

ФЕДЕРАЛЬНОЕ АГЕНТСТВО ВОЗДУШНОГО ТРАНСПОРТА
(РОСАВИАЦИЯ)

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

ИНОСТРАННЫЙ ЯЗЫК
ПО ПРОФИЛЮ ПОДГОТОВКИ
«АНГЛИЙСКИЙ ЯЗЫК»

Учебно-методическое пособие
по профилю «Управление
авиатранспортными процессами»

*для студентов I курса (МАГ)
направления 23.04.01
всех форм обучения*

Москва
ИД Академии Жуковского
2021

УДК 811.111
ББК Чи (Англ.)
Ч-49

Рецензент:

Акопова А.Л. – канд. филол. наук

Черняева Е.В.

Ч-49

Иностранный язык по профилю подготовки «Английский язык» [Текст] : учебно-методическое пособие по профилю «Управление авиа-транспортными процессами» / Е.В. Черняева, С.В. Дербина. – М.: ИД Академии Жуковского, 2021. – 36 с.

Данное учебно-методическое пособие издается в соответствии с рабочей программой учебной дисциплины «Иностранный язык» по учебному плану для студентов I курса (МАГ) направления 23.04.01 всех форм обучения.

Рассмотрено и одобрено на заседаниях кафедры 09.06.2021 г. и методического совета 17.06.2021 г.

УДК 811.111
ББК Чи (Англ.)

В авторской редакции

Подписано в печать 26.10.2021 г.

Формат 60x84/16 Печ. л. 2,25 Усл. печ. л. 2,09

Заказ № 825/0709-УМП12 Тираж 50 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, 2021

Оглавление

Unit 1	
Modern Airport's Luggage Tracking System	4
Unit 2	
Unit Load Devices (ULD)	12
Unit 3	
Dangerous Goods.	19
Unit 4	
Vaccine and Pharmaceutical Logistics.....	24
Unit 5	
Live Animals Logistics.	29

Unit 1.

Modern Airport's Luggage Tracking System

Exercise 1. Express your ideas on the following:

Baggage is never lost.

There is no need in implementing new technologies.

It is easy to track airport luggage.

Exercise 2. Read the transcription.

ˌjuːnɪˈvɜːsəl	ˌɔːtəˈmeɪʃ(ə)n ænd ˈprəʊsesɪz
ˌmɪsˈhændld bægz	ˈreɪdɪəʊ ˈfriːkwənsi aɪ ˌdɛntɪfɪˈkeɪʃən
ˌsɪməlˈteɪniəsli	ˌɔːtəˈməʊtɪv ˈviːɪkl aɪ ˌdɛntɪfɪˈkeɪʃən
ˈhɑːnɪsmɪ ˈsəʊlə ˈpəʊə	ɪlɛkˈtrɒnɪk ˈlaɪsəns plɛt

Exercise 3. Read and translate the text.

Seemingly, airport baggage loss is a universal problem that costs airline companies billions of dollars annually, even though the air transport industry (ATI) has cut the rate of mishandled bags by 61.3% globally since 2007, creating US \$18 billion in total estimated cost savings. This improvement is largely a result of strong technology investment and innovation in baggage systems automation and processes. Despite the obtained results, air companies are still implementing new technologies, and researches carry on the purpose of minimizing that baggage loss percentage, aiming for the passenger's satisfaction. One of the highly considered technologies for tracking airport luggage is Radio Frequency Identification (RFID). Its importance and efficiency are expressed by the vast amount of medical, military and commercial applications using this approach Worldwide. Billions of the RFID systems are operated in transportation (automotive vehicle identification, automatic toll system, electronic license plate, electronic manifest, vehicle routing, vehicle performance monitoring), banking (electronic checkbook, electronic credit card), security (personnel identification, automatic gates, surveillance) and medical (identification, patient history). Radio frequency identification technology, originally designed for product tracking, now promises to help people live and work in a cleaner and healthier environment. An array of test projects and field deployments are beginning to show that RFID can benefit business operations—by creating efficiencies, improving quality control and strengthening security—while simultaneously helping the environment—by cutting materials waste, reducing vehicle exhaust and boosting recycling. Other projects are even using the technology in a green way, such as harnessing solar power to operate RFID systems.

Exercise 4. What do these abbreviations stand for? ATI; RFID.

Exercise 5. Give the Russian equivalents for the following words and word combinations and learn them.

medical, military and commercial applications; passenger's satisfaction; baggage loss; cost savings; to strengthen security; mishandled bags; air transport industry; solar power; to operate systems; universal problem; to cut the rate; to track airport luggage; vast amount; to improve quality control; automotive vehicle identification; automatic toll system; electronic license plate; cleaner and healthier environment; electronic manifest; vehicle routing; vehicle performance monitoring.

Exercise 6. Answer the following questions:

1. What problem does the text raise?
2. What is a universal problem?
3. What kind of technologies are airlines implementing?
4. What is one of the highly considered technologies for tracking airport luggage?
5. What is originally designed for product tracking?
6. What is your person opinion on the problem?
7. What are the key ideas of the text?
8. What points would you stress if you had to give your point of view?
9. What conclusions can you make?
10. Do you shear the author's point of view?
11. Comment on the main problems of the text.

Exercise 7. Put 5 types of questions to each sentence.

1. This improvement is largely a result of strong technology investment and innovation in baggage systems automation and processes.
2. Its importance and efficiency are expressed by the vast amount of medical, military and commercial applications using this approach Worldwide.
3. An array of test projects and field deployments are beginning to show that RFID can benefit business operations—by creating efficiencies, improving quality control and strengthening security—while simultaneously helping the environment—by cutting materials waste, reducing vehicle exhaust and boosting recycling.
4. Other projects are even using the technology in a green way, such as harnessing solar power to operate RFID systems.

Exercise 8. Transfer the text into The Past Simple Tense.

Exercise 9. Put the words in the correct order.

Loss; the purpose; new technologies; air companies; are; and researches; carry on; that; baggage; percentage; still implementing; of minimizing.

Exercise 10. Transfer the sentence into Active Voice.

Its importance and efficiency are expressed by the vast amount of medical, military and commercial applications using this approach Worldwide.

Exercise 11. Give the structural analysis of the sentences.

1. Seemingly, airport baggage loss is a universal problem that costs airline companies billions of dollars annually, even though the air transport industry (ATI) has cut the rate of mishandled bags by 61.3% globally since 2007, creating US \$18 billion in total estimated cost savings.
2. Its importance and efficiency are expressed by the vast amount of medical, military and commercial applications using this approach Worldwide.
3. Radio frequency identification technology, originally designed for product tracking, now promises to help people live and work in a cleaner and healthier environment.
4. An array of test projects and field deployments are beginning to show that RFID can benefit business operations—by creating efficiencies, improving quality control and strengthening security—while simultaneously helping the environment—by cutting materials waste, reducing vehicle exhaust and boosting recycling.

Exercise 12. Use words and word-combinations retelling the text given in

Exercise 3.

To discuss the benefits; paper; application; to show; to present.

Exercise 13. Read the transcription. Open the brackets, put the verbs in the correct tense form, voice and translate the text.

ju: 'ni:kli ar 'dentɪfaɪd	sɪ 'kjʊərɪti kəʊdʒ	ɪ 'lektɪkəli ɪ 'reɪzəbl 'prəʊgræməbl rɪ:d- 'əʊnli 'meməri
dʒɪə 'mætrɪkəl pə 'ræmɪtəz	rɪ 'kwɔɪəmənt	ɔ: 'θentɪ 'keɪf(ə)n tæk 'ni:ks

Components

RFID systems basically (to compose) of three elements: a tag, a reader and a middleware deployed at a host computer. The RFID tag (to be) a data carrier part of the RFID system, which (to place) on the objects (to be) uniquely identified. The RFID reader (to be) a device that transmits and receives data through radio waves using the connected antennas. Its functions (to include) powering the tag, and reading/writing data to the tag. Unique identification or electronic data stored in RFID tags can be consisting of serial numbers, security codes, product codes and other specific data related to the tagged object. The available RFID tags in today's market could be classified with respect to different parameters. For example with respect to powering, tags may be passive, semi-passive, and active. In terms of access to memory, the tags may be read-only, read-write, Electrically Erasable Programmable Read-Only Memory, Static Random Access Memory, and Write-once read-many. Tags (to have) also various sizes, shapes, and may be classified with respect to these geometrical parameters. The RFID reader (to be) a device that

(to transmit and to receive) data through radio waves using the connected antennas. RFID reader can read multiple tags simultaneously without line-of-sight requirement, even when tagged objects (to embed) inside packaging, or even when the tag (to embed) inside an object itself. RFID readers may be either fixed or handheld, and now (to equip) with tag collision, reader collision prevention and tag-reader authentication techniques.

Exercise 14. Give the Russian equivalents for the following words and word combinations and learn them.

electronic data stored in tags; through radio waves; a tag; security codes; a reader; a middleware; to deploy; at a host computer; read-write; to be placed; on the objects; to be uniquely identified; tag-reader authentication techniques; Write-once read-many; to transmit and receive data; to power the tag; to read/write data to the tag; read-only; connected antennas; read multiple tags simultaneously; to be equipped with; reader collision prevention.

Exercise 15. Render the text given in Exercises 13.

Exercise 16. Open the brackets, put the verbs in the correct tense form, voice and translate the text.

Radio Frequency Identification (RFID) technology (to hold) the promise to automatically and inexpensively track items as they (to move) through the supply chain. The proliferation of RFID tags and readers (to require) dedicated middleware solutions that (to manage) readers and process the vast amount of captured data. The efficiency of an RFID application (to depend) on the precision of its hardware components, and the reliability of its middleware which (to be) the computer software that (to provide) services to software applications beyond those available from the operating system.

Middleware (to make) it easier for software developers to perform communication and input/output, so they can (to focus) on the specific purpose of their application. Middleware (to include) Web servers, application servers, content management systems, and similar tools that (to support) application development and delivery. It (to be) especially integral to information technology based on Extensible Markup Language (XML), Simple Object Access Protocol (SOAP), Web services, SOA, Web 2.0 infrastructure, and Lightweight Directory Access Protocol (LDAP).

Exercise 17. Open the brackets, put the verbs in the correct tense form, voice and translate the text.

The three primary functions of an RFID middleware can (to be broadly classified) as device integration (that (to be), connecting to devices, communicating with them in their prescribed protocols and interpreting the data). Filtering (the elimination of duplicate or junk data, which can (to result) from a variety of sources, for example: the same tag being read continuously or spikes or phantom reads caused by interference) and feeding applications with relevant information based on the information collected from devices after properly performing the appropriate

conversions and formatting. Even though most RFID Middlewares (to share) the same clear basic functions, every middleware (to have) an architecture of its own, which (to be) a direct result to the absence of an architecture standardization.

Exercise 18. Read the transcription. Open the brackets, put the verbs in the correct tense form, voice and translate the text.

With the adoption of RFID technology, a variety of security and privacy risks need to be addressed by both organizations and individuals. RFID tags (to consider) “dumb” devices, in that they can only (to listen and respond), no matter who (to send) the request signal. This (to bring) up risks of unauthorized access and modification of tag data. In other words, unprotected tags may be vulnerable to eavesdropping, traffic analysis, spoofing or denial of service attacks.

Skimming: Radio signals transmitted from the tag, and the reader, can (to be detected) several meters away by other radio receivers. It (to be) possible therefore for an unauthorized user to gain access to the data contained in RFID tags if legitimate transmissions properly (not to protect). Any person who (to have) their own RFID reader may interrogate tags lacking adequate access controls, and eavesdrop on tag contents. Traffic Analysis: Even if tag data (to protect), it (to be) possible to use traffic analysis tools to track predictable tag responses over time. Correlating and analyzing the data could build a picture of movement, social interactions and financial transactions. Abuse of the traffic analysis would have a direct impact on privacy.

Denial of Service Attack: the problems surrounding security and trust greatly (to increase) when large volumes of internal RFID data (to share) among business partners. A denial of service attack on RFID infrastructure could happen if a large batch of tags (to corrupt). For example, an attacker can (to use) the “kill” command, implemented in RFID tags, to make the tags permanently inoperative if they (to gain) password access to the tags. In addition, an attacker could use an illegal high power radio frequency (RF) transmitter in an attempt to jam frequencies used by the RFID system, bringing the whole system to a halt.

Personal Privacy as RFID increasingly (to use) in the retailing and manufacturing sectors, the widespread item-level RFID tagging of products such as clothing and electronics raises public concerns regarding personal privacy. People (to concern) about how their data (to use), whether they (to be) subject to more direct marketing, or whether they can (to be physically tracked) by RFID chips. If personal identities can (to be linked) to a unique RFID tag, individuals could (to be profiled and tracked) without their knowledge or consent.

Exercise 19. Put 5 types of questions to each sentence.

1. The RFID reader is a device that transmits and receives data through radio waves using the connected antennas.
2. Its functions include powering the tag, and reading/writing data to the tag.
3. Unique identification or electronic data stored in RFID tags can be consisting of serial numbers, security codes, product codes and other specific data related to the tagged object.
4. Tags have also various sizes, shapes, and may be classified with respect to these geometrical parameters.
5. The RFID reader is a device that transmits and receives data through radio waves using the connected antennas.
6. Middleware makes it easier for software developers to perform communication and input/output, so they can focus on the specific purpose of their application.
7. The efficiency of an RFID application depends on the precision of its hardware components, and the reliability of its middleware which is the computer software that provides services to software applications beyond those available from the operating system.
8. The three primary functions of an RFID middleware can be broadly classified as device integration (that is, connecting to devices, communicating with them in their prescribed protocols and interpreting the data).
9. Filtering (the elimination of duplicate or junk data, which can result from a variety of sources, for example: the same tag being read continuously or spikes or phantom reads caused by interference) and feeding applications with relevant information based on the information collected from devices after properly performing the appropriate conversions and formatting.
10. Any person who has their own RFID reader may interrogate tags lacking adequate access controls, and eavesdrop on tag contents.
11. A denial of service attack on RFID infrastructure could happen if a large batch of tags has been corrupted.
12. If personal identities can be linked to a unique RFID tag, individuals could be profiled and tracked without their knowledge or consent.

Exercise 20. Open the brackets in the correct tense form, voice and translate the text.

Role-Based Access Control (RBAC) Security Implementation

A properly administered RBAC system (to enable) users to carry out a broad range of authorized operations, and (to provide) great flexibility and breadth of application. System administrators can control access at a level of abstraction that (to be) natural to the way that enterprises typically conduct business. This (to achieve) by statically and dynamically regulating users, actions through the

establishment and definition of roles, role hierarchies, relationships, and constraints. In our case, security issues related to data access (to occur) when backend applications (to require) information they (to be unauthorized) to get. Where (to come) the necessity of applying RBAC. The implementation of an RBAC model in middleware security (not to be) as simple as it seems, findings indicate that many well known middleware technologies under study (to fall) short of supporting RBAC. Custom extensions (to be) necessary in order for implementations compliant with each middleware to support RBAC required or optional components. Some of the limitations preventing support of RBAC (to be) due to the middleware's architectural design decisions; however, fundamental limitations exist due to the impracticality of some aspects of the RBAC standard itself.

Exercise 21. Open the brackets in the correct tense form, voice and translate the text.

Green Logistics

Green logistics (to describe) all attempts to measure and minimize the ecological impact of logistics activities. This (to include) all activities of the forward and reverse flows of products, information and services between the point of origin and the point of consumption. It (to be) the aim to create a sustainable company value using a balance of economic and environmental efficiency. Green logistics (to have) its origin in the mid-1980s and (to be) a concept to characterize logistics systems and approaches that (to use) advanced technology and equipment to minimize environmental damage during operations.

RFID Application Impact On Environment

RFID (to show) its efficiency when applied to airports luggage tracking systems. However, we also (to see) an environmental dimension to this effort. Predicting that in helping to tracking passenger's luggage more accurately, RFID (to improve) sustainability by reducing unnecessary luggage truck deliveries, as well as passenger's trips to the airport for lost items, and therefore reducing air pollution in the area. Moreover, indirect impacts of RFID application can be more significant if analyzed properly. Lost luggage or baggage arrival delay, (to mean) more waiting time for passengers, therefore a delay for all their planned activities (postponed meetings, multiple transportations, canceled duties), and its impact on time, place and energy consummation, touching not only the concerned person, but all the little network around him. On a bigger scale network, these situations deteriorative impacts on the environment can (to be) more remarkable.

Exercise 22. Put 5 types of questions to each sentence.

1. This is achieved by statically and dynamically regulating users, actions through the establishment and definition of roles, role hierarchies, relationships, and constraints.
2. The implementation of an RBAC model in middleware security is not as simple as it seems, findings indicate that many well known middleware technologies under study fall short of supporting RBAC.

3. Some of the limitations preventing support of RBAC are due to the middleware's architectural design decisions; however, fundamental limitations exist due to the impracticality of some aspects of the RBAC standard itself.

4. This includes all activities of the forward and reverse flows of products, information and services between the point of origin and the point of consumption. Green logistics have its origin in the mid-1980s and was a concept to characterize logistics systems and approaches that use advanced technology and equipment to minimize environmental damage during operations.

5. On a bigger scale network, these situations deteriorative impacts on the environment can be more remarkable.

Exercise 23. Match the terms with the definitions

Term	Definition
Green logistics	It describes a data storage device in which information, once written, cannot be modified.
Skimming	They usually have a serial number that can't be written over.
Write once read many (WORM)	It is a possibility for an unauthorized user to gain access to the data contained in the tag or card.
read-only tags	It describes all attempts to measure and minimize the ecological impact of logistics activities.
Read-write tags	They are capable of being viewed; capable of being viewed but not of being changed or deleted.

Exercise 24. Render the text in English:

Как технологии могут сделать перевозку багажа более безопасной

В 2019 году авиакомпании и аэропорты потеряли почти 25 миллионов единиц багажа. Современные технологии, например: приложения для отслеживания и RFID-метки, могут сыграть решающую роль.

Такие инциденты удручающе часты. По данным поставщика авиационных информационных технологий SITA, в 2018 году было неправильно обработано примерно 24,8 миллиона сумок. Количество инцидентов, связанных с неправильным обращением с багажом, снизилось.

Отраслевая организация IATA ввела в действие новое постановление, Резолюцию 753, которое означает, что авиакомпании обязаны отслеживать все предметы багажа в ходе полета, особенно когда они загружаются в самолет и войти в систему трансфера в аэропортах.

Согласно отчету SITA Baggage IT Insights 2019, наиболее частой причиной неправильного обращения является задержка багажа.

В своем сообщении в блоге на веб-сайте группы Питер Драммонд, директор портфеля SITA по багажу, сказал, что задержка багажа из-за трансферов «неудивительна», поскольку «трансферы сложны с участием нескольких аэропортов и авиакомпаний» SITA поддерживает сквозное отслеживание багажа, как указано в Резолюции IATA 753.

В основе своего отчета SITA проанализировала более десяти миллионов записей в прошлом году с помощью службы BagJourney - глобальной системы мониторинга багажа, в которой используются инструменты машинного обучения. Среди основных рекомендаций группы было то, что отслеживание мешков наиболее эффективно, когда оно осуществляется на этапах погрузки.

Авиакомпаниям предлагают использовать системы согласования багажа (BRS) как средство как для ускорения процесса оформления багажа, так и для отслеживания каждого отдельного места багажа. SITA также предлагает авиакомпаниям и аэропортам активнее предоставлять информацию о багаже на мобильные устройства пассажиров.

RFID-метки вряд ли являются новыми - они были впервые представлены в аэропортах, включая Гонконг, Милан Мальпенса и Лас-Вегас Маккаран еще в 2005 году. Представители отрасли считают, что они останутся лучшей защитой от утери багажа. Американская авиакомпания Delta связывает свои 99% успешности обработки багажа пассажиров с этими этикетками со штрих-кодом, которые позволяют сканировать сумки, когда они проходят через систему аэропорта.

По словам Эндрю Прайса, главы международного отдела багажных операций IATA, RFID по-прежнему имеет большой потенциал. Группа поддерживает внедрение тегов во всей отрасли.

«Промышленность рассматривает RFID как недорогое решение для отслеживания», - сказал он. «Похоже, что аэропорты готовы внедрить RFID для отслеживания багажа, что предоставит богатый набор данных для оперативного анализа и планирования».

Но легче сказать, чем внедрить технологии в отслеживание багажа. Учитывая возможности сетей авиакомпаний и аэропортов, внедрение таких систем требует времени.

ASSIGNMENT TO ALL THE TEXTS GIVEN IN THE UNIT.

1. What are the points raised in the texts?
2. What is your person opinion on the problem?
3. What are the key ideas of the texts?
4. What points would you stress if you had to give your point of view?
5. What conclusions can you make?
6. Do you shear the authors' point of view?
7. Comment on the main problems of the texts.
8. What's the difference between read-only and read-write RFID tags?

Unit 2

Unit Load Devices (ULD)

Exercise 1. Express your ideas on the following:

Unit Load Devices (ULD)

What for is this equipment used?

Exercise 2.

Read the sentences given below and write them:

'ju:nɪt læʊd dɪ'vaɪsɪz (ju:ɛldi:) ɑ: ju:zd æz kən'teɪnəz fɔ: 'bæɡɪdʒ ænd 'kɑ:gəʊ 'kæɪrɪd
 ɪn ðə hæʊldz ɒv 'sju:təbli dɪ'menʃənd ænd ɪ'kwɪpt 'eəkrɑ:ft ænd ɑ: sɪ'kjʊəd səʊ ðæt
 ðeɪ 'kænɒt mu:v wɪ'ðɪn ðə hæʊld ɪn flaɪt.

ɒn 'pæsɪndʒər 'eəkrɑ:ft, ə 'rɛkɔ:d ɒv wɪfʃ 'ʃɛkt bægz ɑ: stəʊd ɪn wɪfʃ ju:-el-di: ɪz
 'nɔ:məli kept səʊ ðæt ɪf ɪt ɪz 'nɛsɪəri tu: rɪ'tri:v ə pə'tɪkjʊlər 'aɪtəm 'praɪə tu: flaɪt,
 ɪt ʃʊd bi: nəʊn wɪfʃ ju:-el-di: ɪt hæz bi:n 'ləʊdɪd ɪn.

ɒn 'kɑ:gəʊ 'eəkrɑ:ft, ju:ɛldi:z ɑ:r 'ɒf(ə)n ju:zd ɪn ,kɒmbɪ'neɪʃən wɪð 'netɪd 'pæɪlts.
 ɪn ɔ:l 'keɪsɪz, ði 'eəkrɑ:ft hæʊld mʌst bi: ɪ'kwɪpt wɪð ə'rəʊlə flɔ:r ænd ðə stræps ænd
 'fɪtɪŋz (ək'sesərɪz) 'nɛsɪəri tu: sɪ'kjʊəd ðə kən'teɪnəz ænd/ɔ: 'pæɪlts ɪn pə'zɪʃən.

Exercise 3. Put 5 types of questions to each sentence.

1. Containers and pallets should be identified by a unique combination of letters and numbers.
2. The IATA standard system comprises 3 leading letters, 4 or 5 numerals and 2 trailing letters.
3. The 3 leading letters (eg. AKE, PMC) define the type of ULD, the 4 or 5 numerals are a unique number allocated by the operator and the 2 trailing letters show a 2 letter ICAO code which indicated the owner which may be an airline (eg. BA) or a ULD leasing company (eg. JG).
4. Full details of the coding standards are found in the IATA ULD Technical Manual.
5. ULDs may also carry a bar code, which will usually replicate the visible IATA-standard code.

Exercise 4. Read the transcription. Read and translate the text.

'pæɪlts	mə'dʒɔ:ri	'sɛntər ɒv 'grævɪti
ɔ:'θɔ:ritɪz	'lɛdʒəbl	ˌʌn'sɜ:vɪsəbl kən'dɪʃən
'pʌŋktʃəz	'mɛkənɪzəm	ɪn'ɒpərətɪv

TEXT 1.

Containers, pallets, and nets are in most cases required to be approved for use (“certified”) by the airworthiness authority for the country where the manufacturer is located. Currently the 2 most commonly used certification standards are:

1. **FAA** - Technical Standards Order (TSO) C90c
2. **EASA** - ETSO C90c

though other countries such as China, Australia etc. have complementary standards for certification of ULD.

In order to obtain approval or certification from the authorities, the designer must submit calculations and test results to show that the ULD is able to withstand

the loads required while being restrained in the manner laid out in the Technical Standards Order (TSO) standards. These loads are extremely high, in order to prove that the design is capable of restraining the contents of the loaded ULD under extreme flight conditions.

The great majority of ULD are designed and sold as certified ULD, however there are some exceptions. These can be identified by the first letter of their identification code:

Certified container	A
Non Certified container	D
Certified pallet	P
Non Certified pallet	F

Certified ULD must be used on all aircraft which have holds that are of insufficient strength to contain their contents during extreme flight conditions and rely on the ULD being locked to the floor of the hold. Non certified ULD may be used in an aircraft having a hold structure which is deemed capable of withstanding the forces from the contents during extreme flight conditions. An example of this is the B767 Series, which not only has holds designed to withstand these forces but also uses a base size for its containers that is unique to the aircraft type (units known as DPE (LD2), DQP (LD4) and DQF (LD8)).

While airlines may choose to make their own definitions as to exactly what types of ULD may or may not be loaded on their aircraft, it should be remembered that many ULD are transferred between aircraft and even other airlines before reaching their destination. Whether certified or non certified, no damaged ULD or pallet should be used for aircraft loading purposes.

TEXT 2

Correct Use of ULD

It is the responsibility of the ULD designer to create clear instructions regarding the use of the ULD, and to include them in the operations manual. Additionally, airlines should make operations manual instructions on the correct use of the ULD available to all parties involved in loading and unloading the aircraft. While different manufacturers create different instructions, there are considerable similarities:

1. Every ULD should be inspected before use to determine if any damage has occurred which would render the ULD unserviceable.
2. Baggage and cargo should be loaded evenly, paying attention to maintaining the centre of gravity of the load with the 10% of the centre of the base.
3. After completing the load the door of the container must be securely closed.
4. No certified ULD may be used for flight unless its manufacturers plate/markings (also known as TSO plate) is attached and legible. This plate/markings is required by the rules of the certifying authorities (eg. FAA, EASA etc.) and is a legal requirement.
5. Container doors shall always be securely closed or secured in an open position.

A ULD not loaded in compliance with these instructions may very well not be able to carry out its defined purpose of providing restraint to the contents in flight, and should not be allowed on board the aircraft.

Loading of pallets is similar to loading containers; particular attention should be given to the cargo net being used to secure the load to the pallet. Cargo nets are subject to severe wear and tear and are often found to be unserviceable, however there is an all too common tendency to use cargo nets in an unserviceable condition or to attempt some kind of “unauthorized repair”; neither of these actions is acceptable. Indeed, any attempt to carry out an “ad hoc” repair of a damaged ULD using any kind of material or process not specifically defined by the owner airline’s manuals is not acceptable, including but not limited to:

- Using “speedtape” “duct tape” or similar tapes to close over punctures on container panels or doors or to hold a container door closed if the proper mechanism is inoperative.
- Using rope to repair damaged parts of a cargo net or to replace the OEM’s lashing line (corner rope).
- Attaching random 2-stud fittings into the edge of a cargo net (to secure it to a pallet) when the correct fitting is damaged.

Certain types of ULD may have OEM approved “temporary repair” solutions; if so, these may be used but only as defined by the owning airlines documentation.

Exercise 5. Give the Russian equivalents for the following words and word combinations and learn them.

Technical Standards Order (TSO); too common tendency; authority; “speedtape”; “duct tape”; nets; in an unserviceable condition; airworthiness; punctures; rope; container door; proper; mechanism; to be inoperative; random; to secure; to be acceptable; to be specifically defined; to be subject to severe wear and tear; operations manual; in compliance with; extreme flight conditions; to create instructions; calculations; to complete; manufacturers plate/markings; centre of gravity; test results; “unauthorized repair”; “ad hoc” repair; unique; non certified; to rely on; to withstand these forces; to obtain approval or certification; identification code.

Exercise 6. Write the transcription:

Technical Standards Order (TSO); authority; unserviceable condition; airworthiness; puncture; rope; mechanism; to be inoperative; to secure; to be acceptable; to be specifically defined; to be subject to severe wear and tear; operations manual; in compliance with; extreme flight conditions; calculations; to complete; manufacturers plate/markings; centre of gravity; “unauthorized repair”; “ad hoc” repair; unique; identification code.

Exercise 7. Give the summary of TEXT 1.

Exercise 8. Render TEXT 2 in English.

Exercise 9. Put the words in the correct order.

1. that; the ULD; is able to; to obtain approval; in order; or; certification; from the authorities; must; submit; calculations; the designer and test results; to show; withstand; the loads required
2. manual instructions; on the correct use; available; to all parties involved; airlines; should make operations; of the ULD; in loading and unloading the aircraft.
3. to severe wear and tear; cargo nets; and to be unserviceable; are subject; are often found.

Exercise 10. Answer the following questions:

1. What are the 2 most commonly used certification standards?
2. What does the designer have to submit?
3. What is ULD able to withstand?
4. What is TSO?
5. What is the difference in use between Certified and Non Certified ULD? Why? Prove your point of view.
6. Who creates clear instructions?
7. What are considerable similarities?
8. Why are cargo nets subject to severe wear and tear?
9. Is “unauthorized repair” acceptable? Why?

Exercise 11. Mind the prepositions and fill in the gaps:

of in on up without away
 to for by with from
 Storage ... Empty ULD

Empty containers should always be stored ... suitable container racking, set...
 ... easy transfer ... dollies or other handling equipment ... the use of a
 forklift. Outdoors racking should be equipped to prevent containers blowing ...
 ... windy conditions. Empty containers should only be stacked where there exists
 proper training and controls and where the containers are designed to be lifted...
 forklift.

... the exception of a ULD which is approved ... forklift handling, they
 should never be left ... the ground even if empty.

Empty pallets may be stored ... stacks, taking care that:

- Cargo nets, if attached, are not damaged during the stacking/ unstacking process.
- Stacks ... pallets built ... transfer to another location ... ground or air
 are properly built ... a “base pallet” , ... suitable spacing material
 ... the bottom ... the pallet stack and the “base pallet”, and secured ...
 the base pallet ... tie down straps.
- When removing pallets approved ... fork lift truck handling from a stack, this
 must be done ... the fork tines damaging the pallet edge rails.
 Nets may be permanently attached ... a pallet (along one side ... locking the
 fittings ... place) or may be completely removable. If removable they should be
 stored ... a dry location.

**Exercise 12. Read and translate the text. Mind the articles and fill in the gaps:
A/AN THE or “zero article”**

Storage of Loaded ULD

Loaded ULD must always be stored on... suitable transfer vehicle such as:

- ... Dolly
 - ... slave pallet
 -Container racking
 - within ... Cargo terminal ULD handling and storage system
 - on ... purpose-built road vehicle or ... railway wagon
- and only be transferred using special purpose equipment equipped with rollers/ ball mats or similar support/ transfer devices. Specifications for most of these equipment may be found in ... IATA Airport Handling Manual. Chapter 9. Poor handling may well result in ... ULD, which was perfectly serviceable when loading commenced arriving at ... aircraft door in ...unserviceable state, resulting in off loads, delays, reloads and other inconveniences.

Exercise 13. Read the transcription. Open the brackets, put the verbs in the correct tense form, voice and translate the text.

'seɪfti θreɪts	,ɪndɪs'krɪmɪnɪt juːz	sə'fɪʃənt dɪlɪdʒəns
----------------	----------------------	---------------------

Safety Threats

The primary purpose of ULD (to be) to improve flight safety compared to bulk loading of holds. Whilst a serviceable ULD, properly loaded, indeed (to achieve) this, a widespread lack of attention to/ awareness of ULD damage can (to result) in risk arising from the use of containers that (not to be) within their allowable damage limits. The still common attitude that “it (not to matter) as long as the cargo/ baggage makes the flight” and a widespread lack of adequate training for those involved in ULD operations can seriously (to impact) on aircraft safety.

Damaged and/or improperly loaded ULD (to present) a hazard to operators, aircraft systems and structure, cargo and baggage and GSE. Used correctly ULD (to remain) within their safety limits for many years, requiring only minor repairs to wear and tear type damages. Incorrect handling of ULD, particularly the indiscriminate use of forklifts (to result) in ULD damage rendering them unserviceable for use.

Failure to observe rules and a “make it up as we go along“ approach to ULD operations (to result) in safety breaches.

The solutions to these safety risks (to find) in:

- Provision of correct ULD handling infrastructure, guidance for which can (to find) in the IATA Airport Handling Manual. While such equipment (not to be) cheap it (to be) a necessity when it (to come) to ULD handling.
- Provision of training to all parties handling ULD to ensure correct procedures (to follow). ULD may look simple, indeed a person loading ULD may (to consider) less skilled than - say - a driver, however the person loading a ULD (to be) actually

performing a flight safety critical function, and can (to put) the lives of all on board the aircraft at risk. “On the Job” training delivered by a worker who likely (to have) no formal training himself (not to be) a sufficient method to manage to risks associated with ULD operations.

- Sufficient diligence by all parties in the ULD process to ensure that safety breaches (not to be allowed) “just this time” but (to catch and rectify) each time. Letting an unserviceable or badly loaded ULD (to go) “just this time” (to be) as dangerous as ignoring any other defect on an aircraft and should never (to be permitted). An unserviceable ULD should never (to make) it to the aircraft door, the defects should (to be picked) up at the pre loading inspection and the ULD rejected at that stage by having suitably trained staff carrying out the loading process. A culture of “ask if not sure” (to need) to be observed. Guess work (not to have) place in flight safety and this applies to ULD operations as much as to any other field of aviation.

Exercise 14. Translate the words and word-combinations. Mind the sentences with these words and word-combinations in written form.

single isle; widebody; long haul; medium range; short haul; passenger/cargo; single/twin engine; high/low wing; livery; tail logo.

Exercise 15. Render the text in English. Use words given below:

short haul aircraft		baggage rules	
To be bulk loaded		To cause loss of control	
narrow body aircraft		stickers	
items of baggage and cargo		control difficulties	
to complete the load and trim sheet		domestic, international, charter (holiday flight) or scheduled flight	
precise figures		safe envelope	
To be accomplished		shifts	
baggage train of towed trailers		loading crews	
conveyor belts		‘End Bag’ identification tag	

Многие узкофюзеляжные ближнемагистральные самолеты загружаются навалом, то есть отдельными незакрепленными единицами (предметами) багажа и груза. В этом случае учёт погрузки багажа будет осуществляться по количеству предметов с приблизительным средним весом одного мешка для закрытия накладной по загрузке и центровке. Точные цифры будут варьироваться в зависимости от регламентирующих документов или согласно собственным внутренним правилами эксплуатанта воздушного судна.

Средний стандартный вес зарегистрированного багажа обычно варьируются в зависимости от того, является ли рейс внутренним, международным, чартерным или регулярным. Стандартные веса багажа должны применяться с осторожностью. Имели место случаи, когда стандартные веса серьезно занижали фактическую массу загруженного

багажа, что приводило как к ошибке в подсчёте в общей массы воздушного судна, так и к смещению центра тяжести и нарушению безопасной области полётных режимов.

Для удержания навалом загруженных единиц багажа в отсеках в полете используется сетка. Перемещение центра тяжести самолета может вызвать трудности управления (в крайних случаях приводящие к потере управления воздушным судном), а также помешать открытию багажной двери после полета. Грузовая сетка может также использоваться для разделения больших грузовых отсеков на секции.

Насыпная погрузка обычно осуществляется путем доставки предметов на борт воздушного судна в багажном поезде из буксируемых прицепов. Один прицеп может содержать багаж, предназначенный только для одного конкретного отсека, чтобы обеспечить правильную загрузку. Трейлер выгружается в грузовой отсек воздушного судна с помощью конвейерных лент и, наконец, помещается в трюм грузчиками, работающими в нем. Обычно, при массовой погрузке багажа используется система, при которой бригада грузчиков, осуществляющая погрузку, информируются о том, что последняя единица багажа для погрузки на определенный рейс прибыла, с помощью идентификационной бирки "End Bag". Эта бирка прикрепляется к последней зарегистрированной единице багажа, отправленной на воздушное судно. Также могут использоваться наклейки и накладная. Каждая печатная багажная бирка имеет наклейку со штрих-кодом, которая снимается и наклеивается на накладную по мере загрузки багажа. Это помогает гарантировать, что весь зарегистрированный багаж для этого рейса был загружен и учтен.

ASSIGNMENT TO ALL THE TEXTS GIVEN IN THE UNIT.

Comment on the following topics.

- The 2 most commonly used certification standards.
- Correct use of ULD.
- Storage of Empty ULD.
- Storage of Loaded ULD.
- Safety Threats.
- The solutions to safety risks.

Unit 3 Dangerous Goods.

Exercise 1.

Express your ideas on the following:

Why were strict regulations for hazmat transportation introduced?

Exercise 2. Read the transcription.

ˌfɑ:məˈsjʊ:tɪkəlz	ˈsʌbstənsɪz	ˌreɪdɪəʊˈæktɪv məˈtɪəriəl
kəmˈprest ˈgæsɪz	ɪksˈpləʊsɪvz	ˈkɛmɪkəl ænd ˈfɪzɪkəl ˈprɒpətɪz

'lɪkwɪfaɪd 'gæsɪz	æsi,təʊn	waɪt 'fɒsfərəs
'flʊəri:n	klɔ:ri:n	ɔ: 'gænik pə'rɒksaɪdz
'haɪdrɪdʒən 'saɪənaɪd	ɪg'nait	ə'məʊnjəm 'naɪtreɪt
ɒksɪdaɪzɪŋ 'eɪdʒənts	mæg'ni:ziəm	səl'fjʊərɪk 'æsaɪd
'haɪdrə'klɔ:ri:k 'æsaɪd	'lɪθiəm 'bætərɪz	'mɪsə'leɪniəs 'hæzədəs mə'tɪəriəlz
'sʌbstənsɪz 'laɪəbl tu: spɒn'teɪniəs kəm'basɪʃən		'eərəʊsɒl dɪs'pensəz
mɪsə'leɪniəs 'deɪndʒrəs 'sʌbstənsɪz ænd 'ɑ:tɪklz		rɪ'frɪdʒərəɪtɪd 'lɪkwɪfaɪd 'gæsɪz

Exercise 3. Read and translate the text.

A dangerous good is also known as hazardous material or hazmat. Dangerous Goods are articles or substances, which are capable of posing a hazard to health, safety, property or the environment when transported by air. The International Civil Aviation Organization (ICAO) classified dangerous goods in 9 classes.




A dangerous good (also known as hazardous material or hazmat) is any substance or material that is capable of posing an unreasonable risk to health, safety, and property when transported in commerce. Identifying dangerous goods is the first step to reduce the risks posed by the product with proper packaging, communication, handling, and stowage.


The United States Department of Transportation has a system of classifying dangerous goods based on the product's specific chemical and physical properties. A good starting point for determining if your product might be dangerous is by obtaining a Safety Data Sheet (SDS) from the manufacturer and checking the "Transportation Information."




Class 1. Explosives



An explosive substance is a solid or liquid substance (or mixture of substances) which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. An explosive article is an article containing one or more explosive substances.





<p><u>Class 2. Gases</u> It covers compressed gases, liquefied gases, dissolved gases, refrigerated liquefied gases, mixtures of gases and aerosol dispensers/articles containing gas.</p>	 <p>2.1 Flammable Gas: Gases which ignite on contact with an ignition source, such as acetylene and hydrogen.</p>	 <p>2.2 Non-Flammable Gases: Gases which are neither flammable nor poisonous. Includes the cryogenic gases/liquids (temperatures of below -100°C) used for cryopreservation and rocket fuels, such as nitrogen and neon.</p>	 <p>2.3 Poisonous Gases: Gases liable to cause death or serious injury to human health if inhaled; examples are fluorine, chlorine, and hydrogen cyanide.</p>
---	---	---	---


<p><u>Class 3. Flammable Liquids</u> A flammable liquid is a liquid with <u>flash point</u> of not more than 60.5C (141F), or any material in a <u>liquid phase</u> with a flash point at or above 37.8C (100F) that is intentionally heated and offered for transportation or transported at or above its flash point in a bulk packaging.</p>	 <p>Flammable liquids included in Class 3 are included in one of the following packing groups: Packing Group I, if they have an initial boiling point of 35 C or less at an absolute pressure of 101.3 kPa and any flash point, such as diethyl ether or carbon disulfide; Packing Group II, if they have an initial boiling point greater than 35 C at an absolute pressure of 101.3 kPa and a flash point less than 23 C, such as gasoline (petrol) and acetone; or Packing Group III, if the criteria for inclusion in Packing Group I or II are not met, such as kerosene and diesel.</p>
---	---


<p><u>Class 4. Flammable Solid, Spontaneously Combustible, and Dangerous When Wet</u></p> <p>Flammable solids; Substances liable to spontaneous combustion; Substances which, in contact with water, emit flammable gases</p>	 <p>4.1 Flammable Solids: Solid substances that are easily ignited and readily combustible (nitrocellulose, magnesium, safety or strike-anywhere matches).</p>	 <p>4.2 Spontaneously Combustible: Solid substances that ignite spontaneously (aluminium alkyls, white phosphorus).</p>	 <p>4.3 Dangerous when Wet: Solid substances that emit a flammable gas when wet or react violently with water (sodium, calcium, potassium, calcium carbide).</p>
--	---	---	---

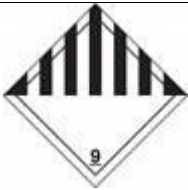

<p><u>Class 5. Oxidizer, Organic Peroxide</u></p>	 <p>5.1 Oxidizing agents other than organic peroxides (calcium hypochlorite, ammonium nitrate, hydrogen peroxide, potassium permanganate).</p>	 <p>5.2 Organic peroxides, either in liquid or solid form (benzoyl peroxides, cumene hydroperoxide).</p>
--	--	--

<p><u>Class 6. Poison (Toxic), Poison Inhalation Hazard, Infectious Substance</u></p>	 <ul style="list-style-type: none"> 6.1a Toxic substances which are liable to cause death or serious injury to human health if inhaled, swallowed or by skin 	 <ul style="list-style-type: none"> 6.2 Biohazardous substances or Biohazard; the World Health Organization (WHO) divides this class into two categories: Category
--	--	--

	<p>absorption (potassium cyanide, mercuric chloride).</p> <ul style="list-style-type: none"> 6.1b (Now PGIII) <p>Toxic substances which are harmful to human health (N.B this symbol is no longer authorized by the United Nations) (pesticides, methylene chloride).</p>	<p>A: Infectious; and Category B: Samples (virus cultures, pathology specimens, used intravenous needles).</p>
--	--	--

<p><u>Class 7. Radioactive Material</u> Radioactive substances comprise substances or a combination of substances which emit ionizing radiation (uranium, plutonium).</p>	
--	--

<p><u>Class 8. Corrosives</u> Corrosive substances are substances that can dissolve organic tissue or severely corrode certain metals: 8.1 Acids: sulfuric acid, hydrochloric acid 8.2 Alkalis: potassium hydroxide, sodium hydroxide</p>	
--	---

<p><u>Class 9. Miscellaneous Hazardous Materials and Lithium Batteries</u> Hazardous substances that do not fall into the other categories (asbestos, air-bag inflators, self inflating life rafts, dry ice).</p>		
--	---	---

Exercise 4. Give the Russian equivalents for the following words and word combinations and learn them.

virus cultures; pathology specimens; United Nations; hazardous substances; potassium hydroxide; sodium hydroxide; corrosive substances; radioactive substances; harmful to human health; refrigerated liquefied gases; to be easily ignited; World Health Organization; solid substances; flammable gas; to react violently; to be easily ignited; cryopreservation; chemical reaction.

Exercise 5. Give the English equivalents for the following words and word combinations and learn them.

белый фосфор; газы, которые сжимаются, сжижаются или растворяются под давление; токсичные вещества ; водород; Организация Объединенных Наций; надувные устройства для подушек безопасности; ядовитые или едкие газы; ацетилен; нитроцеллюлоза; воспламеняющийся газ; источник воспламенения; цианистый калий; хлорид ртути; вирусные культуры; самонадувающиеся спасательные плоты; невоспламеняющиеся газы; криогенные газы/ жидкости; использовать для криоконсервации; ракетное топливо; азот и неон; магний; использованные иглы для внутривенных инъекций; серная кислота; вызвать смерть или серьезный вред здоровью человека; соляная кислота; фтор; хлор; цианистый водород; ядовитые газы; пероксид водорода.

Exercise 6. Put 5 types of questions to each sentence.

1. A dangerous good is also known as hazardous material or hazmat.
2. The International Civil Aviation Organization (ICAO) classified dangerous goods in 9 classes.
3. A dangerous good (also known as hazardous material or hazmat) is any substance or material that is capable of posing an unreasonable risk to health, safety, and property when transported in commerce.

Exercise 7. Retell the text in details.

Unit 4.

Vaccine and Pharmaceutical Logistics.

Exercise 1.

Express your ideas on the following:

What peculiarities must be kept in mind while transporting vaccines or pharmaceuticals?

Exercise 2. Read the transcription.

,fɑ:mə'sju:tɪkəl	'dʒɛpədəɪz	'væksi:nz
'gɑ:dəns	kən'trɪbjʊ(:)t	pæn'demɪk
hju(:),mæni'teəriən	ə,li:vɪ'eɪf(ə)nz	vɑ:st'dɪstənsɪz
'ɪntərɪm'mɛʒəz	kə'læb(ə)rətɪvli collaboratively	ʃɪ'kɑ:gəʊkən'venʃən
rɪ'frɪdʒərənt	'wɛðə	,mʌltɪ'lætərəl',ɔ:gənəɪ'zeɪʃən
'ɪnsjʊləɪtɪd kən'teməz	'dræstɪk 'ɪnkri:s	'θɜ:məl'blæŋkɪts

Exercise 3. Read and translate the texts.

In addressing the acute challenges COVID-19 continues to pose to civil air transport of both passengers and cargo on global scale, ICAO has partnered with its Member States, UN agencies, international and regional organizations, and industry. This partnership is primarily materialized through its Council Aviation Recovery Task Force (CART) and has resulted in a set of recommendations and technical guidance contained in the CART Reports and "Take-Off Guidance Document" respectively. Additional joint statements and coordinated action with other UN agencies, as well as international organizations, have also contributed to ensuring essential connectivity and support to global supply chains.

Since the early days of the pandemic, ICAO has provided States the technical guidance to enable flights and their crews to have the needed flexibility to undertake their essential duties in transporting quickly critical humanitarian personnel and cargo across vast distances. It has provided relief through alleviations to the Standards of its Annexes to the Chicago Convention as interim measures to support continued operations during the initial stages of the COVID-19 pandemic. Further, its contributions, such as the Public Health Corridor (PHC) concept, are critical elements for restoring flows of passengers and goods by air and for reducing contamination risk for shipments through increased use of contactless tools and procedures. ICAO guidance specific to the transport of COVID-19 vaccines is publicly available here, as well as in Section 6 of this document. Ultimately, ICAO will play a key role in restoring and further growing air transport so that it continues to provide needed air connectivity for passengers and cargo—both humanitarian and commercial—to drive global economic recovery.

IATA has been engaging over the last months with a number of international organizations as well as authorities to seek how critical information can be consolidated and collaboratively shared, to ensure appropriate planning across the temperature-controlled supply chain, from manufacturer to end patient.

Working in a collaborative approach takes place also in the context of the United Nations Sustainable Development Goals (SDGs), a universal call to action to improve the lives and prospects for everyone everywhere on a sustainable path to 2030, especially considering the importance of “Partnerships for the Sustainable Development Goals”.

When transporting temperature sensitive pharmaceutical products, quality assurance is the key and cannot be jeopardized. The air cargo supply chain plays a key role in the distribution of vaccines in normal times through well-established global time- and temperature-sensitive supply chain and distribution systems. This capability will be crucial not only to the quick and efficient transport and distribution of COVID-19 vaccines but for all pharmaceutical and life science products as well as humanitarian aid.

This can only happen with careful planning, led by governments — brought together through multilateral organizations— and supported by industry stakeholders. This means that in the long term, a network of sustainable infrastructure, technology-driven initiatives and people are needed.

The temperature-controlled supply chain will need to be capable of storing, handling and transporting such a drastic increase in quantities of vaccines and other related medical supplies throughout the journey.

Consideration must be given to temporary storage areas in cargo terminals such as cool rooms and freezers that are used to hold vaccines where dry ice is present as a refrigerant. Equipment used to transport or hold temperature-sensitive healthcare shipments are critical in the overall process. Whether these are aircraft or non-aircraft containers, active or passive Temperature Controlled Containers (TCC), insulated containers, thermal blankets or ramp “cool” dollies. Equipment used to transport or hold temperature-sensitive healthcare shipments are critical in the overall process. Whether these are aircraft or non-aircraft containers, active or passive Temperature Controlled Containers (TCC), insulated containers, thermal blankets or ramp “cool” dollies.

Exercise 4. Give the Russian equivalents for the following words and word combinations and learn them.

Refrigerant; freezer; IATA; humanitarian aid; jeopardize; collaborative approach; temperature-sensitive; from manufacturer to end patient; contribute; UN agencies; temperature-controlled supply chain; whether; dry ice; Public Health Corridor concept; insulated containers; thermal blankets; the COVID-19 pandemic; the technical guidance; acute challenges; international and regional organizations; ramp “cool” dollies; pharmaceutical and life science products; active or passive Temperature Controlled Containers (TCC); contribute.

Exercise 5. Give the Russian equivalents for the following words and word combinations and learn them.

Термоодеяла; от производителя до конечного пациента; цепочка поставок с контролем температуры; изолированные контейнеры; техническое руководство; международные и национальные организации; пандемия COVID-19; сухой лед; фармацевтические и медико-биологические товары; морозильник; хладагент; гуманитарная помощь;

Exercise 6. Answer the following questions:

1. What has ICAO partnered with?
2. What ICAO Member States do you know?
3. What do the letters “CART” stand for?
4. What has ICAO provided States since the early days of the pandemic?
5. What is the Public Health Corridor?
6. What are the peculiarities of transporting temperature sensitive pharmaceutical products?
7. What difficulties can airlines meet when transporting temperature sensitive pharmaceutical products?

Exercise 7. Put 5 types of questions to each sentence.

1. IATA has been engaging over the last months with a number of international organizations as well as authorities to seek how critical information can be consolidated and collaboratively shared, to ensure appropriate planning across the temperature-controlled supply chain, from manufacturer to end patient.
2. When transporting temperature sensitive pharmaceutical products, quality assurance is the key and cannot be jeopardized.
3. ICAO guidance specific to the transport of COVID-19 vaccines is publicly available here, as well as in Section 6 of this document.
4. ICAO has provided relief through alleviations to the Standards of its Annexes to the Chicago Convention as interim measures to support continued operations during the initial stages of the COVID-19 pandemic.
5. In addressing the acute challenges COVID-19 continues to pose to civil air transport of both passengers and cargo on global scale, ICAO has partnered with its Member States, UN agencies, international and regional organizations, and industry.

Exercise 8. Render the text in English. Use the words and word -combinations given below.

quantity of vaccine; training requirements; in a frozen state; prohibition; special handling requirements; deep frozen; temperature-controlled environment; supply chain partners; vaccine manufacturers; preparation and planning.

На самом деле все проблемы связаны с подготовкой и планированием перевозки. Необходимо, чтобы производители вакцин как можно раньше предоставили информацию авиакомпаниям и другим партнерам в цепочке поставок, чтобы понять, какие температурные условия потребуются при транспортировке вакцин. Потенциально требуемая температура может варьироваться от глубокой заморозки при -80 С до +2С - +8С. Требования к температуре также влияют на тип упаковки, которая будет использоваться, и на любые особые требования к обработке груза.

Если для поддержания вакцины в замороженном состоянии требуется сухой лед, необходимо учитывать следующее: количество сухого льда, которое будет предлагаться для каждого рейса; требования к подготовке/обучению персонала, который будет готовить грузы; запрет на перевозку сухого льда при загрузке груза в пассажирском салоне; в каком виде образом грузы будут предлагаться для воздушной перевозки, например, в индивидуальных упаковках, перегруженных упаковках или в устройствах для поштучной загрузки в самолет.

Эти факторы могут ограничить количество доз вакцины, которое может быть перевезено за один рейс, а также время и усилия, необходимые авиакомпании или ее поставщику наземных услуг для принятия груза.

Exercise 9. Read and translate the texts. Pay special attention to the translation of the verb “SHALL”. Analyze its function in the sentences.

For shipping dry ice as refrigerant for general cargo, the shipper must also be dangerous goods qualified (i.e. trained and assessed), and the packing requirements must meet the applicable requirements of the IATA Dangerous Goods Regulations (DGR).

Shippers are advised to coordinate with the airlines in advance for shipping dangerous goods (as well as pharmaceutical products).

Dry ice (Carbon dioxide, solid) is regulated by the Dangerous Goods Regulations (DGR) even when used as a refrigerant for non-dangerous goods. Shippers must be dangerous goods qualified (i.e. trained and assessed) according to the training requirements in the Regulations and follow the packing requirements laid out in Packing Instruction 954.

Dry ice must only be in packagings that allows the release of the carbon dioxide gas that is generated as the dry ice sublimates.

Packagings such as aluminium, plastic or steel drums or jerricans are not suitable. Packagings such as wood, fibreboard or more likely expanded polystyrene boxes are suitable as these materials are gas permeable.

Dry ice can be placed directly into the appropriate packagings or in the dry ice bunker of the ULD or loose in the ULD. Completed packages can be packed with the dry ice into a larger box to form an overpack. Alternatively, the packages can be packed into a ULD with the dry ice provided that the airline agrees. In that respect, it is not just the dry ice inside a package that can be packed into an aircraft ULD but the dry ice itself can also be in loose in the ULD. It must be emphasized that "overpack" does not exist for general cargo, and acceptance staff will consider the "overpack" of general cargo as a single package (piece).

Where the dry ice is in packages, the outside of each package must:

be marked with the name and address of the shipper (consignor) and consignee, "UN 1845", "Carbon dioxide, solid" or "Dry ice" and the net weight of dry ice in each package; and be labelled with a Class 9 hazard label.

If the individual packages are packed with the dry ice into an overpack then the information must be on the outside of the overpack. Where very large numbers of packages each containing dry ice are to be offered for transport, it is recommended that the shipper groups packages into an overpack as this will facilitate handling and reduce the time and effort required by the airline or their ground service provider to perform the dangerous goods acceptance check.

There is no requirement for a Shipper's Declaration for Dangerous Goods where the dry ice is used as a refrigerant for non-dangerous goods. However, there must be information on the air waybill, or if there is no air waybill on another document, that shows: "UN 1845", "Carbon dioxide, solid" or "Dry ice", the number of packages and the weight of dry ice in each package.

Shippers shall always make advance arrangement with the freight forwarder or directly with the airline for the transport of shipments containing dry ice to ensure that the total weight of dry ice being offered in the consignment does not exceed the

limit for the particular aircraft type. Shippers must ensure that all requirements in the DGR have been followed before tendering the shipment because a shipment rejection can possibly result in a delay and potentially miss the booked flight.

In cases where aircraft TCC is used and in the possession of shipper, shipper is responsible for ensuring the aircraft TCC is only handled by appropriately trained and qualified personnel and the serviceability of ULD is maintained.

Exercise 10. Answer the following questions:

1. What are the peculiarities of dry ice transportation?
2. In what cases is there no requirement for a Shipper's Declaration for Dangerous Goods?
3. Why shall shippers always make advance arrangement with the freight forwarder for the transport of shipments containing dry ice?
4. What kind of information must there be on the air waybill or if there is no air waybill on another document?

Exercise 11. Give summary of the text given in Exercise 9.

Exercise 12. Put 5 types of questions to each sentence.

1. Dry ice (Carbon dioxide, solid) is regulated by the Dangerous Goods Regulations.
2. Packagings such as aluminium, plastic or steel drums or jerricans are not suitable.
3. If the individual packages are packed with the dry ice into an overpack then the information must be on the outside of the overpack.
4. In cases where aircraft TCC is used and in the possession of shipper, shipper is responsible for ensuring the aircraft TCC is only handled by appropriately trained and qualified personnel and the serviceability of ULD is maintained.

Unit 5

Live Animals Logistics.

Exercise 1.

Express your ideas on the following:

What peculiarities must be kept in mind while transporting livestock?

Exercise 2. Read the transcription.

ðeər a: 'meni 'ri:znz wai 'pi:pl wɪf tu: 'træns'pɔ:t liv 'æniməlz.

ði 'æniməlz meɪ bi: 'pɜ:snl pɛts, ɔ: gɑ:d ænd ə'sɪstəns dɒgz.

ðeɪ meɪ bi: 'spɔ:tɪŋ 'æniməlz, 'ægrɪ'kʌltʃərəl 'æniməlz fɔ: 'brɪ:dɪŋ, fu:d 'æniməlz 'bi:ɪŋ træns'pɔ:tɪd fɔ: 'slɔ:tə, 'zəʊə'lɒdʒɪkəl 'æniməlz ænd 'spi:ʃɪz 'bi:ɪŋ træns'pɔ:tɪd fɔ: 'ri:znz ɒv 'saiəns.

træns'pɔ:tɪŋ 'æniməlz fɔ: lɒŋ 'piəriədz ɒv taɪm ɪz kən'sɪdəd ʌn'nesisəri:li kruəl ænd tu: bi: ə'vɔ:ɪdɪd wɛn'evə 'pɒsəbl.

'ðeəfɔ:, fɔ: lɒŋ 'dʒɜ:nɪz ði 'əʊnli 'spi:di 'ɒpʃən ɪz tu: ju:z 'eəkrɑ:ft.

Exercise 3. Read the transcription.

'vetərɪnəri ɪn'spektəz veterinary inspectors	hju(:)'meɪnli humanely	waɪld 'fə:nə ænd 'flɔ:rə Wild Fauna and Flora
'spi:ʃi:z species	bi: ə'blaɪdʒd be obliged	hju(:)'mɪdɪti kən'trəʊl humidity control
lɪv 'kɑ:gəʊ live cargo	'laɪvstɒk livestock	'æniməl 'fɪzɪ'ɒlədʒi animal physiology
ˌɛkʃhə'leɪʃənz	ɪn'kɜ:	'kɑ:bəndaɪ'ɒksaɪd
fjuəl 'pɛnlti	'pæltɪs	ɔ:g'zɪljəri 'paʊə 'ju:nɪt
sɪ'deɪʃən	'bætənz	'kwɒrənti:n rɪ'kwærəmənts
'tɜ:bjʊləns	'ædɪkwɪtli	ˌænɪs'θetɪk dɑ:ts

Exercise 4. Read and translate the texts.

TEXT 1.

Air transport is the most humane way of transporting live animals on long journeys, it is important to ensure high standards are maintained by all those involved: veterinary inspectors, animal keepers, handlers and attendants, container manufacturers, air carriers, pilots etc. This is best achieved through regulation and oversight. Regulations for the transport of live animals need to set a balance between ensuring compliance with aviation safety requirements and practice, and treating animals humanely in accordance with current welfare standards. The safety of crewmembers, passengers and animal handlers also need to be considered.

The International Air Transport Association (IATA) is not a regulatory body, but airline members of the Association are obliged to ensure IATA's Live Animals Regulations (LAR) are followed. As such, IATA's LAR has become the worldwide standard for transporting live animals by commercial airlines, and supranational and national regulating bodies reference it. As well as providing guidance for airlines, the LAR is used by shippers, freight forwarders, and animal care professionals. The LAR contains a comprehensive classification of 1000's of animal species along with the container specifications required for their transport. It also includes information on handling, marking and labelling along with necessary documentation when transporting animals by air. International and national regulations will also apply.

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) has also established a set of detailed guidelines for the transport of all animals. These guidelines attempt to broadly follow the LAR.

All animals are handled as live cargo and most are stowed in the aircraft's climate-controlled cargo bays unless the aircraft has been converted as a dedicated livestock carrier. Many airlines allow small pets to be carried in the passenger cabin under certain conditions; and there will be national guidelines to be followed when transporting guide and assistance dogs in the passenger cabin. Aircraft manufacturers can provide air carriers with specific information concerning the safe transport of live animals within each different aircraft type and model. Especially with reference to loading, storage and unloading, and temperature and humidity control.

The key factors that affect the safe transport of live animals include the:

- aircraft Environmental Control System (ECS) settings,
 - animal physiology,
 - airport and en-route environments,
 - ground handling.
- Optimal ECS settings, handling and packaging, and ideal loading configurations vary by species. Combinations of species in transit will complicate management of these key factors.

Three environmental parameters need to be controlled in order to maintain the welfare and comfort of live animal cargo, and to prevent death. These are: temperature, relative humidity, and cargo compartment carbon dioxide (CO₂) concentration. Depending on the species being carried (and their age, and state of pregnancy) each of these parameters vary considerably. For example, most large farm animals fall within the ranges 4.4 to 26.6 C, 0 to 75% humidity, and 0 to 3% CO₂; whereas one-day old poultry require 32 to 37 °C, 0 to 80% humidity and 0 to 0.5% CO₂.

Humidity and CO₂ levels inside the cargo compartment may not be controllable directly by the ECS settings, and the hold temperature set by the pilots is not necessarily what is experienced by the animals. The supplied air obviously has some vapour and CO₂ content, but when entering the cargo compartment it mixes with the existing air, which in turn has been affected by the animal body temperatures, exhalations and emissions. Data, gathered from in-service experience, of the air condition in each cargo compartment, can be used to make decisions concerning what animals to carry where on the aircraft, and how many. The number of animals planned for carriage can always be reduced and distribution planned throughout an aircraft's cargo compartments (where possible) in order to ensure climate conditions are suitable.

Some aircraft ECS and cargo compartment configurations allow for airflow rates to be adjusted. Higher airflow rates should be selected for high-density animal loads; this will incur a fuel penalty, which may affect aircraft range. Where a cargo compartment does not contain any animal or temperature-sensitive cargo, air conditioning to this area can be turned off if this provides greater ventilation in compartments containing animals, without raising their temperature through heat-transfer. This may also help reduce fuel burn.

ECS need to be able to cool cargo compartments adequately when external ambient temperatures are high during ground operations (taxiing, pre-take off, post landing and stopovers). Also, aircraft can become heat-soaked when exposed on the ground to strong sunlight, resulting in extremely high temperatures in the cargo compartments. Pre-loading, and pre engine start, the performance of an aircraft's Auxiliary Power Unit (APU) and where available, external cooling systems will determine whether the conditions are suitable for animal loading.

It should always be the aim of carriers to reduce the time that animals are held in cargo compartments and therefore, close cooperation is required between flight crew, loading and unloading ground crew, animal-handling agents and air traffic services. For example, closing cargo doors last before departure and opening first on arrival may ensure greater airflow and more comfortable conditions for the animals. Also loading animals at night can avoid both higher ambient daytime temperatures and higher workload for the ECS.

During lengthy stopovers en-route, consideration should be given to off-loading the animals. In these situations and where animals may remain at the destination aerodrome for long periods before collection, consideration must be given to quarantine requirements, veterinary services, food, watering and protection from the climate.

TEXT 2.

It is essential to consult with aircraft manufacturers regarding specific recommendations for loading different aircraft types and models. However, the following factors should be considered.

- Do not transport animals and carbon dioxide (usually in dry ice form) in the same compartment.
- Avoid mixing live animals with cargo that contains a lot of moisture on the container, such as rain, snow, or ice, or liquids inside the container.
- Load animal containers with enough space between pallets to allow air to freely circulate.
- Spreading animals evenly within and between cargo compartments can help to reduce condensation, however, weight and balance limits will still need to be complied with.
- Some areas within cargo compartments may suffer greater heat transfer through the walls, and animal densities should be reduced in such circumstances.
- Animal containers, pallets and stalls need to maintain their location and their integrity during turbulence in flight.
- Containers are designed specifically for different species of animal, and they should have adequate ventilation gaps and holes to allow air flow, and reduce localized temperature and CO₂ build-up.
- Container construction also needs to cope with animal behaviour that may weaken its structure, e.g. gnawing, clawing, kicking etc.
- Container construction should allow for appropriate inspections, both in-flight and on the ground. Adequate lighting is therefore also required.

- When animals are self-loading, the slope of loading ramps should be minimised to facilitate each animal species' ability, and consideration given to batons or other anti-slip measures.
- When transporting animals in belly holds (lower deck compartments), access in flight will not likely be possible. All aspects of the animals' welfare need to be planned and accounted for, especially as temperature control is usually more difficult in these belly holds.
- Apart from the factors discussed above, there are many other considerations for both packers and carriers to consider when transporting live animals.
- The animals should be in good health, preferably not pregnant, and mixed species should not be housed in the same container. If sedation is deemed necessary, then it is advisable that a vet travels with the animal; note that sedated animals may not be able to maintain balance during turbulence and significant manoeuvring, and therefore they risk injury.
- It may not be possible to address sickness, injury or death whilst in transit, therefore inspection during refuelling stopovers is essential. Handling of animals carries the risk of human contamination and cross-contamination between animals and other species, and therefore should be avoided whenever possible. Food items should not be stored near to animals for this reason. Although, there will be occasions when the destruction of a sick or injured animal, in transit, is required; and this must be conducted by a vet or someone with suitable experience. Some means of killing an animal, such as anaesthetic darts, can damage aircraft structures and systems if used incorrectly.
- Arrangements for feeding and watering will depend on the species of animal involved and the duration of the journey. Some animals (e.g. reptiles) are able to survive comfortably without distress for long periods without food and water, others may benefit from fasting before loading onto the aircraft. Where water is provided, there should be mitigation against risk of animals drowning.
- It is usual that people, or organisations, and airlines need to be authorised by a competent authority before they can transport live animals by air. Such authorisations will typically be time-limited and require re-authorisation periodically.
- Personnel involved in the transport of live animals need to be adequately and appropriately trained to fulfil their responsibilities in accordance with national and international regulations. These personnel include: ground-handling staff, aircraft commander, loadmaster and aircrew, and animal attendant. On occasion, when authorised, a member of aircrew can fulfil the attendant's duties. Competence will need to be demonstrated and requalification may be necessary.
- Appropriate documentation is essential in monitoring the safe transport of live animals, these will typically include: certificates, declaration forms, journey logs and crate labelling.

Exercise 5. Give the Russian equivalents for the following words and word combinations and learn them.

International and national regulations; incur; Auxiliary Power Unit (APU); temperature and humidity control; journey logs; veterinary inspectors; to set a balance; to reduce fuel burn; animal keepers; handlers and attendants; belly holds; declaration forms; container manufacturers; air carriers; humanely; regulation and oversight; climate-controlled cargo bays; quarantine requirements; order to maintain the welfare and comfort of live animal cargo; ambient temperatures; human contamination ;performance of an aircraft; carbon dioxide; the slope of loading ramps; sedation; suitable experience; aircraft structures; crate labelling; shippers, freight forwarders, and animal care professionals; to treat animals humanely; air traffic services; stopover; anaesthetic darts; fuel penalty; re-authorisation; animal physiology; feeding and watering; animal species; to be authorised.

Exercise 6. Give the English equivalents for the following words and word combinations and learn them.

заражение человека; снижать расход топлива; контролировать температуру и влажность; температура окружающей среды; международные и внутренние регулирующие/законодательные акты; вспомогательная силовая установка (ВСУ); владельцы животных; отсеки; кормление и водопой; виды животных; поддержание комфортных условий для живых животных; эксплуатационные характеристики самолета; углекислый газ; наклон погрузочных рамп; соответствующий опыт; конструкции самолета; ветеринарные инспекторы; маркировка ящиков; грузоотправители, экспедиторы и специалисты по уходу за животными; гуманное обращение с животными; службы воздушного движения; дротики для анестезии; бланк декларации; производители контейнеров; повторное разрешение; физиология животных; авиаперевозчики; регулирование и надзор; грузовые отсеки с климат-контролем; карантинные требования.

Exercise 7. Translate into English.

1. Животные должны быть здоровы, желательно не беременны, а смешанные виды не должны содержаться в одном контейнере.
2. Если седация считается необходимой, то желательно, чтобы с животным путешествовал ветеринар.
3. Животные, находящиеся под воздействием седативных препаратов, могут быть не в состоянии сохранять равновесие во время турбулентности и значительных маневров, и поэтому они рискуют получить травму.
4. При перевозке животных в трюмах (отсеках нижней палубы) доступ к ним в полете будет невозможен.

Exercise 8. Put 5 types of questions to each sentence.

1. Container construction also needs to cope with animal behaviour that may weaken its structure.

2. Animal containers, pallets and stalls need to maintain their location and their integrity during turbulence in flight.
3. Do not transport animals and carbon dioxide (usually in dry ice form) in the same compartment.
4. The number of animals planned for carriage can always be reduced and distribution planned throughout an aircraft's cargo compartments (where possible) in order to ensure climate conditions are suitable.
5. Three environmental parameters need to be controlled in order to maintain the welfare and comfort of live animal cargo, and to prevent death.
6. All animals are handled as live cargo and most are stowed in the aircraft's climate-controlled cargo bays unless the aircraft has been converted as a dedicated livestock carrier.
7. The International Air Transport Association (IATA) is not a regulatory body, but airline members of the Association are obliged to ensure IATA's Live Animals Regulations (LAR) are followed.

Exercise 9. Open the brackets, put the verbs in the correct tense form, voice and translate the text.

Live animal transport (to be) a complex, high-touch process involving everyone from the shipper to freight forwarders to airline staff, including the handlers. Inappropriate container use or misunderstanding carrier or government regulations can (to have) catastrophic consequences.

The LAR has all the information you (to need) to make sure your live animal shipments (to handle and to transport) in the most expedient and humane manner and at their destination in good health, whether it (to be) a pet, day-old chicks, racehorses or something a little more exotic.

The LAR (to cover) animal transport of all kinds and (to contain) comprehensive information about the requirements for protected and endangered species as lab animals, livestock and domestic animals.

Exercise 10. Transfer the sentences into Active Voice.

1. Airlines are authorised by a competent authority.
2. The existing air has been affected by the animal body temperatures.
3. The hold temperature is set by the pilots.
4. The LAR is used by shippers, freight forwarders, and animal care professionals.
5. High standards are maintained by the veterinary inspectors.

Exercise 11. Comment on:

- **Applicability** (shipper and carrier responsibilities, training, combatting illegal trade)
- **Government regulations** (general and variations by country)
- **Carrier regulations** (general, variations by carrier, airline contact information and AVI services)

- **Reservations and advance arrangements** (schedules, routing, interline advance, delivery, accompanying persons)
- **Animal behaviour** (general, disturbance, segregation, sedation, euthanasia, in-flight environment)
- **Listing, description and species size** (taxonomy, alphabetical list, description and size)
- **Documentation** (shipper's certification, waybill, captain notification, CITES documents, other documents, live animal acceptance checklist)
- **Container requirements** (general, stocking density, marking, labelling)
- **Handling** (animal acceptance, ground handling, loading, feeding and watering, captain's advice, health and hygiene, OIE recommendations)
- **CITES** (general, documentation, list of states, management authorities by country, Article XI, combatting illegal trade)
- **Life science logistics for lab animals** (health status, animal type and number, species and container considerations)

Литература

1. Kenza Oufaska, Yassir Rouchdi, Mohamed Boulmalf, Khalid El Yassini. "RFID Application to Airport Luggage Tracking as a Green Logistics Technology". *Proceedings of the International Conference on Industrial Engineering and Operations Management, Paris, France, July 26-27, 2018*
2. <https://www.airport-technology.com/features/baggage-tracking-technology-for-airports/>
3. [https://www.skybrary.aero/index.php/Unit_Load_Devices_\(ULD\)](https://www.skybrary.aero/index.php/Unit_Load_Devices_(ULD))
4. https://www.faa.gov/hazmat/what_is_hazmat/
5. <https://www.cad.gov.hk/english/dgdetail.html>
6. <https://www.iata.org/en/programs/cargo/live-animals/ceiv-animals/>
7. <https://www.iata.org/en/publications/store/live-animals-regulations/>
8. https://www.skybrary.aero/index.php/Transporting_Live_Animals_By_Air
9. <https://www.google.com/search>
10. <https://en.wikipedia.org/>
11. <https://adrbook.com/en/class-4-flammable-solids/s/7>
12. <https://adrbook.com/en/which-hazardous-material-placards/s/13>
13. Guidance for Vaccine and Pharmaceutical Logistics and Distribution, IATA. Set of considerations and awareness on large scale handling, transport and distribution of vaccines, pharmaceutical, life science and medical products., Edition 5 & Last Edition - 1 June 2021