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## UNUSUAL SHIPMENTS IN AIR TRANSPORT

### 1. INTRODUCTION

Unusual shipments include cargo which according to its characteristics is not usually transported by air and whose nature and characteristics require special measures in handling and shipping, in order to protect:

- a) the aircraft,
- b) the crew and the passengers,
- c) personnel handling such cargo,
- d) other shipments, mail and passenger luggage,
- e) the unusual shipments themselves (self-destruction).

The translation of the term *unusual shipments* as well as its definition, have very often caused these shipments to be classified incorrectly as "specijalni teret" (*special cargo*) or "posebni teret" (*separate cargo*) which is completely wrong, since IATA and ICAO clearly defined and accepted the term itself, pointing out that the only correct translation is "neobičajene pošiljke" (*unusual shipments*).

Special categories include: diplomatic luggage, fragile and bulky luggage, animals, pets, items accepted for transportation by a special approval of the carrier and items not accepted for transportation.

To illustrate this: out of the overall annual air transportation of cargo 2% are unusual shipments, a proportion which has remained a constant in relation surface-air in the total world cargo transportation, out of which 2% is air transportation.

Similarly, it is fairly clear that the term "specijalni teret" (*special cargo*) will be used to refer to one of the categories of unusual shipments if it involves transportation of greater amounts by aircraft of a certain air-line.

For example: *a shipment of 3,500 kg detonators for mining and geological work on the LH-4360 FRA-LJU, will be special cargo for that line's aircraft, although e.g. apart from this shipment there will also be a shipment of e.g. 380 kg restrictive chemicals, then a shipment of two live dogs and 570 kg seedlings, all of which are categorised as unusual shipments.*

Regarding the term "poseban teret" (*separate cargo*), even the name itself does not say why a certain cargo would have to be separate, nor in which sense it could be separate.

The term "poseban teret" (*separate cargo*) can possibly be used in planning the loading of a certain aircraft only to designate a separate loading in various belly compartments e.g. human remains and a live dog (they have to be "separately" loaded) or separate loading of shipments of various animal species that are by nature antagonistic.

Therefore, the translation of the term *unusual shipments* by "specijalni" or "posebni teret" can be at least regarded as deficient, if not completely wrong according to the IATA definition, in the same way as it would be wrong to translate *Specific Commodity Rate* by "specijalna tarifa".

Just as SCR is about *specific* types of cargo, so the *unusual shipments* are about specific shipment categories that are not usual in air transportation.

### 2. PERISHABLE GOODS

This type of unusual shipments includes e.g. flowers, fruit and vegetables, blood plasma, perishable drugs etc. Because of handling in shipping and special urgent telexes for ramp transfer and advance information to the recipient, the carrier considers even the daily newspaper shipments to be perishable cargo, since their life-time / sales value regarding news is somewhat limited.

When receiving the perishable consignments for transportation, the carrier has to check the adequacy of packaging as well as the actual condition of cargo prior to its transportation. That way the carrier must make certain that the received cargo is fresh, in order to be able to guarantee the transportation to the destination and delivery in good condition. Perishable shipments should never be accepted for transportation as a part of mixed consignments.

Such shipments have to be obligatorily marked with visible adhesive labels on every piece of freight, warning the carrier that they contain perishable items. Additional measures while handling:

- a) AWB is marked with: PERISHABLE and possible additional instructions about handling (storage at a certain temperature ...)
  - b) manifest is marked with PER
  - c) the cargo area is booked to destination
  - d) the airports on the way and transfer airports are informed by telex
  - e) the aircraft captain is informed.
3. that the temperature has to be maintained which will guarantee the freshness (temperature warning label);
  4. that it is necessary to check the adequacy of packaging;
  5. that because of dry ice it is necessary to inform all transit, transfer airports as well as the destination about such cargo;
  6. that loading requires auxiliary means:
    - a. rubber or plastic wrappings and mats;
    - b. wooden bars, for separating the aircraft structure from direct cooling effect of the dry ice;
    - c. wooden boxes for dry ice, with ventilation openings at the sides;
    - d. ropes, synthetic tightening straps and rings to hold the cargo within the belly compartment in place;
  7. that such shipments are loaded only into belly compartments;
  8. that maximum limit of amount of dry ice is not exceeded regarding the aircraft and the belly compartment - depending on the aircraft configuration;
  9. that belly compartments are obligatorily aired at airports, after they have been opened either for unloading or handling of shipments, because poisonous carbon dioxide is formed when dry ice comes into contact with oxygen;
  10. that due to the above mentioned, shipments containing fresh meat are never loaded together with shipments of live animals.

### 3. LIQUIDS

This type of unusual shipments includes consignments of liquids that are not air transport restrictive, i.e. they are not affected by the IATA Restricted Articles Regulations.

When such shipments are received for transportation, the following checks have to be carried out:

- a) the adequacy of the internal container
- b) the airtight closing of the container
- c) the way of filling the container (they should not be filled up to the brim because of temperature and air pressure variations)
- d) the adequacy of the internal container to bear the pressure of 1 bar per cm<sup>2</sup> over the whole surface (the sender is asked to provide a certificate)
- e) the adequacy of material placed between the internal and the external container as absorbing and shock-absorbing material, in order to protect the aircraft from leakage in case of damage, as well as to protect the other shipments and passenger luggage
- f) that every single piece of freight is provided with the label FRAGILE.

Additional handling measures:

1. the air way-bill, under "Type and quantity of goods", contains the name of the liquid and label: LIQUID - NOT RESTRICTED.
2. every piece of freight is provided with the label FRAGILE as well as with the label which warns against turning over - UPRIGHT POSITION label.

### 4. FRESH MEAT

Such shipments are unusual because of two reasons:

- as perishable goods
- as goods sent together with restrictive material, DRY ICE

When fresh meat is being transported the following has to be considered:

1. that the shipment contains perishable items;
2. that it is usually packaged with dry ice;

### 5. HUMAN REMAINS

Discussing payments for this kind of shipments, the classification tariffs point out that shipments of human remains can be packaged as:

- a. urns
- b. coffins

Human remains in coffins have to be packaged according to regulations in:

1. metal, hermetically closed internal coffin,
2. outer wooden coffin and
3. a wooden case of neutral design and regular rectangular dimensions.

For human remains transported in urns only a wooden box is needed, of regular dimensions and neutral design.

When accepting such shipments for transport, receiving documentation and issuing transport documents, the following has to be checked:

1. the dimensions in order to check the loading possibilities
2. the weight (of the coffin) because of possible usage of floor expanders of the contact surface

3. the loading cannot be performed together with the loading of live animals or food items.

Shipments of human remains are not labelled in any special way, except maybe for the label SECURE (a label warning that the shipment has to be secured by binding).

## 6. HEAVY CARGO

This kind of unusual shipments includes shipments or single piece of freight of multi-item shipments of 150 or more kilograms gross weight.

If the weight of the shipment or a single piece of freight of a multi-item shipment is found to be 150 or more kilograms when received for transportation - it is necessary to measure the dimensions in order to calculate the actual contact surface of the shipment with the aircraft floor. The HEA dimensions of a single piece of freight are filled into the air way-bill in the following order:

length - width - height.

Based on these data as well as on the given single weight along with dimensions, the carrier's operative service will be able to make the necessary calculations regarding the quantity of material used for fastening and binding needed for the loading of such a shipment: (X)

*Example (1):*

1 case 165 kg 210×80×35 cm

maximum floor bearing capacity of a DC-9 aircraft as well as all the Boeing types of aircraft

732 kg/m<sup>2</sup>

210x80 = 16,800 cm<sup>2</sup> of actual contact surface.

1. check of the weight because of the possible categorisation as "heavy cargo" (single piece of freight of 150 or more kilograms)
2. check of the quantity of expanders, rings and ropes regarding the gross weight
3. check of the documents required for issuing the air way-bill (consular certificate, passport, obituary ...)
4. check if the air way-bill has been issued correctly
  - a. specification: HUMAN REMAINS of the late ....
  - b. adding the stipulation: HEAVY CARGO and therefore also
  - c. filling in the dimensions
  - d. application of the tariff only on the prepaid basis (only in cases when the airport of destination receives a money deposit in the amount of the transportation cost, can the payment of transportation cost in the air way-bill be

marked on the basis *charges collect*, provided the air way-bill includes a marked report on the deposit received)

5. check that import requirements of the destination country are fulfilled
6. check that the area has been booked to destination
7. check the recipient's address so that he could be notified about the arrival of the shipment.

The abbreviation HUM (and if necessary HEA) has to be contained in the manifest of cargo.

Loading into the aircraft:

1. loading, handling or unloading have to be carried out discretely, so that passengers' attention is not drawn to it, in case of loading into a passenger plane
2. loading has to be done using in advance prepared lashing material - auxiliaries.

Issuing of air way-bill concerning shipment/items of "heavy cargo":

1. the column regarding goods specification has to contain:
  - a. individual dimensions of every single piece of freight
  - b. individual gross weight with corresponding dimensions
  - c. note: HEAVY CARGO
  - d. note: HEAVY CARGO - CARGO AIRCRAFT ONLY if the pieces of freight can be loaded only into a cargo type of aircraft.
2. after issuing the air way-bill, to the identification adhesive labels (the air way-bill number, number of pieces, destination, ...), the *lashing labels* (adhesive labels stating the requirement of binding the cargo) or the so-called *secure-labels* are added.

Loading of heavy cargo into the aircraft:

- a. lashing material has to be calculated and prepared in advance
- b. heavy cargo can be loaded only on the flat surfaces of the aircraft floor
- c. loading has to be performed in such a way that it fully guarantees the aircraft safety against damaging the structure due to sliding or moving of the cargo
- d. loading of extremely heavy items of "heavy cargo" has to be previously authorised by the appropriate carrier's service
- e. loading has to be carried out within the given loading time limits (block time, ground time)

The captain of the aircraft has to be notified about the loading of "heavy cargo" into the aircraft, and he will have to adjust the controlling of the aircraft regarding forces acting during the flight and regarding the "unusual cargo" in one or more belly compartments.

By dividing the gross weight with the maximum floor bearing capacity of this type of aircraft, the sufficient contact surface for the given example is obtained which amounts to approximately 2,254 cm<sup>2</sup>, and thus the given piece of freight would not require any contact surface expanders.

The shipment will only have to be properly bound and fixed to the aircraft floor.

*Example (2):*

*1 case 253 kg 75×40×110 cm*

*M.F.B.c. (Maximum-Floor-Bearing-Capacity):*

*732 kg/m<sup>2</sup>*

*75×40=3,000 cm<sup>2</sup> of actual contact surface*

*253,000 gr: 73 gr (rounded up) = 3,466 cm<sup>2</sup> of necessary contact surface*

In the second example it can be seen that the shipment, due to its gross weight, has a contact surface which is not big enough for safe loading. In that case the contact surface will have to be widened by using expanders or props of standard dimensions. In our case we can use 100x15x3 cm expanders with the total surface of 1,500 cm<sup>2</sup>, therefore 3x1,500=4,500 cm<sup>2</sup>, which provides a minimum of 3,466 cm<sup>2</sup> + min. 10%.

The given examples include two kinds of "heavy cargo":

1. heavy cargo with sufficient contact surface - only binding is required
2. heavy cargo with insufficient contact surface (high density cargo) - requiring both binding and expanding of the contact surface.

## 7. PRESS MATERIAL

This title marks the shipments of "unusual cargo" which due to their nature have to be accepted by the carrier and treated during the transportation with additional handling measures, since this type of goods can be characterised as perishables.

Press material, journal photographs, television film reports etc. have a limited period of topicality, so that delayed shipping and late delivery to the recipient may render such material useless. Therefore, the carrier undertakes a range of measures to deliver these shipments in order and on time to the end user:

- a. the air way-bill contains a note regarding press material - PRESS
- b. the shipment itself is labelled: PRESS MATERIAL - DO NOT OFFLOAD! which warns the personnel handling the cargo not to unload such a shipment prematurely, and that it needs to be delivered most urgently
- c. these shipments are loaded separately from others, usually in separate nets for this kind of ship-

ments, and they are loaded last so as to be the first for unloading before any other goods

- d. when planning and loading into the aircraft, these shipments should not be loaded or planned for loading in the same belly compartment with shipment of radioactive material, restrictive chemicals and magnetic materials, since press-material shipments often contain undeveloped or developed films that might be damaged by the influence of radioactivity or chemical features of restrictive chemicals, or magnetic materials.

## 8. VALUABLE CARGO

When accepting such cargo for shipment, it is necessary to determine precisely whether it involves:

1. valuable cargo regarding application of classification tariff for this kind of goods (e.g. money, gold, platinum, ...)
- or
2. valuable cargo regarding transport safety (silver, with charging according to the stated transporting value)

In both cases the shipments are treated as valuable cargo. The only difference lies in the applied tariff.

For both kinds of valuable cargo the carrier undertakes the same advance measures and safety measures during the transportation:

- a. when accepting for transport the type is defined
- b. checks the value regarding the carrier's responsibility
- c. checks the previous insurance of the cargo
- d. checks the possibilities of additional insurance by its own policy
- e. checks the adequacy of packaging
- f. checks the stamp and the seal on the cargo
- g. issues air way-bill with the exact specification of goods and marked: VALUABLE CARGO
- h. books the area for the cargo, regardless of its weight, to its end destination
- i. informs the transfer stations and destination
- j. manifests the shipment according to the existing regulations for this kind of cargo, marking the manifest with VAL
- k. places the cargo into a separate bag, offered by most air carriers as auxiliary equipment for loading of such goods, and seals the bag with an appropriate seal
- l. informs the operative service about the loading of such cargo into a certain aircraft and determines the belly compartment in which it is to be loaded
- m. plans the loading of cargo into a safe, if it is available on the aircraft of that type.

The unloading of valuable cargo is performed on the basis of a preadvice-telex received from the loading airport - in the presence of authorised persons and security officers, if necessary, and the delivery is carried out after carefully checking the identity of the person.

## 9. DIPLOMATIC CARGO / MAIL - DIP

These are shipments of diplomatic agencies, that send diplomatic materials to their governments, or shipments sent by the governments to their diplomatic agencies abroad.

The carrier has to:

- a. check the cargo packaging
- b. check that the diplomatic seal is all right and undamaged
- c. check the bearer / recipient by asking for authorisation or showing the consular documents
- d. keep in mind that international regulations forbid loading of diplomatic cargo into belly compartments together with shipments of radioactive or other restrictive materials.

Diplomatic baggage can be transported in the passenger cabin when this is allowed by the carrier. Diplomatic baggage must be accompanied and under continuous supervision of a diplomatic courier. The diplomatic courier may be allowed, at request, to carry more baggage into the passenger cabin than otherwise allowed. There are also special provisions made by the carrier about the keeping of diplomatic baggage, depending on its weight. If the weight of the diplomatic baggage does not exceed 10 kg it is placed under the diplomatic courier's seat. Cargo weighing between 10 and 30 kg is also placed beneath the seat, but has to be bound. If the weight exceeds 30 kg (max. up to 75 kg) it is placed on the additional seat next to the courier. In the last case, the additional seat needs to be reserved in advance as well, paying the conventional tariff in one way. Diplomatic baggage has to be packed according to regulations.

## 10. LIVE ANIMALS - AVI

These are the most specific of "unusual cargoes" that can be found in air transport, due to the very fact that they involve "live cargo", and due to the condition that such a "live cargo" shipment has to reach its destination in the best of health. Accepting such shipments for transportation requires the carrier services to know of certain conditions that the sender needs to fulfil before the cargo has even been accepted for transportation, and also to know the basic characteristics of single animal species and their habits and behaviour under special conditions. The sender will be

required to fulfil the conditions regarding previous feeding and watering, equipping of cages or containers with the necessary material and adequacy of containers for handling during the transportation, having in mind characteristics of certain species regarding digestion, behaviour in specific conditions (air transport), antagonistic inclinations, tendencies to look for shelter (calming down in the container or trying to get out by force) or the tendency to study the environment (trying to find a possible escape from the container).

On his part, the carrier will check and insure all the most optimal conditions that will insure and enable complete handling of the cargo until its destination, keeping the shipment in good health all the way to the end delivery.

Insurance of such conditions on behalf of the carrier starts already when the cargo is being received for delivery and by issuing the air way-bill:

- a. the acceptance of the shipment includes
  1. checking the container quality
    - a. strength
    - b. tightness
    - c. suitability for handling (personnel protection)
    - d. suitability for feeding and watering
    - e. suitability for cleaning
    - f. suitability of size regarding the animal species

Checking the container quality means also checking whether it fulfills the container IATA standards for such cargo, which have been regulated by the "IATA Live Animals" manual for every single animal species separately.

2. checking of documentation
  - a. along with delivering the cargo to the carrier, the sender has to supply the veterinary certificate stating that the animal is in good health. Prior to accepting such cargo for transportation, the authorised veterinary expert in airport veterinary inspection service will perform another veterinary examination, thus determining the medical condition before the transport.

The sender also has to fill in and sign the so-called "Shipper's Certificate for Animal Shipments".

In order to protect the export of certain rare species the carrier will consult the veterinary expert in cases when there is doubt that the export of a certain species is allowed.

When such information cannot be supplied by the veterinary officers, it is necessary to consult the International Union for Con-

servation of Nature and Natural Resources (IUCN), Survival Service Commission, Morges, Switzerland

a body dealing with issues on the protection of nature in the whole world, by introducing measures for the protection of animal species.

3. correct filling-in of the air way-bill:

Under "Type and quantity of goods" the carrier needs to fill in the following data:

- a. description of cargo by the designation:  
LIVE ..... (animal species)  
name, sex, colour, age
  - b. instructions for handling, feeding and watering
  - c. note: CARRIER IS NOT LIABLE FOR THE DEATH DUE TO THE NATURAL CAUSES.
4. checking that the cargo has been correctly labelled
- a. label "LIVE ANIMALS"
  - b. label "KEEP IN UPRIGHT POSITION"
  - c. label / tag with instructions for feeding and watering
  - d. label about possible need to maintain a certain temperature
5. loading and unloading preparations:
- a. plans for loading with regard to the rest of the cargo
  - b. planning of loading into loading compartments which will keep the smell and the noise away from the passenger cabin (if it is a passenger plane)
  - c. loading into the most easily accessible places in the loading compartments
  - d. loading into compartments that may be heated, ventilated and pressurised
  - e. obligatory fixing of live animals shipments
  - f. separate loading of live animals that show natural antagonism
  - g. separate loading from shipments packaged with dry ice
  - h. separating from radioactive material shipments
  - i. separating from the fresh meat shipments
  - j. separating from all the shipments of restrictive materials
  - k. separating from the human remains shipments.

6. Manifesting

Live animals are accepted for transportation only on the basis of previously made arrangements - agreement, which defines whether there is a possibility for acceptance regarding the cargo that had been reserved up to that moment, in order to avoid accepting several different animal species (natural antagonism), accepting in spite of the already accepted shipments of "unusual cargo" (RAR, RRR, fresh meat in dry ice, HUM ....) and accepting for overall transportation without obtaining the booking confirmations to the end destination.

9. CONCLUSION

Fast development of air transportation, continuous increase in the number of passengers, and also of their luggage, requires a faster and more efficient procedure of receiving and delivering the passenger baggage. In the times of a sudden expansion of air traffic, the number of flights in time unit has suddenly increased, and proportionally the number of passengers and unusual shipments. Simultaneously, the time needed for acceptance of shipments should be minimised. The cargo reception and delivery procedures differ from the procedures regarding passenger reception and transport, although their timing is mutually co-ordinated. Good co-ordination in procedures regarding reception and delivery of unusual shipments is one of the important factors of providing good and fast service knowing the basic regulations in air traffic.

SUMMARY

*The article lists the unusual shipments in air transport. Over 2% of the annual cargo air transportation are the unusual shipments. Good co-ordination of the reception and delivery processes of unusual shipments is one of the important factors in providing good and fast service knowing the basic regulations in air traffic.*

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