VASI</b> Visual Approach Slope Indicator
<b>FAF</b> Final Approach Fix	<b>N2</b> Engine HP compressor speed	<b>VFR</b> Visual Flight Rules
<b>FIR</b> Flight Information Region	<b>ND</b> Navigation Display	<b>VMC</b> Visual Meteorological Conditions
<b>FL</b> Flight Level	<b>NDB</b> Non-Directional Beacon	<b>V1</b> decision speed
<b>F/O</b> First Officer	<b>NLG</b> Nose Landing Gear	<b>VOR</b> VHF Omnidirectional Range
<b>FOD</b> Foreign Object Damage	<b>nm/NM</b> nautical miles	<b>VRef</b> Reference velocity
<b>fpm</b> feet per minute	<b>NOSIG</b> No significant change expected in next two hours	<b>VSI</b> Vertical Speed Indicator
	<b>NOTAM</b> Notice for Airmen	<b>Z</b> Coordinated Universal Time
	<b>OAT</b> Outside Air Temperature	
	<b>OM</b> Outer Marker	

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## Рецензия:

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Учебное пособие по авиационному английскому языку для студентов факультета эксплуатации специальности «Эксплуатация воздушных судов и организации воздушного движения». Санкт-Петербург, 2017. 235 с.

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Учебное издание «**English for specific purposes (ESP): Aviation English**» учебный материал, входящий в базовую (обязательную) часть профессиональных основных образовательных программ бакалавриата по направлению подготовки образования «Эксплуатация воздушных судов и организация воздушного движения» специальности по специальности высшего образования.

**4. Читательское назначение учебного издания:** **English for specific purposes (ESP): Aviation English**: Учебное пособие по авиационному английскому языку факультета летной эксплуатации специальности «Эксплуатация воздушных судов и организация воздушного движения» авторов Н.А. Лебедевой и Н.С. Гулиной для курсантов, студентов высших и средних учебных заведений гражданской авиации по направлению подготовки / по укрупненным группам / 25.00.00. «Аэронавигация и эксплуатация авиационной и ракетно-космической техники» специальности 25.05.05 «Эксплуатация воздушных судов и организация воздушного движения».

**5. Оценка структуры и содержания учебного издания:** Представляет включает 6 разделов (Units), тематический словарь, список обозначений в введении, основную часть, библиографический список, более 115 рис., CD с аудиозаписями (количеством 2 часа 45 минут), 7 видеороликов. Предполагает 100 часов занятий и 80 часов самостоятельной работы для освоения дисциплины «Авиационный английский язык».

Учебное пособие предназначено для практических занятий в аудитории и самостоятельной работы студентов. В учебном пособии реализован учебно-методический подход, направленный на достижение максимального результата комплекса когнитивной, информационной, профессиональной и общекультурной компетенций, задействованных в учебном процессе Университета Гражданской авиации.

Актуальность учебного издания «**English for specific purposes (ESP): Aviation English**», подготовленного авторами Н.А. Лебедевой и Н.С. Гулиной, не вызывает сомнения. Принцип отбора учебного материала для пособия предполагает логическую и содержательно-методическую взаимосвязь с другими основными образовательными программами, а также интеграцию знаний из различных смежных предметных дисциплин, что способствует одновременному развитию как собственно коммуникативных, так и профессиональных умений будущих профессионалов.

Отметим, что пособие содержит уникальный систематизированный и подготовленный на высоком методическом уровне учебный материал для использования в образовательном процессе в условиях учебного времени, отведенного на освоение курса авиационного языка.

Авторы соблюдают последовательность изложения лексического и грамматического материала учебного пособия по принципу «от простого к сложному». Дальнейшее повышение уровня сложности излагаемого лексического и грамматического материала происходит за счет введения профессиональной лексики. В конце курса обучения авиационному английскому языку, предложенного рецензируемым учебным пособием, будущие специалисты должны овладеть навыками использования иностранного языка в ситуациях профессионального общения. Учебные материалы представляют не только профессиональный интерес для пилотов и авиадиспетчеров, но и способствуют повышению их мотивации к изучению авиационного английского языка. К достоинствам учебного пособия «**English for specific purposes (ESP): Aviation English**» следует отнести разработку комплексной системы упражнений, направленной на развитие видов речевой деятельности, необходимых для безопасного обслуживания и выполнения международных полетов. Актуальность и современность пособия отличает представленный видеоматериал и комплекс упражнений к нему, имеющийся на CD аудиоматериал, озвученный носителем языка, гиперссылки на открытые электронные ресурсы, что во многом помогает оптимизировать учебное время.

**6. Результаты рецензирования:** Рецензируемое учебное пособие «**English for specific purposes (ESP): Aviation English**» авторов Натальи Александровны Лебедевой и Натальи Сергеевны Гулиной полностью отвечает требованиям, предъявляемым к обучению авиационному английскому языку, и соответствует Государственному образовательному стандарту высшего профессионального образования.

На основе вышесказанного считаю целесообразным присвоить учебному пособию «**English for specific purposes (ESP): Aviation English**», подготовленному авторами Лебедевой Н.А. и Гулиной Н.С., гриф УМО: «Допущено Федеральным учебно-методическим объединением в системе высшего образования по укрупненным группам специальностей и направлений подготовки 25.00.00. «Аэронавигация и эксплуатация авиационной и ракетно-космической техники» в качестве учебного пособия для студентов образовательных организаций высшего образования – бакалавриата «Аэронавигация» и по специальности высшего образования «Эксплуатация воздушных судов и организация воздушного движения».

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ЗАМ. НАЧАЛЬНИКА  
ПО РАБОТЕ С  
ДЕЯТЕЛЯМИ

