

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

Кафедра специальной языковой подготовки

Е.В. Черняева, С.В. Дербина,
Е.Н. Николаева, Р.С. Болдыревский

ИНОСТРАННЫЙ ЯЗЫК. АНГЛИЙСКИЙ ЯЗЫК

Учебно-методическое пособие

*для студентов
направления 25.03.02, 25.05.05 (АКС)
очной формы обучения*

Москва
ИД Академии Жуковского
2018

УДК 811.111(07)
ББК Чи(Англ.)
Ч49

Рецензент:

Кожевникова И.Д. – ст. преподаватель каф. спец. яз. подготовки

Черняева Е.В.

Ч49

Иностранный язык. Английский язык [Текст] : учебно-методическое пособие / Е.В. Черняева, С.В. Дербина, Е.Н. Николаева, Р.С. Болдыревский. – М.: ИД Академии Жуковского, 2018. – 48 с.

Данное учебно-методическое пособие издается в соответствии с рабочей программой учебной дисциплины «Иностранный язык» по учебному плану для студентов курса направления 25.03.01, 25.05.05 (АКС) очной формы обучения.

Рассмотрено и одобрено на заседании кафедры 17.04.2018 г. и методического совета 06.06.2018 г.

УДК 811.111(07)
ББК Чи(Англ.)

В авторской редакции

Подписано в печать 19.09.2018 г.
Формат 60x84/16 Печ. л. 3 Усл. печ. л. 2,79
Заказ № 341/0622-УМП03 Тираж 100 экз.

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

Издательский дом Академии имени Н. Е. Жуковского
125167, Москва, 8-го Марта 4-я ул., д. 6А
Тел.: (495) 973-45-68
E-mail: zakaz@itsbook.ru

© Московский государственный технический
университет гражданской авиации, 2018

Оглавление

UNIT1	4
LIGHTS-GENERAL	4
UNIT 2	6
COCKPIT LIGHTS.....	6
UNIT 3	10
COCKPIT LIGHTS.....	10
OPERATION.....	10
UNIT 4	18
CABIN LIGHTS-DESCRIPTION	18
CABIN LIGHTS-DESCRIPTION	19
UNIT 5	24
CABIN LIGHT-OPERATION	24
Unit 6	28
CARGO AND SERVICE COMPARTMENTS.....	28
Unit 8	33
EXTERIOR LIGHTS	33
UNIT 9	39
ANTICOLLISION LIGHTS DESCRIPTION	39
ANTICOLLISION LIGHTS	39
Unit 10	46
GETTING READY FOR THE EXAM	46

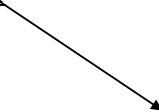
UNIT 1

LIGHTS-GENERAL

EX1

Match the terms with their translation. Define the terms:

<u>Stepping-up transformer</u> Filament Rectifier Amplifier Iron core Primary winding Wiring diagram	Усилитель Электрическая монтажная схема Выпрямитель Нить накаливания <u>Повышающий трансформатор</u> Первичная обмотка Железный сердечник
--	---



EX2

Match the words with their transcription. There are 3 extra words:

1) m' tʒ:nl 2) eks' tʒ:nl 3) kəm' praɪz 4) kəm' pɑ:tmənt 5) 'lævətəriz, 6) 'pɔ:təbl
 7) 'meɪntənəns 8) ,ɪndɪ'pendəntli 9) sə'plai

Independently, comprise, internal, potable, compartment, lavatories, portable
 maintenance, supply, external, common, depend

EX3

Read and translate the text

LIGHTS-GENERAL

The aircraft lighting system provides internal and external illumination. The lighting system comprises the following subsystems : cockpit lights cabin lights cargo and service compartment lights exterior lights emergency lights.

Cockpit Lights (33 –10)

The cockpit lighting system consists of general and instrument illumination.

Cabin Lights (33 –20)

The cabin lighting system provides illumination of the entry areas, the cabin, the lavatories, the galleys and the attendant work areas.

Cargo And Service Compartment Lights (33 –30)

The cargo and service compartment lighting system provides illumination of the cargo and service compartments. Electrical outlets are also provided for portable maintenance light connection.

Exterior Lights (33 –40)

The exterior lighting system provides illumination of runway, taxiway, logo, engine air intake and wing leading edge for ice detection, navigation and anti –collision lights.

Emergency Lights (33 –50)

The emergency lighting system provides illumination of the cabin, and the exit signs, if the main lighting system fails. EPSUs (Emergency Power Supply Units) supply electrical power independently from the aircraft power supply.

EX 4

Find the English equivalents to the following:

Основное освещение, подсветка приборов, входные зоны, салон, туалеты, розетки, хвостовой логотип, воздухозаборник двигателя, передняя кромка крыла, блок источника аварийного питания.

EX5

Answer the questions:

1. What subsystems does the aircraft illumination comprise?
2. What do the cockpit lights illuminate?
3. Which areas are lit in the cabin?
4. What are the electrical outlets in the cargo and service compartments provided for?
5. Which exterior objects are illuminated by the exterior lights?

EX6

Retell the text.

UNIT 2

COCKPIT LIGHTS COCKPIT LIGHTS-DESCRIPTION

EX1

Translate the words and word combinations into Russian:

General and instrument illumination, entry areas, the cabin, the lavatories, electrical outlets, engine air intake, wing leading edge, for ice detection, anti-collision lights.

EX2

Match the words with their transcription. There are 3 extra words

1) 'dʒɛnərəl 2) 'sɜːfɪs 3) ɪ'kwɪpmənt 4) ɪndɪ'keɪʃənz 5) flʌd 6) ɪn'skrɪpʃən 7) wɒt'ɛvə 8) kən'səʊl 9) ɪn'fʊə 10) 'pedɪstl 11) rɪə 12) ,sʌplɪ'mentəri 13) ə'laʊ 14) 'mɪnɪfə 15) 'veəriəbl 16) 'hælədʒən

Equipment, surface, permit, whatever, console, pedestal, blood, rear supplementary, allow, miniature, variable, halogen, general, indications, ensure, inscription, flood, minimum.

EX3

What do these abbreviations stand for? Match them with the translation:

1) RH	a) Flight Control Unit	A) блок источника
2) CAPT	b) Left hand	<u>аварийного питания</u>
3) LH	c) <u>Emergency Power</u>	Б) Правый
4) FCU	<u>Supply Unit</u>	В) блок управления
5) F/O	d) Captain	полётом
6) <u>EPSU</u>	e) First officer	Г) второй пилот
	f) Right Hand	Д) командир ВС
		Е) Левый

EX4

Translate the verbs, use them in sentences of your own:

To permit \ to be permitted To comprise \ to be comprised To ensure \ to be ensured To fit \ to be fitted	To locate \ to be located To allow \ to be allowed To supply \ to be supplied To generate \ to be generated
--	--

EX5

Read and translate the text:

COCKPIT LIGHTS

COCKPIT LIGHTS-DESCRIPTION

The cockpit light system consists of:

general lighting of cockpit panel, instruments and work surfaces,

integral lighting of panels and instruments,

test system for annunciator lights,

dimming system for annunciator lights.

The light system permits to see all equipment details, all inscriptions and indications easily, whatever the level of darkness. It is especially used at night for check lists.

The cockpit light system comprises: cockpit lighting: dome lights, panel and instrument lighting: flood lights and lamps, work surface lighting: reading lights, console lighting: lamps, integral lighting of VU panels and instruments, lighting of annunciators and pushbuttons.

There are also two electrical outlets in the cockpit.

DESCRIPTION

Flood Lighting

The flood lighting of captain, first officer and centre main instrument panels is ensured by four lights, located under the glareshield. A flood light located on the overhead panel is used to illuminate the instruments and panels on the pedestal.

The CAPT, F/O and Centre lights illuminate only the instruments and the placards located in four zones of the main instrument panel (CAPT, LH CENTRE, RH CENTRE, F/O).

NOTE: In electrical emergency configuration, the lighting of the CAPT and LH CENTRE zones remains available. The pedestal flood light swivels towards the rear of the pedestal.

Reading Lights

The captain and the first officer reading lights are fitted on the upright of the cockpit side windows. Supplementary reading lights are located on the overhead panel.

The CAPT and F/O reading lights swivel in order to illuminate the captain and first officer sliding tables, the consoles and the ceiling if necessary. The supplementary reading lights swivel.

Panel/Inst Integral Lighting

The panel and instrument integral lighting allow the crew to read the corresponding indications during night flights or flights in stormy conditions.

This integral lighting consists of miniature lamps supplied by AC power from lighting controllers.

There are 3 independent controllers to supply integral lighting of the overhead panel,

the instrument panels, consoles and the centre pedestal.

glareshield and FCU (Flight Control Unit).

Each controller generates a variable low voltage current source with high intensity (from 0 to 5 Volts).

Dome Light System

The cockpit lighting consists of two dome lights. Each dome light has four halogen long life lamps.

NOTE: In electrical emergency configuration, the Dome light of the F/O side remains available, provided the dome light control is not set to OFF.

Console Lighting

Each console, briefcase and associated floor area are illuminated. Three lights are used for each console lighting and one for each briefcase lighting. Four lights, fitted at the base of CAPT and F/O seats, are used for floor lighting

EX6

Find the English equivalents for the following word combinations:

Общая подсветка, встроенная подсветка, лампа светового табло, система затемнения, плафон, противобликовый щиток, предупредительная надпись на металле/ пластике, прожекторное освещение/фонарь заливающего света, верхний щиток (кабины экипажа, управление), аварийный режим, предупредительная надпись на пластике, металле, поворачиваться в направлении задней части центрального пьедестала, непосредственно над

боковыми окнами пилотской кабины, дополнительные лампы для чтения, съёмный столик, потолок, читать соответствующие показания приборов, источник тока низкого напряжения, лампа с длительным сроком службы, подсветка консоли, чемодан с полетной документацией.

EX7

Answer the following questions:

1. How many subsystems does the cockpit light system consist of? What are they?
2. What is the function of the cockpit light system?
3. What lights does the system comprise?
4. Where are they located in the cockpit?
5. What is the function of each light?
6. Which lamps are used for their operation?

EX 8

Translate the sentences into English:

1. Яркое освещение приборной доски со стороны командира ВС и второго пилота обеспечивается четырьмя лампами, расположенными под противобликовым щитком.
2. Система освещения пилотской кабины включает в себя: потолочные плафоны, встроенную и общую подсветку приборных панелей, подсветку кнопок и ламп светового табло.
3. В условиях отказа основной системы питания самолета, подсветка центральной зоны остается включенной.
4. Индивидуальные светильники для чтения у пилота и второго пилота освещают съемные столики, консоли и потолок при необходимости.
5. В кабине представлены три независимых блока управления для запитывания встроенной подсветки верхнего щитка панели управления, приборных панелей, консолей, противобликового щитка и центрального пьедестала.

EX 9

Put 5 questions to each sentence:

1. The panel and instrument integral lighting allow the crew to read the corresponding indications during night flights or flights in stormy conditions.
2. A flood light located on the overhead panel is used to illuminate the instruments and panels on the pedestal.
3. The light system permits to see all equipment details, all inscriptions and indications easily, whatever the level of darkness.

EX 10.

Make sure you know the translation of the words and word combinations

a) general lighting, integral lighting, annunciator lights, dimming system, dome light, glareshield, flood light, overhead panel, emergency configuration, placards, to swivel towards the rear of the pedestal, on the upright of the cockpit side windows, supplementary reading lights, sliding table, ceiling, to read corresponding indications, low voltage current source, long life lamps, console lighting, briefcase.

b) RH CAPT LH FCU F/O EPSU

c) Equipment, surface, permit, whatever, console, pedestal, blood, rear supplementary, allow, miniature, variable, halogen, general, indications, ensure, inscription, flood, minimum

EX11

Retell the text

EX12

Topics for further research:

- 1.Types of lamps used for interior lighting.
Capacity/efficiency/durability.
- 2.Incidents and accidents caused by interior lighting failure.
- 3.Interior lighting maintenance and repair, safety precautions.

UNIT 3

COCKPIT LIGHTS

OPERATION

EX1

Match the words with their transcription. There are 3 extra words:

1) 'ri:dəbl 2) 'sɜ:kɪt 3) grɜ 4) 'æmbɪənt 5) 'vəʊltɪdʒ 6) 'klærənt 7) ə'nʌʃɪeɪtə 8) 'ri:əʊstæt 9) 'ɪntə'feɪs 10) ər'dentɪkəl 11) bʌlb 12) 'ɪnstɹəmənt 13) θru: 14) 'aʊə 15) 'swɪvl

Interface, rheostat, though, current, readable, gear, voltage, annunciator, identical, bulb, instrument, through, hour, swivel, circuit, ambient, currant.

EX2

What do these abbreviations stand for? Match them with the translation:

1)INT LT/DOME	a) Dimmed	A) Плафон внутреннего освещения
2)BRT	b) Circuit breaker	Б) Автомат защиты сети
3)VDC →	c) Voltage direct current	В) Постоянный ток напряжением
4)C/B	d) Bright	Г) Яркий
5)DIM	e) Interior light dome	Д) Затемненный

EX3

Translate the verbs, use them in sentences of your own:

To decrease / to be decreased

To lose / to be ?

To deliver/ to be delivered

To indicate / to be indicated

To provide/ to be provided

To equip / to be equipped

To swivel / to be swiveled

To mount / to be mounted

To belong/ ?

EX 4

Study the grammar rule. Select the verbs typical for the technical English. Learn how to use the underlined verbs:

Verbs which cannot be used in the passive voice

Intransitive verbs

Intransitive verbs (verbs that do not take an object) cannot be passive. For this reason, the following sentences have no passive equivalents:

We arrived home late at night.

Did you sleep well?

He was running too fast.

Certain state verbs

Certain state verbs are not used in the passive even if they are transitive. Examples of such verbs are: belong, have (own), lack, resemble, suit etc. The following sentences cannot be made passive:

Joanne has two brothers.

Does this bag belong to you?

Unfortunately, Friday doesn't suit me.

Remember that some state verbs also have active meanings (e.g. measure, fit and weigh). If these verbs are used with the active meaning, they can be passive:

The truck weighed 2.5 tons. (Its weight was 2.5 tons.) (active sentence, stative meaning, cannot be made passive)

They weighed the truck before and after loading the cargo. (They measured its weight.) (active sentence, active meaning, can be made passive)

The truck was weighed before and after loading the cargo. (passive sentence)

There are state verbs which can normally be passive:

Nothing is known about the thief.

She is loved by all her friends.

I have the feeling I've been misunderstood.

Verbs which are always passive

Some verbs are used almost exclusively in the passive voice:

He was born into a wealthy family.

When your order is shipped, we will send you a confirmation e-mail.

The victims were hospitalised immediately.

The room was strewn with books and magazines.

The area is mainly populated by families with small children.

Active verbs with a passive meaning

Some verbs are used in the active form with a passive meaning:

The company's new phone doesn't sell as well as the last one. (Fewer people buy it.)

The sign on the door read "No entry". (That is what you read on it.)

The trousers have been mended, and now the hole doesn't show. (It can't be seen.)

Active gerunds after need, require and want also have passive meanings:

The walls need painting. (They should be painted.)

Liquid nitrogen requires careful handling. (It should be handled carefully.)

The dog wants feeding. (It should be fed.)

Passive verbs with an active meaning

Some verbs can be used in the passive form with an active meaning:

My parents are retired now. (My parents have retired.)

Are you finished yet? (Have you finished yet?)

Those days are gone. (Those days have gone.)

EX5

Read and translate the text:

DOME LIGHTS-OPERATION

The INT LT/DOME switch 14LE with 3 positions (OFF, DIM, BRIGHT) located on the overhead control and indicating panel 25VU controls the two dome lights. Each dome light has four halogen long lasting lamps.

1. Normal Operation

When the INT LT/DOME switch 14LE is in the BRT position:

- the dome light in 453VU is supplied with 28VDC from busbar 601PP through circuit breaker 3LE on the rear C/B panel 122VU.

-the dome light in 452VU is supplied with 28VDC from essential busbar 401PP through circuit breaker 1LE on the overhead C/B panel 49VU.

When the switch is in the DIM position the light intensity decreases.

In the BRT position, the lights are supplied in parallel and in the DIM position they are supplied in series by groups of two.

2. Emergency Lighting

If the busbar 601PP is lost, only the dome light in 452VU on the cockpit right side remains on. It is supplied by essential busbar 401PP through circuit breaker 1LE.

In this configuration, the 3 positions: OFF, DIM and BRT of the switch 14LE are operational.

CONSOLE AND FLOOR LIGHTING OPERATION

Four lights are used for the lighting of each console (3 for the console itself and 1 for the briefcase).

The associated floor lighting consists of four lights fitted at the base of the Captain and First Officer seats.

(1) Captain Console And Floor Lighting

The CONSOLE/FLOOR switch 15LE with 3 positions: OFF–DIM–BRT controls the 28VDC supply to these lighting systems.

The switch is located on the Captain lighting/loud speaker control panel 301VU. The normal busbar 103PP supplies the 8 lights through the circuit breaker 5LE located on the rear circuit breaker panel 122VU.

(2) First Officer Console And Floor Lighting

The CONSOLE/FLOOR switch 16LE with 3 positions: OFF–DIM–BRT controls the 28VDC supply to these lighting systems. The switch is located on the F/O lighting/loud speaker control panel 500VU. The normal busbar 204PP supplies the 8 lights through the circuit breaker 4LE located on the rear circuit breaker panel 122VU.

INSTRUMENT PANEL LIGHTING AND READING LIGHTS-OPERATION

INSTRUMENT PANEL LIGHTING

Three lights 36LE (First Officer), 37LE (Captain) and 38LE (center) provide the ambient lighting of the Captain, First Officer and center main instrument panels.

They are installed under the glareshield and illuminate only the instruments and the placards located on four zones of the main instrument panels:

2 zones at the ends of the main instrument panels, 301VU and 500VU,

2 zones on the center instrument panel:

One on the left side which has the emergency equipment, one on the right side which has items of equipment such as the landing gear control lever, clock, the landing gear control and indicating panel 402VU etc.

The single control dual rheostat 35LE located on the center pedestal on the FLOOD LT/INTEG LT panel 111VU controls these lights:

The first rheostat controls:

- The brightness of the 11.5W halogen lamps of the First Officer light

36LE:

- the section of the center instrument panel light 38LE which illuminates the right zone. The normal busbar 103PP supplies the lamps with 28VDC through circuit breaker 2LE located on rear circuit breaker panel 122VU.

The second rheostat controls:

- The brightness of the 11.5W halogen lamps of the Captain light 37LE and the section of the center instrument panel light 38LE which illuminates the left zone (standby equipment).

READING LIGHTS

Captain And First Officer Reading Lights

The two reading lights are fitted on the upright of the side windows of the cockpit. They swivel and illuminate the sliding tables of the Captain and First Officer, the consoles and the ceiling if necessary.

Each reading light has:

- a 11.5W, 28V halogen bulb of the long lasting type (2000 hours),
- a rheostat which provides the three functions OFF – DIM – BRIGHT,
- a variable diameter diaphragm to reduce or increase the lighted surface (the diameter varies from 100 mm to 350 mm).

NOTE: Very often this light is named incorrectly as map light.

Supplementary Reading Light (First Officer)

The supplementary reading light 29LE is equipped with a long lasting halogen lamp and swivels. The READING LT rheostat 30LE is used to control the reading light brightness.

Center Pedestal Light

The center pedestal light 27LE is equipped with a 11.5W long-lasting lamp. It swivels towards the rear of the pedestal.

The FLOOD LT/PED rheostat 28LE is used to control the light brightness.

Second Supplementary Reading Light (Captain)

The installation of the second supplementary reading light 29LE in 54VU, its power supply (103PP) and control (rheostat 30LE) are identical to those of the first supplementary reading light.

PANEL/ INST INTEGRAL LIGHTING-OPERATION

The panel and instrument integral lighting allow the crew to read the corresponding indications during night flights or flights in stormy conditions. This integral lighting consists of miniature lamps supplied by AC power from lighting controllers.

There are 3 independent controllers to supply integral lighting of
 the overhead panel,
 the instrument panels, consoles and the centre pedestal.
 glareshield and FCU (Flight Control Unit).

Each controller generates a variable low voltage current source with high intensity (from 0 to 5 Volts).

ANNUNCIATOR LIGHT TEST AND DIMMING-DESCRIPTION

General

Bulbs supplied with 5VAC–400Hz are used for the lighting of the sun readable lights in the cockpit. The current is delivered by the 115V/5V transformers. Each light is parted in two sections; each one has two 5V bulbs. An annunciator light test switch permits illumination of all annunciators and therefore check of all lights.

Switch 33LP

A switch with 3 positions: DIM, BRT, TEST is located on the overhead control and indicating panel 25VU.

System Description

Miniature lamps (115 mA, 5VAC) are used for the lighting of the annunciator lights mounted on the panels and instruments in the cockpit. A relay (system) or internal contacts (case of ON–OFF position indication pushbutton switches) control illumination of each annunciator light. Four different busbars: AC1 supply: 103XP, AC2 supply: 202XP, 115VAC STAT INV BUS: 901XP. Essential supply: 801XP supply the annunciator lights with 5VAC–400Hz through the transformers. In the case of emergency supply only busbar 901XP is serviceable. The system comprises

Four Identical Transformers

Five Circuit Breakers

Switch 33LP

Fourteen Annunciator Light Test and Interface Boards

Four–Stage Relays

EX6

Find the English equivalents for the following word combinations:

Коммутационная шина, запитываться параллельно, запитываться попарно, автомат защиты сети, панель управления освещением/ колонками, общее освещение, двойной реостат с одним блоком управления, четырехступенчатое реле

EX7

Answer the following questions:

1. Where is the INT LT/DOME switch 14LE located?
2. What are the positions of this switch?
3. How are the dome lights supplied in emergency configuration?
4. How many lights are used for the lighting of each console?
5. Where are the floor lights fitted?
6. Which lights does the single control dual rheostat control?
7. Which light illuminates the standby equipment?

EX 8

Translate the sentences into English:

1. Трехпозиционный переключатель располагается на верхнем щитке управления и осуществляет управление работой двух потолочных плафонов.
2. Яркость галогеновых ламп регулируется двойным реостатом.
3. Первые диммеры имели механический способ управления и могли выполнять только одну функцию — изменяли яркость светильника.
4. Применение диммеров с лампами накаливания (для их включения «с нуля») позволяет избежать броска тока через лампу (surge).

5. С диммерами несовместимы люминесцентные лампы и источники света, оснащенные дополнительными устройствами, такими как трансформатор, драйвер.

EX 9

Put 5 questions to each sentence:

1. Bulbs supplied with 5VAC–400Hz are used for the lighting of the sun readable lights in the cockpit.
2. They swivel and illuminate the sliding tables of the Captain and First Officer, the consoles and the ceiling if necessary.
3. Each controller generates a variable low voltage current source with high intensity (from 0 to 5 Volts).

EX 10.

Make sure you know the translation of the words and word combinations

- a. Busbar, to be supplied in parallel, to be supplied in series by groups of two, circuit breaker, lighting/loud speaker control panel, ambient lighting, single control dual rheostat, four–stage relays.
- b. INT LT/DOME BRT VDC C/B DIM
- c. Interface, rheostat, though, current, readable, gear, voltage, annunciator, identical, bulb, instrument, through, hour, swivel, circuit, ambient, currant.

UNIT 4

CABIN LIGHTS-DESCRIPTION

EX1

Match the words with their transcription. There are 3 extra words:

- 1) sʌb-'sɪstɪm 2)'lævətəri 3)'fɑ:sn 4)flʊə'resnt 5)'pɜ:sə 6),mɪsə'lemɪəs
7)'kɒntrəri 8)'aɪtəm 9)prə'si:dʒə 10)kəm'pli:t

Lavatory, fasten, fluorescent, purser, item, complete, lavender, miscellaneous, contrary, procedure, sub–system, purse, contamination.

EX2

What do these abbreviations stand for? Match them with the translation:

1)NS/FSB/RTS	a) director	A) Не курить. Пристегнуть ремни. Вернуться на место
2)CIDS	b) Additional/Aft Attendant Panel	Б) Система обмена данными с салоном
3)FAP	c)Programming and Test Panel	В) Панель старшего бортпроводника
4)AAP	d)Cabin Intercommunication Data System	Г) Дополнительная/задняя панель бортпроводника
5)PSU	e) <u>no smoking, fasten seat belt and return to seat</u>	Д) Панель обслуживания пассажира
6)DEU	f) Forward Attendant Panel	Е) Кодирующее/декодирующее устройство
7)DIR	g) Passenger Service Unit	Ж) Тестовая и программирующая панель
8)PTP	h) Decoder/Encoder Units	З) командный прибор
9)CAM	i) cabin assistant module	И) Модуль бортпроводника

EX3

Translate the verbs, use them in sentences of your own:

To divide/ to be divided

To run/ to be ?

To process/ to be processed

To signal/to be signaled

To push/ to be pushed

To monitor/to be monitored

To adjust/ to be adjusted

EX4

Read and translate the text:

CABIN LIGHTS-DESCRIPTION

The cabin lighting system illuminates the cabin, the entrances, the lavatories, the galley and the attendant work areas.

The system has these sub—systems:

General Illumination

Call System

Lavatory Lighting

Passenger Reading Lights

Lavatory Lighted Signs

Cabin Attendant Work–Lights.

NOTE: The Call System and the lighted signs NO SMOKING, FASTEN SEAT BELT and RETURN TO SEAT (NS/FSB/RTS) are part of the CIDS (Cabin Intercommunication Data System)

Cabin General Illumination

The general illumination consists of fluorescent tubes installed in the hatracks and the ceiling panels. In each cabin zone the four strips are divided into two groups for control purposes.

Group I: Lighting strips on the outer side of the lateral hatracks(WINDOW LIGHTS).

Group II: Lighting strips in the ceiling panels (inboard side) (CEILING LIGHTS).

The entry areas illumination consists of fluorescent tubes installed on the entrance area ceiling panels.

The cabin attendants control the general illumination through the FAP (Forward Attendant Panel) and the AAP (Additional Attendant Panel(s)), which are part of the CIDS

Lavatory Lighting

The lavatory lights are installed above each lavatory door. A microswitch, installed at each lavatory door controls the brightness of the lavatory lighting system and the indication signs.

The passenger reading and cabin attendant work lights

The passenger reading and cabin attendant work lights are high intensity lights. Attendant work lights are installed at each attendant station. Each passenger seat is provided with a reading light installed in the PSU (Passenger Service Unit).

Passenger Lighted Signs

There are four passenger lighted signs:

The LAVATORY OCCUPIED sign

The FASTEN SEAT BELT sign

The NO SMOKING sign

The RETURN TO SEAT sign.

CABIN LIGHTS SYSTEM-DESCRIPTION

General

The cabin lights are controlled through the CIDS (Cabin Intercommunication Data System) which includes a FAP (Forward Attendant Panel), two directors (DIRs) (one active and one in standby, and DEUs (Decoder/Encoder Units). Some DEUs are used for the light system, they are called type "A" DEUs. Signals from the FAP are processed by the DIRs to control the cabin lights. The DIRs transmit these signals to each DEU.

Cabin General Lights

The related DEUs control the cabin fluorescent lamps according to the selection on the FAP. The FAP controls the DEUs via the CIDS DIRs to give brightness (BRT) levels which are: full or 100% BRT, 50% BRT (Dimming 1) and 10% BRT (Dimming 2) for their related window and/or ceiling lights.

Entry Lights

The related DEUs control the entry fluorescent lamps according to the FAP selection. The FAP controls the DEUs via the CIDS DIRs in order to give BRT levels (100%, 50% or 10%).

NOTE: If the engines are running and the cockpit door is open, the CIDS directors signal the DEU of the left forward entry light to set the intensity to 10%.

Passenger Reading Lights

There is one light for each passenger seat. Each passenger reading light is controlled with an integrated pushbutton.

The FAP controls the activation of the passenger reading lights. The related DEU supplies DC control power (28V DC) for individual switching. The power unit receives 115V AC for the light operation. The test of the passenger reading lights is done via the DEUs, using the PTP (Programming and Test Panel).

Attendant Work Lights

The FAP controls the activation of the attendant work lights. The power units are installed in the overhead panels above the cabin attendant seats, and receive

115V AC for the light operation. Each power unit is connected to a DEU of the CIDS DIRs for light test activation, using the PTP.

FAP (CABIN LIGHTING PANEL) & PTP DESCRIPTION

FORWARD ATTENDANT PANEL

General

The FAP (Forward Attendant Panel) is located at the purser's station. With the FAP the various cabin systems can be controlled and monitored. It is connected to the directors (DIRs) and to the type B DEUs (Decoder/Encoder Units). The FAP is composed of four parts: the air conditioning panel, the light panel, the audio panel, the water and miscellaneous panel.

Cabin Lighting

The cabin light panel comprises control keys for the various cabin lights. There are controls for the entrance areas and the different cabin sections. The MAIN ON key when pushed, switches on the cabin zones and entrance areas lighting with 100% intensity, and contrary the MAIN OFF key when pushed, switches off the cabin zones and entrance areas lighting. The BRighTness, DIMming 1 and DIM2 keys respectively switch on the lights at 100%, 50% and 10% intensity, for the FWD, AFT and MID (only for A321) entrance areas. In addition, POWER LAVatory, ATTeNdant and READing keys provide the supply respectively for the lavatory lights, attendant work lights and the passenger reading lights. The WinDoW and CeILinG keys enable respectively to control windows and ceiling lights. Specific zone such as first class, business class or tourist class can be controlled via the FAP, the light intensity for these zones is adjustable with the BRT, DIM1 or DIM2 key. All pushbuttons, except for MAIN ON and MAIN OFF, have integral lights for visual indication of the activated functions.

Programming Test Panel (PTP)

The PTP is located next to the FAP. It is equipped with a CAM which contains all the software of customer specific layouts. The PTP is used for the reprogramming of lights related cabin items and a test of the emergency lights system.

The TEST EMER LIGHT SYS switch, on the PTP, starts a test procedure of the complete emergency light system.

EX 6

Find the English equivalents for the following:

Багажная полка, потолочная панель, поперечно на багажной полке, двигатели запущены, входная зона, установить яркость освещения на 10%, встроенная нажимная кнопка, источники питания, старший бортпроводник, панель Разное, и наоборот, клавиши соответственно переключают.

EX 7

Answer the following questions:

1. What are the sub-systems for the cabin lighting system?
2. What lights illuminate the cabin from the hatracks and the ceiling panels?
3. Who and how controls the cabin general illumination?
4. How can the brightness of the lavatory lights be controlled?
5. Which cabin lights are high intensity lights?
6. How are the passenger lights tested?
7. How are the flight attendant work lights activated?

EX 8

Translate the sentences:

1. Освещение пассажирских салонов обычно делится на общее, ночное, дежурное и индивидуальное.
2. Лампы общего, ночного и дежурного освещения расположены в общем световом коробе на потолке вдоль всего пассажирского салона.
3. Группы ламп накаливания образуют ночное и дежурное освещение.
4. Дежурное освещение включается при неработающих двигателях и отсутствии наземного аэродромного питания — от аккумуляторов.
5. В коробе общего освещения через определённые интервалы включаются плафоны с лампочками, а также плафоны освещения входных дверей, плафоны освещения вестибюля, кухни, туалетов.
6. Для индивидуального освещения пассажирских мест применяются точечные светильники, вмонтированные в багажные полки.
7. Управление освещением в салонах осуществляется со щитка бортпроводника.

EX9

Check you know how to translate these words and word combinations:

- a) Hatrack, ceiling panels, the lateral hatracks, engines are running, entry areas, to set the intensity to 10%, integrated pushbutton, power units, purser, miscellaneous panel, and contrary, keys respectively switch.
- b) NS/FSB/RTS, CIDS, FAP, AAP, PSU, DEU, DIR, PTP, CAM
- c) Lavatory, fasten, fluorescent, purser, item, complete, lavender, miscellaneous, contrary, procedure, sub-system, purse, contaminationEX 10

Match the incandescent lamp types with their diagrams:

			1. Classic
			2. Tipped candle
			3. GLS
			4. Candle
	PAR 38 Reflector		5. Mushroom
			6. Pygmy
			7. Decorative round
			8. Reflector
			9. PAR 38 reflector

UNIT 5

CABIN LIGHT-OPERATION

Cabin Illumination

EX1

Match the words with their transcription. There are 3 extra words:

- 1)θru(:)'aʊt 2)'pɜ:pəs 3)'fɒləʊɪŋ 4)'mɛmbreɪn 5)dɪs'eɪbl 6)'ɛntrəns 7)'bæləst 8)sək'seɪʃən 9)fɔɪl

Throughout, membrane, disable, ballast, follower, succession, foil, purpose, following, entrance, pursue, airfoil.

EX2

What do these abbreviations stand for? Translate the abbreviations:

<u>WDO</u>	<u>Window</u>	?
<u>CLG</u>	<u>Ceiling</u>	?
<u>VAC</u>	<u>Voltage</u> <u>Alternating</u>	?
<u>FAP</u>	<u>current</u>	?
<u>DEU</u>	<u>Forward attendant Panel</u>	?
	<u>Decoder/encoder unit</u>	?

EX3

Translate the verbs, use them in sentences of your own:

To distribute \ to be distributed	To switch \ to be switched
To designate \ to be designated	To disable \ to be disabled

The cabin lamps are distributed in four strips throughout the cabin zones. The four strips in each cabin zone are divided into two pairs for control purposes. The two outboard strips are designated as WINDOW (WDO) lights and the two center strips as CEILING (CLG) lights. The system is designed so that the window and ceiling lights in each cabin zone can be on together or separately.

When on, the fluorescent lamps can be selected to 100 % (BRT), 50 % (DIM 1) or 10 % (DIM 2) intensity. Each fluorescent lamp is installed in a holder which contains an integral ballast unit. The units are supplied with 115VAC from busbars 212XP and 214XP through circuit breakers 300LG through 307LG (cabin lighting) and 308LG (entrance lighting). The lighting system is controlled from the forward attendant panel 120RH and the aft attendant panel 126RH, which contains the following membrane switches:

Forward Attendant Panel (FAP)

MAIN ON when pushed, switches on the cabin zones and entrance areas lighting with 100 % intensity. It also causes the integral light in all BRT, WDO and CLG membrane switches to come on.

MAIN OFF when pushed, the cabin zones and entrance area lights goes off Also any light of the general illumination switch goes off. This function is disabled in flight.

ENTRY FWD BRT and ENTRY AFT BRT – when initially pushed, causes the related entrance area lighting to come on with 100 % intensity, ENTRY FWD DIM1 and ENTRY AFT DIM1 with 50 %,intensity and ENTRY FWD DIM2 and ENTRY AFT DIM2 with 10 % intensity. It also causes the integral light under the membrane switch foil to come on.The lights may be switched off by pushing the membrane switch twice in succession.

FWD BRT and AFT BRT – when initially pushed, causes the related cabin zone lighting to come on with 100 % intensity, FWD DIM1 and AFT DIM1 come on with 50 % intensity and FWD DIM2 and AFT DIM2 come on with with 10 % intensity.

It also causes the integral lights in the related BRT, WDO and CLG membrane switch to come on. The lights may be switched off by pushing the membrane switch twice in succession.

WDO – With the cabin lighting set on at any intensity. On pushing this membrane switch, the window lights in each cabin zone and the light under the membrane switch foil go off. Pushing the membrane switch again will cause the lights to come on.

CLG – With the cabin lighting set on at any intensity. On pushing this membrane switch, the ceiling lights in each cabin zone and the light under the membrane switch foil go off. Pushing the membrane switch again will cause the lights to come on.

Operation/Control and Indication

The forward attendant panel 120RH and the aft attendant panel 126RH are connected to the Directors 101RH and 102RH of the CIDS (Cabin Intercommunication Data System). The input signals from the forward attendant panel 120RH and the aft attendant panel 126RH are processed by the director and transmitted to the Decoder/Encoder Units (DEUs). The DEUs accept the input data and activate the output to the fluorescent lamps with ballast units in accordance with the code presented at the input. The DEU is capable of handling up to four fluorescent lamps with ballast units. Three signal lines connect each fluorescent lamp with ballast unit to the related DEU. The DEU output signal has two levels 0 (0VDC) and 1 (28VDC). With no output signal from the associated DEU the fluorescent lamps will illuminate at full brightness.

The entrance lighting has fluorescent lamps with ballast units installed in the ceiling panels at the forward and aft entrances. Two fluorescent lamps are installed in the LH and RH ceiling panels at each entrance. The operation is the same as the cabin lighting.

1. The entrance lighting at entrance 1 LH is automatically dimmed to DIM2 level (10%) whenever the cockpit door is opened with the engines running.
2. The CIDS directors 101RH and 102RH receive one signal from the engine oil–pressure system and another signal from the cockpit door microswitch.

The directors 101RH and 102RH transmit their output signal to the DEU which controls the entrance 1 LH fluorescent lamp with ballast unit. The DEU provides a DIM2 signal and the light dims to 10% intensity.

EX6

Find the English equivalents for the following word combinations:

Две световые полоски по краям салона, встроенное балластное устройство, мембранный переключатель, дважды последовательно, поверхность мембранного переключателя, в соответствии с, всякий раз, с запущенными двигателями, маслосистема двигателя.

EX 7

Answer the following questions:

1. How many light strips are the cabin lights distributed into?
2. What is the function of the outboard strips?/ center strips?
3. Can the cabin zones be lit separately?
4. What are the modes for the cabin lights?
5. How are the units supplied?
6. Are the cabin and entrance areas supplied using the same CB?
7. What happens, when MAIN ON switch is pushed?
8. How can the lights be switched off using the membrane switch?
9. What are the FAP and AAP connected to?
10. Where are the signals then transmitted to?

EX8

Translate the sentences:

1.С задней панели AAP возможно управление некоторыми системами пассажирской кабины.

2. На усовершенствованных самолетах система обмена данными с салоном передает информацию на жидкокристаллический монитор передней панели бортпроводника.

3. Количество кнопок управления зависит от конфигурации пассажирской кабины самолета, что позволяет контролировать работу других систем, предусмотренных эксплуатантом на борту воздушного судна

4. Тестовая и программирующая панель имеет модуль бортпроводника, на который установлено программное обеспечение, необходимое для функционирования систем пассажирской кабины.

5. На жидкокристаллический дисплей тестовой и программирующей панели выводится информация о состоянии (статусе) систем пассажирской кабины, а также отображаются некоторые виды неисправностей при отказе этих систем.

6. В случае возникновения неисправности, в какой-либо из систем пассажирской кабины, на панели старшего бортпроводника загорается красный индикатор CIDS CAUT.

EX 9

Make sure you know these words and word combinations:

- a) two outboard strips, integral ballast unit, membrane switch, twice in succession, membrane switch foil, in accordance with, whenever, with the engines running, the engine oil–pressure system.

Unit 6

CARGO AND SERVICE COMPARTMENTS.

EX1

Match the words with their transcription. There are 3 extra words:

1) 'sɜ:vis 2) kəm'pɑ:tmənt 3) 'meɪntənəns 4) 'aʊtlet 5) ɪn'stɔ:ld 6) ək'sesəri 7) fə'sɪlɪtɪz 8) 'lætərəl 9) hɑ:'drɔ:lɪk 10) ə'dʒeɪsənt

Outlet, service, installed, compartment, adjacent, maintenance, Facilitate, accessory, facilities, lateral, accessible, hydraulic, outer.

EX2

What do these abbreviations stand for? Translate the abbreviations:

APU	Auxiliary power unit	?
VAC	?	?
VDC	?	?

EX3

Translate the verbs, use them in sentences of your own:

To provide /to be provided	To install /to be installed
To equip/to be equipped	To comprise/to be comprised
To transmit /to be transmitted	To de-energize/to be de-energized

EX 4

Read and translate the text:

General

The cargo and service compartment lighting-system provide illumination to the service area, forward and aft cargo compartment, avionics compartment and wheel wells. A maintenance outlet is installed in the air conditioning duct and accessory compartment.

AVIONICS COMPARTMENT LIGHTING-DESCRIPTION

General

To help servicing and maintenance operations, some of the compartments are equipped with lighting facilities. The lighting system comprises lamps, fluorescent tubes, control switches and electrical outlets used for portable maintenance lights.

AVIONICS COMPARTMENT LIGHTING

The avionics compartment lighting system consists of a number of lights and maintenance outlets. The busbar 601PP supplies the five maintenance outlets with 28 VDC through circuit breaker 11LS. The busbar 216XP supplies the three maintenance outlets with 115 VAC through circuit breaker 12LS. The outlets are located in the forward and aft parts of the avionics compartment. Six dome lights provide the illumination of the avionics compartment.

The busbar 601PP supplies the lights with 28 VDC through circuit breaker 1LS and relays 24LS and 25LS. The relay 24LS controls the power supply to the lateral L, aft L and R dome lights. The relay 25LS controls the power supply to the lateral R, forward L and R dome lights. The door proximity switches transmit the ground signal to relays 24LS and 25LS.

Auto Mode

When the service door in zone 125 or zone 128 is open, the associated proximity switch removes the ground for relay 24LS. Relay 24LS de-energizes and the L lateral, L and R aft dome lights come on.

When the service door in zone 120 or zone 126 is open, the associated proximity switch removes the ground for relay 25LS. Relay 25LS de-energizes and the R lateral, L and R forward dome lights come on.

Manual Mode

When the pushbutton switch 23LS is pressed, the two relays 24LS and 25LS de-energize and the avionics compartment lights come on. The integral light in the pushbutton switch comes on.

WHEEL WELL LIGHTING-DESCRIPTION

General

The wheel well lighting-system has the lighting of the main wheel wells and the hydraulic compartment. For maintenance practices an electrical outlet is installed at the front wheel well and in the hydraulic compartment.

Wheel Well Lighting

One dome light is installed in each of the main-wheel well compartments. Two dome lights are installed in the hydraulic compartments LH and RH. The busbar 202PP supplies 28 V DC to all four lights through the circuit breaker 2LL and the control switch 12LL. An outlet 3LL is provided in the nosewheel well for maintenance purposes. Another outlet 4LL is provided in the hydraulic compartment, adjacent to the control switch 12LL, on panel 2025VU. When the control switch is placed to the ON position, all lights come on.

SERVICE&CARGO COMPARTMENT LIGHTING-DESCRIPTION

Service Area Lighting

The service area lighting system comprises the lights installed in the APU compartment and in Section 19. Electrical outlets are provided for portable maintenance lights.

The lights and outlets are supplied with 28 V DC from busbar 208PP through the circuit breakers 2LJ and 1LJ. Switch 11LJ controls the APU light 6LJ and switch 3LJ controls the two lights 4LJ and 5LJ in Section 19. When busbar 208PP is energized and the circuit breaker 1LJ is closed, power is available at the two maintenance outlets in Section 19.

Air-conditioning and Accessory Compartment Lighting.

The air conditioning compartment is provided with a 28 VDC outlet for a portable maintenance light.

Cargo Compartment Lighting

Forward, aft and bulk cargo compartments are lit by fluorescent tubes. Lighting is also available at the forward and aft loading areas. The fluorescent tubes are installed in the ceilings of the FWD, AFT and BULK cargo compartments. They are controlled by three switches, located close to the doors. Each loading area light is controlled by a switch, located close to the cargo door. The loading area light is bracket mounted and its direction can be adjusted.

EX5

Find the English equivalents to the following words and word combinations:

Зона обслуживания, передний и задний грузовые отсеки, отсек бортового радиоэлектронного оборудования (авионики), ниши шасси, выходной канал обслуживания, отсек вспомогательных агрегатов, неконтактный переключатель, автоматический режим, поперечный, отсек гидравлики, ниша переднего шасси, отсек ВСУ, переносные рабочие лампы, люк безконтейнерной загрузки, устанавливаемый на кронштейн.

EX 6

Answer the following questions:

1. Which areas are illuminated within the cargo and service compartment lighting?
2. Where is the maintenance outlet installed?
3. How are the forward dome lights activated in auto mode? / manual mode?
4. Which objects are lit alongside with the wheel-well area?

5. Where is the maintenance light electrical outlet installed in the landing gear area?
6. How many dome lights are installed in each of the wheel-well compartment?
7. Which lamps light the forward, aft and bulk cargo compartments?
8. What is the purpose of the loading area light bracket mounting?

EX7

Translate the sentences:

1. Самолёт имеет два багажно-грузовых отсека (БГО), в зоне с контролируемой температурой и давлением.
2. Багажно-грузовые отсеки (БГО) спроектированы с условием, что багаж и грузы размещаются без использования контейнеров (в навал).
3. Электропитание системы освещения БГО осуществляется от бортовых и наземных источников питания.
4. Слева внизу располагается выключатель освещения багажника. Если его забыть выключить, то при закрывании двери сработает реле и свет отключится сам.

EX8

Put five questions to the following sentences:

1. The wheel well lighting-system has the lighting of the main wheel wells and the hydraulic compartment.
2. The busbar 601PP supplies the lights with 28 VDC through circuit breaker 1LS and relays 24LS and 25LS.

EX9

Make sure you know how to translate these words and word combinations

Service area, forward and aft cargo compartment, avionics compartment, wheel wells, maintenance outlet, accessory compartment proximity switch, Auto Mode, lateral, hydraulic compartment, nosewheel well, to be adjacent to, APU compartment, portable maintenance lights, bulk cargo compartment, bracket mounted.

EX 10

Revision:

Две световые полосы по краям салона, четырехступенчатое реле, мембранный переключатель, дважды последовательно, поверхность мембранного переключателя, в соответствии с, всякий раз, с запущенными двигателями, запитываться попарно, маслосистема двигателя, общая подсветка, встроенная подсветка, лампа светового табло, система затемнения, плафон, противобликовый щиток, предупредительная надпись, багажная полка, потолочная панель, поперечно на багажной полке, двигатели запущены, входная зона, установить яркость освещения на 10%, встроенная нажимная кнопка, источники питания, старший бортпроводник, панель Разное, клавиши соответственно переключают, и наоборот, прожекторное освещение/фонарь заливающего света, верхний щиток (кабины экипажа, управление), аварийный режим, предупредительная надпись на пластике, металле, поворачиваться в направлении задней части центрального пьедестала, непосредственно над боковыми окнами пилотской кабины, дополнительные лампы для чтения, съёмный столик, потолок, читать соответствующие показания приборов, источник тока низкого напряжения, лампа с длительным сроком службы, подсветка консоли, чемодан с полетной документацией, коммутационная шина, запитываться параллельно, автомат защиты сети, панель управления освещением/ колонками, общее освещение, встроенное балластное устройство, двойной реостат с одним блоком управления, основное освещение, подсветка приборов, входные зоны, салон, туалеты, розетки, хвостовой логотип, воздухозаборник двигателя, передняя кромка крыла, блок источника аварийного питания.

Плафон внутреннего освещения, Автомат защиты сети, Постоянный ток напряжения, Яркий, Затемненный, Система обмена данными с салоном, Панель старшего бортпроводника, Дополнительная/задняя панель.

Unit 8**EXTERIOR LIGHTS**

EX1

Match the words with their transcription. There are 3 extra words:

1)'eɔʒɪz 2) kə'liʒən 3)feɪz 4)frɪkst 5)di'tɜ:mɪnd 6)'fɪləmənt 7)'tʊgl 8)bild
9)'riəwəd 10)ɪg'zɔ:st 11)'veəriəs 12)'flʌŋkfənz

Exhaust, collision, functions ,phase, fixed, determined, filament, edges, toggle, build, rearward, various, fluctuations, guarded, phrasal.

EX2

Translate the verbs, use them in sentences of your own:

To fulfil/ to be fulfilled	To produce / to be produced
To rate/ to be rated	To downlock / to be downlocked
To attach/ to be attached	To determine/ to be determined
To retract/ to be retracted	To cause/ to be caused
To increase/ to be increased	To decrease/ to be decreased

EX3

Read and translate the text:

GENERAL

The exterior lighting system fulfils various functions:

- illuminating the runway and taxiway
- illuminating the wing leading edges and engine air intakes
- indicating the aircraft position and direction
- reducing collision risk in flight and on ground.

TAXI AND TAKE OFF LIGHTS-DESCRIPTION

General

The taxi and take-off light system illuminates the runway during the taxi and the take off phase. Two light units provide the lighting. They are installed on the nose landing gear.

System Description

The taxi and take-off light system consists of:

- a single filament light (or halogen lamp in alternate solution) 8LR, rated at 450 Watts, installed on the nose landing gear in a fixed position,
- a transformer, to produce rated operating voltage,
- a single filament light (or halogen lamp in alternate solution) 7LR, rated at 600 Watts, installed on the nose landing gear in a fixed position,

a transformer, to produce rated operating voltage, two power supply relays 5LR for the takeoff and 6LR for the taxi light, a switch 4LR, on the cockpit overhead panel.

The 115 VAC busbar 204XP supplies power to the taxi light through the circuit breaker 1LR and relay 6LR. The 115 VAC busbar 103XP supplies power to the take off light through the circuit breaker 3LR and relay 5LR. The 28 VDC busbar 202PP supplies power to the switch 4LR through the circuit breaker 2LR. The landing-gear computer supplies the power supply relays 5LR and 6LR with a ground signal when the nose landing gear is downlocked.

Operation

With energized busbars and closed circuit breakers, 115 VAC is supplied to the contacts of the power relays. The control switch is supplied with 28 VDC. When the nose landing gear is downlocked, the power supply relays get a ground signal. When the control switch 4LR is in the TAXI position, the relay 6LR energizes and the taxi light 8LR comes on. With the switch 4LR in the T.O position, the relay 5LR energizes and continues to energize the relay 6LR. The taxi light 8LR and the take off light 7LR come on. When the nose landing gear is unlocked, the ground signal for the power supply relays is removed. The take off light and the taxi light go off. You can also switch off the lights with the switch 4LR in the OFF position.

WING & ENGINE SCAN LIGHTS DESCRIPTION

General

Two lights are installed, one on each side of the forward fuselage. They illuminate the engine air intakes and the wing leading edges. It is possible to examine these areas in flight; for example, to determine the build up of ice. The toggle switch 2LX controls the lights.

Description

The wing and engine scan light system has two lights 3LX and 4LX with a fixed single filament. The lights are installed one on each side in the forward fuselage of the aircraft. An attached transformer gives the rated operation voltage to each light. Electrical power comes from the 115 VAC busbars 202XP and 103XP through the circuit breakers 1LX and 5LX.

Operation

The switch 2LX is supplied with 115 VAC when: the busbars 202XP and 103XP are energized, the circuit breakers 1LX and 5LX are closed. The wing and engine scan lights come on when the switch 2LX is in the ON position.

NAVIGATION LIGHTS

The Navigation Light system gives an external, visual indication of the position of the aircraft and its direction of flight. A forward-facing light is installed at the edge of each wing tip. A rearward-facing light is installed on the tail cone below the Auxiliary Power Unit (APU) exhaust.

System Description

A forward-facing navigation light assembly is installed at the leading edge of each wing tip. A rearward-facing navigation light assembly is installed on the tail cone, below the APU exhaust. Each light assembly has a different colored lens:

the left wing-tip navigation light has a red lens

the right wing-tip navigation light has a green lens

the tail navigation light has a clear lens.

The navigation lights are controlled by the toggle switch 3LA which is installed on the overhead panel 25VU in the cockpit. The switch has two positions, which are identified NAV & LOGO ON/OFF

Operation/Control and Indicating

With the switch 3LA set to ON, the 115V AC SERVICE BUS 2, 216XP supplies power through:

the circuit breaker 1LA

the switch 3LA (to energize the relay 6LA)

the relay 6LA to the step-down transformers of the wing-tip navigation light assemblies 9LA(10LA)

the relay 6LA to the step-down transformer 13LA.

The step-down transformers in the wing-tip navigation light assemblies supply 12.15V AC to the lights. The lamps come on. The step-down transformer 13LA supplies 12V AC to the tail navigation light. The lamp comes on.

With the switch 3LA set to OFF:

the relay 6LA is de-energized

the lamps go off.

When the towing tractor is connected it supplies 115V AC through:

the electrical box 5GC,

the closed contacts in the relay 6LA to the step-down transformer in the wingtip navigation light assemblies 9LA(10LA),

the closed contact in the relay 6LA to the step-down transformer 13LA.

The step-down transformers in the wing-tip navigation light assemblies supply 12.15V AC to the lights. The lamps come on. The step-down transformer 13LA supplies 12V AC to the tail navigation light. The lamp comes on. When the towing tractor is disconnected the lamps go off.

LOGO LIGHTS

The logo lights 4LY and 5LY are installed on the horizontal stabilizer in the zones 334 and 344. Each logo light consists of a housing which contains the lamp assembly and a step-down transformer. The step-down transformer lowers the aircraft 115VAC to 28VAC power supply.

The toggle switch 'NAV/LOGO' 3LA, installed on the cockpit overhead panel 25VU, controls the logo lights together with the navigation lights. The toggle switch has an ON and OFF position. When you set the toggle switch 3LA to the ON position the logo lights come on automatically during taxiing, take-off and landing.

With the switch NAV & LOGO (3LA) set to ON, 115 V AC is supplied to the relay 6LA. When the flaps are lowered to 15 degrees or more, or the landing-gear struts are compressed, a ground signal is received. This energizes the coil of the relay 5LY. Power is then supplied to the step-down transformer of the light assemblies. From these transformers a decreased voltage of 28 V DC is supplied to the logo lights 3LY (4LY) which causes the logo lights to go on.

When the landing-gear is retracted, and the flaps are retracted to less than 15 degrees, the ground signal is removed. In this condition, the logo lights go out.

Also, with the switch NAV & LOGO (3LA) set to OFF, the relay 6LA is de-energized which causes the logo lights to go out.

EX 4

Find the English equivalents to the following:

Передние кромки крыла, воздухозаборники двигателя, положение ЛА, уменьшение риска столкновения, рулевая фара, лампа с одной нитью накаливания, рабочее напряжение определенного уровня, компьютер управления шасси, переднее шасси выпущено и встало на замок, фары освещения передней кромки крыла, воздухозаборников, определить обледенение, рычажный переключатель с перекидной головкой, на кромке законцовки каждого крыла, навигационные огни, блок освещения, выходное сопло ВСУ, цветная линза/колпак, тягач, обмотка реле.

EX5

Answer the following questions:

1. What functions does the exterior lighting system carry out?
2. What lights the runway and taxiway during the taxi and the take off phase?
3. What kind of lamp is usually/optionally installed on the nose gear?
4. Is the taxi light installed flexibly?
5. When does the landing gear computer supply the ground signal to the corresponding relays?
6. Why is it necessary to examine the engine air intakes and the wing leading edges in flight?
7. Where are the navigational lights installed?
8. How are their lens colored?
9. Where are the logo lights installed?
10. What do the logo lights consist of?

EX 6

Translate into English:

1. Типовое осветительное оборудование состоит из посадочных, рулёжных и посадочно-рулёжных фар, фар освещения передней кромки крыла, воздухозаборников, фар подсветки опознавательных знаков (эмблем). 2.

2. Фары бывают выдвигаемыми и невыдвигаемыми.

3. Посадочно-рулёжные фары могут быть выполнены как в едином блоке (лампа-фара) с одной или двумя нитями накаливания, так и в виде самостоятельных изделий.

4. Посадочно-рулёжные лампы-фары обычно монтируются в выдвижном каркасе с электроприводом, позволяющим их убирать в полёте в обвод

фюзеляжа или крыла и выпускать на строго фиксированный угол при взлёте-посадке.

5.В ряде случаев рулёжные фары фиксированно устанавливаются на стойках шасси или внутри передней кромки крыла.

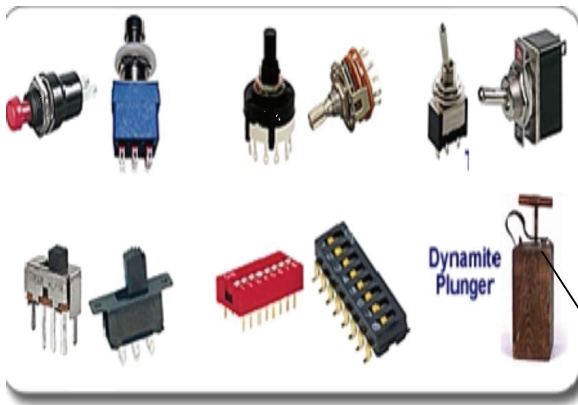
EX 7

Make sure you know how to translate these words and word combinations:

wing leading edges, engine air intakes, aircraft position, reducing collision risk, taxi light, a single filament light, rated operating voltage, landing-gear computer, nose landing gear is downlocked, wing & engine scan lights, to determine the build up of ice, toggle switch, at the edge of each wing tip, light assembly, APU exhaust, colored lens, towing tractor, the coil of the relay.

EX 8

Match the switch types on the diagram with their names:



1)Slide

2)Rotary

3)DIP (корпус с двухрядным расположением выводов)

4)Toggle

5)Push button

6)Dynamite plunger

UNIT 9

ANTICOLLISION LIGHTS DESCRIPTION

ANTICOLLISION LIGHTS

EX1

Match the words with their transcription. There are 3 extra words:

1) rɛkəg'niʃən 2) dɪ'zɑɪnd 3) 'vɪzʃuəl 4) ɪn'tɛnsɪtɪ 5) 'fju:zɪlɑ:ʒ. 6) ə'kɜ: 7) ɔ:l'tɜ:nɪli 8) 'aɪsələrt 9) ɪn'vɑ:əʃnəmɛnt 10) 'ɪndʒəri 11) dɪ'tɛəriə'reɪʃən 12) kən'tæmɪ'neɪʃən 13) ə'ber 14) prɪ'kɔ:ʃən 15) ɪg'niʃən 16) glʌv

Isolate, designed, visual, fuselage, above, occur, alternately, environment, injury, synchronization, deterioration, dove, intensity, contamination, obey, precaution, ignition, glove, recognition.

EX2

Find the verbs in the Passive, use them in active sentences of your own, if possible.

EX3

Read and translate the text:

General

The aircraft recognition lighting system is designed as a visual aid to other aircraft, so reducing the possibility of a collision.

The system consists of:

an anti-collision light providing a high-intensity red flashing light on the top and on the bottom of the aircraft fuselage.

a strobe light providing a high-intensity white flashing light. One light is installed in each wing tip facing forward and one is installed in the tailcone, below the APU exhaust, facing rearwards.

Description

Two anticollision /beacon lights are installed, 7LV on the top and 6LV on the bottom of the aircraft fuselage. The anticollision/beacon lights are high intensity red discharge lamps. Each lamp is supplied from an individual power unit. The anticollision/beacon lights flash at approx. 60 flashes per minute, when the BEACON switch 2LV is in the ON position.

Three strobe lights are installed, two at each wing tip on the leading edges 16LV and 17LV and one on the tail cone 19LV. The strobe lights are high intensity white lights synchronized to operate alternately with the anticollision/beacon light. The forward facing strobe lights flash at approx. 120 flashes per minute and the rearward facing strobe light flashes at approx. 60

flashes per minute. This occurs when the STROBE switch 11LV is either in the ON or AUTO position.

Operation

The aircraft recognition lighting system consists of two independent systems which are designed to operate alternately in synchronization:

the anti-collision light system and

the strobe light system.

The anti-collision/beacon light system operates, when the "BEACON ON-OFF" control switch (2LV), located on the overhead panel 25VU, is in the "ON" position. This causes the power supply units (3LV) and (4LV) to energize and supply the upper and lower anti-collision lights/beacon lights (6LV) and (7LV) with power.

The strobe light system operates, when the "STROBE ON-AUTO-OFF" control switch (11LV), located on the overhead panel 25VU, is in the "ON/AUTO" position. This causes the power supply units (14LV), (15LV) and (18LV) to energize and supply the two strobe lights (16LV) and (17LV) on each wing tip and the strobe light (19LV) on the tailcone with power.

If a malfunction should occur at the high-intensity strobe lights (white) or their power supply units, this does not have an affect of the function of the fuselage anti-collision light (red).

EXT LT PANEL (25VU)

BEACON sw

This switch turns on and off the two flashing red lights, one on top and one on the bottom of the fuselage.

STROBE sw

This switch turns on and off the three synchronized strobe lights, one on each wing tip and one below the tail cone.

ON: The strobe lights flash white.

AUTO: The strobe lights come on automatically when the main gear strut is not compressed.

OFF : The strobe lights are off

LANDING LIGHT DESCRIPTION

General

Two retractable landing lights are installed on the bottom of the wings. The lights operate through maximum operating speeds (VMO). The landing light system provides lighting to illuminate the runway when the aircraft lands at night. Two landing lights 7LB and 8LB are installed one on the underside of each wing. Each light has a separate control switch 5LB and 6LB. They can be extended at all aircraft speeds.

System Description

The left-hand (LH) landing light 7LB and the right-hand (RH) landing light 8LB are installed on the bottom of the LH and RH wings. Each landing light has an independent extension/retraction and illumination circuit. Two toggle switches, LAND L 5LB and LAND R 6LB, control the landing light system.

These switches are installed on the overhead panel 25VU in the cockpit. When the landing lights are extended, an indication 'LAND LT' is shown on the CRT (Cathode Ray Tube) as a memo message. The CRT is a part of the Electronic Centralized Aircraft Monitoring system (ECAM)

LANDING LIGHT OPERATION

Power Supply

The 115V AC busbars, 101XP and 202XP, supply power to the LH and RH landing lights through the circuit breakers 1LB, 2LB, 3LB and 4LB. These circuit breakers are installed on panel 122VU in the cockpit. The circuit breakers 1LB and 2LB control the power supply to the LH and RH landing light step-down transformers. The circuit breakers 3LB and 4LB control the power supply to the LH and RH single-phase motors of the landing lights.

Operation/Control and Indicating

Two control switches 5LB and 6LB are installed on the overhead panel 25VU. The switch LAND L controls the left-hand landing light and the switch LAND R controls the right-hand landing light. These switches are operated from RETRACT to OFF to ON for extension and illumination of the landing lights.

Then from ON to OFF to RETRACT, to set the landing lights to off and to retract them. These operations are as follows:

RETRACT to OFF

Power is supplied to the extend coil of the related motor, through a microswitch, to extend the related landing light.

OFF to ON

Power is supplied to the related power relay, through the full-wave rectifier and the closed contacts of a microswitch. This connects 115V AC, 400Hz, to the step-down transformer which decreases the voltage to 28V AC. The related landing light comes on.

ON to OFF

This removes power from the related power relay and opens the contacts of the microswitch. This removes 115V AC, 400 Hz, from the step-down transformer and the related landing light goes off.

OFF to RETRACT

Power is supplied to the retract coil of the related motor, which retracts the related landing light. The landing light stays off.

SAFETY PRECAUTIONS

When you work on the light system, make sure that you obey all the AMM (Aircraft Maintenance Manual) safety procedures. This will prevent injury to persons and/or damage to the aircraft.

Here is an overview of main safety precautions related to the light system.

Isolate the electrical circuits from the related equipment and the environment to prevent injury to persons and/or aircraft damage. Do not disconnect the electrical connections for at least two minutes after you de-energize the electrical circuits. When you change a lamp, do not touch the glass with your fingers. The oils from your skin will quickly cause deterioration of the lamp. If you accidentally touch the lamp glass, clean it with a lint-free cloth. Do not look directly towards the lights without eyes protection. Their intensity can be high enough to cause permanent damage to your eyes. Make sure that there are no signs of fuel contamination in the landing light assembly. If you find fuel contamination, the landing light must not be operated.

If you do not obey this precaution, ignition of the remaining fuel in the landing light can occur.

Put the safety devices and the warning notices in position before you start a task on or near: the flight controls, the flight control surfaces, the landing gear and the related doors, components that move.

Do not remove a strobe light for at least ten minutes after you de-energize the electrical circuits. The high voltage electrical current in the capacitor of the strobe light is dangerous.

Do not touch the strobe lights for at least 5 minutes after operation. The strobe light will still be hot. Use gloves when removing lamps, oils from your skin can deteriorate the life of the bulbs.

Be careful if you touch the strobe light with the cover removed and the power on. Some components have dangerous voltages.

EX4

Find the English equivalents to the words and word combinations:

Красный импульсный маяк высокой интенсивности, проблесковый световой маяк (стробоскоп), хвостовой обтекатель, огонь для предотвращения столкновений, разрядная лампа, быть синхронизированным работать попеременно, амортизационная стойка основного шасси, убираемые посадочные фары, по нижней части каждого полукрыла, однофазный двигатель, двухполупериодный выпрямитель, воздействие окружающей среды, кожные масла, повреждение лампы, безворсовая ткань, попадание топлива в установку посадочной фары, возгорание остатков топлива.

EX5

Answer the following questions:

1. What is the aircraft recognition lighting system designed for?
2. What does it consist of?
3. Where are the components installed?
4. What colour and intensity are the lights?
5. How is each lamp supplied?
6. Why are the landing lights retractable?
7. What are the safety precautions for the work on the lights system?

EX 6

Translate the following sentences:

На современных летательных аппаратах применяются выдвижные посадочные фары, выдвижные посадочно-рулежные фары

Выдвижные посадочные фары обычно состоят из алюминиевого корпуса, в котором размещен выдвигающийся обтекатель с лампой-фарой, редуктора, электродвигателя и контактного устройства.

Лампа-фара представляет собой стеклянную колбу с зеркальной задней стенкой, внутри которой нить накаливания.

Посадочные лампы-фары, как правило, устанавливаются снизу фюзеляжа или крыльев, а рулежная — на стойке шасси летательного аппарата.

Импульсный маяк высокой интенсивности имеет две импульсные газоразрядные лампы, закрытые красными светофильтрами, блок питания и два трансформатора зажигания ламп.

Многие самолеты оснащены огнями вдоль передней кромки крыла (WING), которые применяются для освещения крыла и пилонов двигателей в полете. Эти огни используют, чтобы сделать самолет более заметным во время взлета и посадки, а также для проверки крыльев в полете на наличие повреждений. Пилоты также могут использовать их с целью осмотра крыльев и ребер на предмет обледенения, которое могло образоваться при полете через облака.

Яркие белые лампы рулежных огней расположены на стойке переднего шасси большинства самолетов. Это освещение, как правило, включено всегда, когда воздушное судно находится в движении на земле, для лучшей видимости во время руления, взлета и посадки.

Яркие белые посадочные огни, как правило, устанавливаются на большинство самолетов для улучшения видимости при заходе на посадку. Эти огни могут также использоваться для освещения взлетно-посадочной полосы плохо освещенных аэропортов. Они часто требуются для ночных посадок, но также широко используются в дневное время, чтобы сделать самолет более заметным. При том, что использование этих огней является обязательным, их расположение может варьироваться. Посадочные огни могут быть расположены в основании крыла, во внешней части крыла, или где-нибудь вдоль передней части фюзеляжа. Некоторые самолеты оснащены двумя и более комплектами посадочных огней, установленными в нескольких из этих мест.

Посадочно-рулежные фары обычно располагаются в передней кромке основания крыла. Эти яркие белые лампы предназначены для обеспечения бокового и переднего освещения при рулении и движении по взлетно-посадочной полосе. Эти огни являются полезными в плохо освещенных аэропортах, но, как правило, ненужными в обычных условиях. Их свет также может быть использован в полете, если требуется увеличить видимость.

Некоторые самолеты оборудуются дополнительными фарами в носовой части. Эти огни предназначены в первую очередь для обеспечения подсветки при проведении наземным персоналом предполетной проверки самолета в ночное время.

EX 7

Make sure you remember the words and word combinations:

a high-intensity red flashing light, a strobe light, tailcone, anticollision /beacon lights, discharge lamps, to be synchronized to operate alternately, the main gear strut, retractable landing lights, single-phase motors, full-wave rectifier, environment, the oils from your skin, lint-free cloth, fuel contamination in the landing light assembly

Unit 10

GETTING READY FOR THE EXAM

Read and translate the text. Put 5 questions to the text. Render it.

LAVATORY LIGHTING/ PASSENGER READING LIGHTS

LAVATORY LIGHTING-DESCRIPTION

General

The lavatory lighting system consists of a fluorescent lamp, an integrated ballast unit and a halogen lamp installed in each lavatory. The POWER LAV membrane switch on the forward attendant panel 120RH controls the power for the fluorescent lamps. A microswitch is installed in each lavatory door frame and controls the halogen lamp and the illumination level of the fluorescent tube.

System Description

The lavatory lighting system has:

a fluorescent lamp with a ballast unit installed above the lavatory door in each lavatory.

a halogen lamp installed adjacent to the lavatory mirror in each lavatory.

a microswitch installed at each lavatory door frame. The microswitch is a part of the lavatory lighted signs system

LAVATORY LIGHTING OPERATION

SYSTEM OPERATION

Power Supply

The 115VAC from the busbar 214XP supplies the fluorescent lamps through the circuit breaker 1LQ and the power control relay 2LQ. The pushbutton membrane-switch POWER LAV, on the forward attendant panel 120RH, controls the power supply for the fluorescent lamps.

The 28VDC from the busbar 208PP supplies the lavatory occupied signs and auxiliary lights through the circuit breakers 1WJ, 11WJ and the door microswitches.

Operation

The system is supplied with power when the busbars are energized and the circuit breakers 1LQ, 1WJ and 11WJ are closed. With the door microswitch in the FREE position the halogen lamp is disconnected from the 28VDC. The DIM 1 (50 %) input of the ballast unit is supplied with 28VDC. When the switch POWER LAV on the forward attendant panel 120RH is pushed relay 2LQ energizes. Each lavatory ballast unit is supplied with 115VAC and the fluorescent lamp comes on with 50 % intensity.

When the lavatory door is locked, the related door microswitch changes over to the ENGAGED position and the halogen lamp is supplied with 28VDC. The 28VDC is disconnected from the DIM 1 input of the ballast unit and the fluorescent lamp illuminates with 100 % intensity.

The integral light under the POWER LAV membrane switch foil (on the forward attendant panel 120RH) comes on when the membrane switch is initially pushed. When the membrane switch is pushed again, the fluorescent lamps in the lavatory go off. Also the integral light under the POWER LAV membrane switch foil goes off.

All fluorescent lights go off when the membrane switch LIGHT MAIN OFF on the forward attendant panel 120RH is pushed. Other systems are also switched off with this membrane switch at the same time.

PASSENGER READING LIGHTS-OPERATION

System Description

The reading lights are installed in the combi-panels. The combi-panels are installed in the PSUs (Passenger Service Units) channel above the passenger seats. The number of combi-panels on each side of the cabin must agree with the number of seat rows.

Power Supply

115VAC is supplied to the reading lights from the busbars 110XP and 210XP.

This is controlled through the circuit breakers 1LW thru 6LW and the relays 7LW and 8LW.

The power units change the 115VAC to 6VAC for the light operation on classic aircraft types. On enhanced systems the PISA (Passenger Interface Supply Adapter) changes the 115VAC into 28VDC. A fuse in each line gives protection for the transformer and the related PCB (Printed Circuit Board). A membrane switch POWER READ on the FAP (Forward Attendant Panel) 120RH controls the power supply for the reading lights.

Operation

When the POWER READ membrane switch on the FAP 120RH is pushed, the power units 511RH and 512RH are activated. The coils of the relays 7LW and 8LW in the panel 2000VU are energized. This closes the contacts of the relays and 115VAC is supplied to the power units.

When the reading-light membrane switches 501RH thru 503RH are pushed, a ground pulse is supplied to the voltage control circuit. This completes the primary circuit of the step-down transformer. The transformer changes the 115VAC down to 6VAC which causes the lights to come on.

A test of the reading lights, the work lights and the PCB circuits is made by the related BITE test on the PTP(Programming and Test Panel) 110RH. In this test all reading lights and work lights come on for approximately 3 s and then go off.