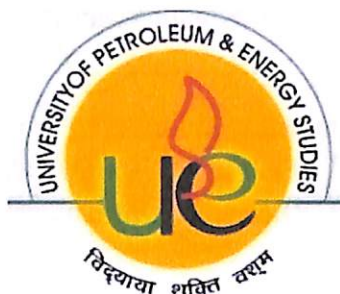


AIRPORT GROUND HANDLING



AIRPORT GROUND HANDLING

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A DISSERTATION REPORT SUBMITTED IN PARTIAL FULFILLMENT OF

THE REQUIREMENT FOR

EXECUTIVE BBA (AVIATION OPERATIONS) OF

UNIVERSITY OF PETROLEUM & ENERGY STUDIES, INDIA

CENTRE FOR CONTINUING EDUCATION

AIRPORT GROUND HANDLING

Acknowledgement

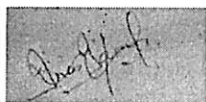
This is to acknowledge with thanks the help, guidance and support that I have received during the Dissertation.

I have no words to express a deep sense of gratitude to the management of our university UPES and my institution SPEEDWINGS ACADEMY FOR AVIATION for giving me an opportunity to pursue my Dissertation, and in particular my guide MRS. SHALINI MATHEW for her able guidance and support.

I must also thank Mr. Suman Grover and Mrs. Mala Prasad for their valuable support.

I also place on record my appreciation of support provided by Mr. Mohd Rafeeq and other staff of Dr. Iqbal Library.

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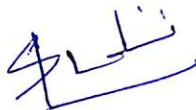
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AIRPORT GROUND HANDLING

Table of contents

Acknowledgment.....	2
Table of content.....	3
Table of figure.....	4
Executive summary.....	5
Chapter -1 Introduction.....	6
1.1 Functions of Ground Handling.....	7
1.2 Ground Handler.....	7
1.3 Roles and responsibilities of ground handler.....	8
Chapter – 2 Literature review.....	9
2.1 Challenges and practices.....	10
2.2 IATA.....	11
Chapter – 3 Research Design, Methodology and Plan.....	12
3.1 Risk identification.....	12
3.1.1 Ground Handling Process.....	12
3.1.2 RAMP.....	12
3.1.3 Cargo Handling.....	16
3.1.4 Passenger Handling.....	35
3.1.5 Baggage Handling.....	40
3.1.6 Check-in.....	47
3.1.7 Reservation counter.....	49
Chapter – 4 Findings and Analysis.....	54
4.1 Ground Handling Procedures.....	54

AIRPORT GROUND HANDLING

4.1.1 Ramp Services.....	54
4.1.2 On-ramp services.....	54
4.1.3 Onboard Servicing.....	54
4.1.4 External Ramp Equipment.....	54
4.2 Operational Analysis.....	55
Chapter- 5 Interpretation of Results.....	57
Chapter -6 Conclusion and Scope for Future Work.....	59
Bibliography.....	61
Appendix.....	62

AIRPORT GROUND HANDLING

TABLE OF FIGURES

1) Aircraft Ramp.....	13
2) Ramp Patrol Unit.....	15
3) Aircraft Security Equipment.....	16
4) DGR.....	19
5) Packing.....	21
6) Labels of DGR.....	22
7) Handling Labels.....	22
8) Shipper's Declaration.....	23
9) Live Animals.....	26
10) This Way Up.....	27
11) Laboratory Animals.....	27
12) Automated Baggage Machine.....	42
13) 90° Transfer Baggage Conveyors.....	44
14) Conveyor belts.....	45
15) BHS.....	46
16) Check ticket.....	48
17) Baggage tag.....	48
18) Gate numbers.....	49
19) E-tickets.....	49

AIRPORT GROUND HANDLING

CHAPTER- 1

INTRODUCTION

Access to the airport from the surrounding community is an integral part of the overall passenger. The access link of an airport's passenger handling system includes all of the ground transportation facilities such as ramp services, baggage services, cargo services, passenger services, etc. these preliminary services of an airport services start from the check-in process and ends to the final destination. Preferably, ground handlings are performed to decrease ground time and thus to increase aircraft productivity. In general, ground handling services are an essential part of the final product offered by a airline to the customer.

Ground handlings are the preliminary services of an airport which starts from the check-in process and ends to the final destination. These ground handling services starts from the point of departure to one's arrival on ground and are generally parked at a terminal gate of an airport.

According to International Air Transport Association (IATA), approximate 50 per cent of the ground handling at the world's airports are outsourcing by airlines. Ground handling addresses the requirement of many ancillary services from the times of arrival to departure at a terminal gate.

Ground handling covers a wide variety of services for airlines delivered at airports in support of the operation of air services. It includes not only highly technical services such as maintenance, fuel and oil services and freight handling, but also services which are essential to passenger's safety and comfort, such as passenger check-in, catering, baggage handling and surface transport at the airport.

The market in ground handling services is covered by the Directive 96/67/EC dating from October 1996 which gradually opened up the services to competition. This was necessary since the checking-in of passengers, baggage handling, the provisions of catering services, etc. used to be a monopoly at many European airports and many airlines complained about the relatively high prices for the services provided and sub-optimal efficiency and service quality.

Ground handling management has to deal with very diverse tasks. Airlines pay at the most part for the delays that their aircrafts experience. Therefore, they strongly emphasize the time-

AIRPORT GROUND HANDLING

efficiency of ground operations provided either by themselves, or the airport authority or independent companies. It makes the task even tougher for ground handlers whose efficiency relies on technology-advanced equipment, coordination of staff and information support systems.

1.1 Functions of Ground Handling

For the purpose of this advisory circular, “ground handling” will include the facilities, equipment, personnel, policies and procedures for-

- Ticketing of passengers and baggage
- Acceptance and processing of cargo, including dangerous goods
- Cleaning the aircraft interior
- Servicing of restroom supplies
- Servicing of galleys supplies
- Servicing of blankets, pillows and magazines
- Servicing of the aircraft
- Fueling of the aircraft
- Loading of the cargo, including dangerous goods
- Computation and provision of mass and balance data
- Computation and provision of performance data
- Correction or deferring of maintenance irregularities
- Provision of flight planning information
- Provision of operational flight plan
- Security screening of passengers and carry-on baggage
- Enplaning the passengers and their carry-on baggage
- Marshalling, towing or assisting the aircraft in departing the gate
- Deicing of the aircraft
- Preparation of parking area for arrival of the aircraft
- Marshalling and parking of the aircraft after landing
- Deplaning the passengers and their carry-on baggage
- Provision of the baggage to the deplaned passengers
- Security for the aircraft while parked.
- Communications as necessary associated with flight handling, departure and arrival
- Retention of required records associated with flight handling, departure and arrival
- Implementation of emergency procedures associated with an incident or accident.

1.2 Ground Handler

AIRPORT GROUND HANDLING

Ground handlers, also known as ground handling staff, are employees of airline companies or airports who load and unload baggage and freight, as well as perform various odd jobs to prepare planes for flight. They deal with the turnaround of the aircraft where after the plane have stopped to drop off its passengers. The ground handlers will come onto the plane and sort out the aircraft by making sure it's clean and in a reasonable condition for the next batch of passengers to arrive onboard.

1.3 Roles and Responsibilities of Ground Handler

The roles and responsibilities of airport ground staff may vary from one airport to another will depend on whether they are working for a specific airport management company, or an airline.

- Inside the Airport Terminal
 - checking passengers in for flights
 - re-routing or re-booking passengers whose flights have been cancelled or delayed
 - Assisting disabled passengers or those travelling with young children.
 - Giving passengers up-to-date information on flights.
 - Assisting passengers with all enquiries, including lost or delayed baggage.
 - Assisting staff in carrying out security checks as and when the situation arises.
 - Delivering high levels of customer service to passenger and those travelling through the airport.
- Outside the Airport Terminal
 - Handling all the loading and uploading of passenger bags from the aircraft.
 - Helping direct passengers on to and off the aircraft.
 - Directing landed aircraft to taxi spots.
 - Providing services such as steps from the aircraft for passengers and crew to disembark the aircraft.

AIRPORT GROUND HANDLING

CHAPTER – 2 LITERATURE REVIEW

Starting point in defining the scope of this Dissertation is to define Airport Ground Handling. For this purpose, the International Air Transport Association (IATA) definition is used:

‘Ground handling covers the complex series of processes required to separate an aircraft from its load (passengers, baggage, cargo and mail) on arrival and combine it with its load prior to departure’.

As the dissertation focuses on risk identification, the further specified by using the definition from the CAST/ICAO Common Taxonomy (CICTT) for occurrence categories.

CICTT defines ground handling (ramp) as ‘Occurrences during (or as a result of) ground handling operations’. The following usage notes are provided by CICTT:

- Includes collisions that occur while servicing, boarding, loading, and deplaning the aircraft
- Includes propeller/rotor/fan blade strikes
- Includes pushback/power back/towing events
- Includes Jet Blast and Prop/rotor wash ground handling occurrences.
- Includes aircraft external preflight configuration errors (examples: improper loading and improperly secured doors and latches) that lead to subsequent events.
- Includes all parking areas (ramp, gate, tie downs).
- Except for power back events, which are coded here, if a collision occurs while the aircraft is moving under its own power in the gate, ramp, or tie down area, code it as a ground collision (GCOL).

The last bullet of the CICTT definition is ignored in this dissertation, as this would exclude collisions with ground handling equipment or vehicles when the aircraft is taxiing in, parking on the aircraft stand, or taxiing out. Another motivation to include ground handling incidents during taxiing is that responsibilities of ground handling or maintenance organizations extend to the

AIRPORT GROUND HANDLING

taxiway (e.g. pushback and removal of the nose gear steering bypass pin). The various areas in which ground handling operations take place are:

- 1) Taxiway
- 2) Aircraft stand
- 3) Aircraft stand making
- 4) Aircraft stand clearance line
- 5) Aircraft clearance line
- 6) Movement area jet way
- 7) Fuel hydrant pit
- 8) Parking space ground handling equipment with height restriction
- 9) Parking space ground handling equipment
- 10) Access/exit
- 11) Jet way

It should be noted that for the purpose of this Dissertation, any de/anti-icing platform is also considered as aircraft stand.

To set the final scope of this Dissertation, ground handling occurrences are confined to risks of aircraft damage. Collisions between vehicles/equipment on taxiway or various areas on the aircraft stand are not taken into account.

Only normal operations during ground handling are viewed. Factors complicating ground handling and possibly increasing risk level are summarized but not further analyzed.

2.1 Challenges and best practices for Ground Handling Services

Ground handling is a key component of the air transport logistics supply chain as it facilitates the mobility of cargo and people from one destination to another. Ground handling facilitates international trade hence its existence is critical to the competitiveness of a nation. Airline businesses usually overshadow ground handling due to the historical dominance of airlines in the aviation industry. The importance and effectiveness of the ground handling functions as part of the air transport business is fast becoming a global issue as the industry is slowly emerging. The following tenets of ground handling are fast becoming key issues in the air transport business: passenger handling, cargo handling, ramp handling, baggage handling, equipment, safety, security and human resource. Ground handling players are mainly concerned with productivity, profitability and maximizing returns on investment. Dwindling revenue, unsustainable profit margins, low productivity and low customer satisfaction and loyalty are terms no shareholder or business leaders wants to hear. This research will give insight into ground handling best practices that are a panacea for the industry. The ground handling business is time sensitive and requires massive investment. Therefore, sustainable best practices are the ingredient for customer loyalty and business success. The focus on ground handling in South Africa and Zimbabwe will help in assessing the level of development in each country. This will aid in recommending best practices

AIRPORT GROUND HANDLING

for the industry taking it into account different country-specific risks and operational conditions. There are few studies in the field of ground handling and it is an industry not many individuals know about it. Many ground handling executives admit that the industry absorbed them by accident and not by design. They only realize the importance of the industry when they are in it.. this research is a practical study meant to bring out solutions to the industry.

2.2 International Air Transport Association

International air transport is one of the most dynamic and fastest-changing industries in the world. It needs a responsive, forward-looking and universal trade association, operating at the highest professional standards. IATA is the association. IATA brings together approximately 265 airlines, including the world's largest. Flights by these airlines comprise 94 per cent of all international scheduled air traffic. Since these seamless service of the highest possible standard to passengers and cargo shippers, much of that cooperation is expressed through IATA, whose mission is to represent , leas and serve the airline industry”.

Continual efforts by IATA ensure that people, freight and mail can move around the vast global airline network as easily as if they were on single airline in a single country. In addition, IATA helps to ensure that Members aircraft can operate safety, securely and efficiently and economically, under clearly defined and understood rules. For consumers, IATA simplifies the travel and shipping process. By helping to control airlines costs, IATA contributes to cheaper tickets and shipping costs. Thanks to airline cooperation through IATA, individual passenger can take one telephone call to reserve a ticket, pay in one currency and then use the ticket on several airlines in several countries – or even return it for cash refund

AIRPORT GROUND HANDLING

CHAPTER – 3

RESEARCH DESIGN, METHODOLOGY AND PLAN

The methodology is described to identify risks during ground handling and is described how the regularity framework applicable to Schiphol Airport is investigated.

3.1 Risk Identification

The first step in the risk identification is a review of the ground handling process. This provides a reference for the data analysis.

3.1.1 Ground Handling Process

To identify the existing risks during ground handling, the ground handling process is reviewed and mapped. The primary purpose is to establish an overview of various actors and their interfaces during the ground handling process. It also provides an indication about their interdependency in terms of time. The overview of actors and interfaces is used as basis for the data analysis.

3.1.2 REGION OF AIRCRAFT MOVEMENT AND PARKING (RAMP)

There is growing realization in the aviation industry that encourage prompt reporting of issue actually reduces the number of accidents and incidents. An environment of “open reporting “ is a key element in fostering “just culture” for the systematic reporting, collection, analysis and dissemination of safety information that will be solely to prevent accidents.

Implementation of just culture begins with commitment and action not just by supervisors, managers on the RAMP, they by senior managers as well.

Encourages RAMP personnel to promptly and fully report incidents and accidents is a key element in just culture. RAMP personnel must be trained to view safety as a much more important priority than meeting schedules, and they should be encouraged to report immediately to their supervisor the slightest scratch or dent in an aircraft any collision between ground

AIRPORT GROUND HANDLING

equipments and aircraft. So RAMP is the most sensitive area to work. For that staffs need to be more cautions while working.



Fig 1:- Aircraft Ramp

RAMP OBJECTIVES:

- SAFETY
 - To ensure airside safety adhered at all times
- ON TIME PERFORMANCE
 - Being efficient at all time
 - To handle all the handling and services during within 25 minutes turn around
- COST
 - Everyone's responsibility to minimize department cost in term of cost control.
- NO PILFERAGE
 - To aim for NIL pilferage cases.

FUNCTIONS OF RAMP:

- Take all details like ETA (Estimated Time of Arrival), bay no., incoming load, baggage weight and count, transfer baggage, SSR passengers, details etc.
- Report on the RAMP beforehand for checking GSE (Ground Support Equipment).
- Announce touchdown.
- Pass c/on (chocks on) to all department.
- Aligned stepladder.
- Evacuate passengers.
- Ensure anti-sabotage check (interior check of cabin by airlines security staff).
- Offload baggage and cargo.
- Clean cabin of the aircraft.
- Load catering.

AIRPORT GROUND HANDLING

- Refueling.
- Start embarkation.
- Load outgoing baggage.
- Tally with boarding gate's employee about exact load.
- Get the load and trim signed by the captain.
- Release aircraft.

RAMP SERVICES:

This includes services on the ramp or apron, such as:

- Guiding the aircraft into and out of the parking position (by way of aircraft marshalling)
- Towing with pushback tractors
- Lavatory drainage
- Water cartage (typically non-potable for lavatory sink use)
- Air conditioning (more common for smaller aircraft)
- Air start units (for starting engines)
- Luggage handling, usually by means of belt loaders and baggage carts
- Gate checked luggage, often handled on the tarmac as passengers disembark
- Air cargo handling, usually by means of cargo dollies and cargo loaders.
- Catering trucks
- Refueling, which may be done with a refueling tanker truck or refueling pumper
- Ground power (so that engines need not be running to provide aircraft power on the ground).
- Passenger stairs (used instead of an aerobridge or air stairs, some budget airlines use both to improve turnaround speed)
- Wheelchair lifts, if required
- Hydraulic mules (units that provide hydraulic power to an aircraft externally)
- Deicing

RAMP PATROL UNIT:

In order to maintain operational safety in apron area, ramp patrol units monitor from close proximity on the field aircraft ground movements, aircraft parking, ground handling such as offload, maintenance, fuelling, catering, and boarding in order to ensure that flights are processed in accordance with safety operational standards. Their main focus is the enforcement of federal, state, and local safety regulations, and if necessary issue violation infractions to the violating parties. Like all other subordinate units, ramp patrol units report directly to the airside operations manager for the progress of the day, who in turn directs their focus of operation according to the daily priorities as requested in the interest safe flight handling.

AIRPORT GROUND HANDLING



Fig 2:- Ramp Patrol Unit

RAMP SAFETY:

The following rules apply to all operations on the RAMP:

- Always be aware of your surroundings.
- Always wear Personal Protection Equipment (PPE).
- No smoking.
- Do not operate any equipment that has been unserviceable vehicles.
- Keep the RAMP area clear of FOD (Foreign Object Debris).
- Those who have Airside Driving Permit (ADP), they only operate vehicles.
- Avoid the intake and exhaust areas of aircraft engines.
- No vehicles should be parked or driven within 15 meters of a moving aircraft.
- RAMP equipments must be positioned prior to the arrival of the aircraft behind the restraint line with the parking brakes on.
- No alcoholic drinks or any drugs, legal or illegal, that are likely to impair performance or judgment.
- No rough or boisterous play; practical jokes may lead to injury or damage.
- Report all injuries, equipment damage and near-collisions to a supervisor.
- Only a trained operator may drive a vehicle or operate its controls.
- Always obey speed limits
- Never try to get on or off a moving vehicle; wait until it stops.
- Never carry co-workers on vehicles unless seats are available. "No seat, no ride".
- Do not operate vehicles or equipment in the no-drive zone under the aircraft's fuselage and wings. Loading/unloading of some containerized narrow body aircraft may require vehicles or equipment to be operated between the inboard engine and fuselage; great care must be taken to avoid contact with the engine or fuselage.
- Never drive over fuel hoses or static leads.
- Minimize the distance a high-lift vehicle is driven with the rear van body raised.
- Never back a vehicle toward an aircraft unless a marshaller is present and the view is clear.
- Be very careful near moving aircraft; they have the right-of-way.

AIRPORT GROUND HANDLING

- Never back a vehicle toward an aircraft unless a marshaller is present and the view is clear.
- Be very careful near moving aircraft; they have the right-of-way.
- Avoid the intake and exhaust areas of aircraft engines.
- Use extreme caution when walking under any part of an aircraft.
- Wait until the aircraft's anti-collision beacon is off before approaching the aircraft.
- Never try to load late-arriving baggage if the aircraft's anti-collision beacon is on.

The following general rules apply to ramp operations near propeller-driven aircraft:

- Do not approach the aircraft until the propellers have stopped turning and the anti-collision beacon is off.
- Never walk close to or between propellers or between propeller blades, even if they are motionless.
- Never touch a propeller blade.

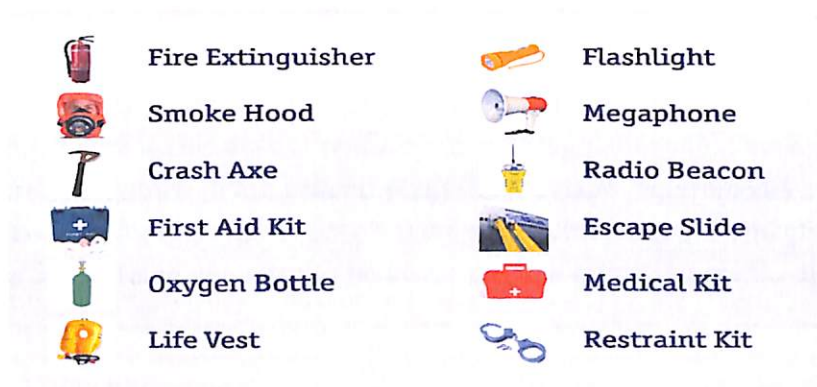


Fig 3:- Aircraft Safety Equipments

The Ramp is a high-noise area where the use of personal hearing protection is essential. Personnel should use only personal hearing protection equipment that is approved for special operational task. Also, Ramp personnel must know local fire prevention procedures, emergency evacuation plans and procedures for inspecting and maintaining fire equipment. To protect their own health, and the health of others, ramp personnel should thoroughly wash their hands before eating/drinking and after using the lavatory. They should also wear gloves when servicing aircraft and cover open cuts and scratches with waterproof bandages.

As appropriate, ramp personnel should wear safety footwear, gloves, knee pads, high-visibility clothing, toilet-servicing and winter weather gear, sun hats, sunglasses, earmuffs and sunscreen. High-visibility clothing should be mandatory on the ramp. Clothing should fit snugly to prevent becoming snagged.

3.1.3 CARGO HANDLING

AIRPORT GROUND HANDLING

With air traffic predicted to grow at an average rate of 8% per year, and in some areas even up to 20%, the amount of air cargo flown around will also increase tremendously. As a result, companies involved with air cargo face growing challenges on how to organize this and how to get cargo from and to their customers safely and on time. Planning a complex cargo handling system is more than just adding separate items. Complete systems must be designed to make sure that pallets and containers are conveyed to the right place at the right time.

Definition of Air Cargo

The goods transported by air are known as air cargo or air freight. All articles, goods, materials, merchandise, or wares carried onboard an aircraft, ship, train, or truck, and for which an air waybill, or bill of lading, or other receipt is issued by the carrier. It includes livestock, but usually does not include bunkers (fuel for powering the vessel or vehicle), accompanying baggage, vessel or vehicle's equipment and spare parts, mail, and stores. Personnel carried onboard are classified as crew or passengers.

Special Cargoes

Special cargoes are goods that, due to their nature, weight, dimensions and or value, require special handling. These goods are governed by several regulations that must be followed when handling this freight. Although the general ready-for-carriage requirements are also applicable to consignments containing this type of cargo, there are additional requirements for preparing special cargoes for carriage you need to be aware of. The following are the types of special cargoes:

- Dangerous goods
- Live animals
- Valuable cargo
- Perishable cargo
- Wet cargo
- Human remains
- Personal effects (unaccompanied baggage)
- Strongly smelling goods
- Outsized or heavy cargo (machinery, vehicles, etc.)
- Arms, ammunition, war material
- Other cargo needing special handling

HANDLING OF DANGEROUS AND HAZARDOUS CARGO MATERIALS

Dangerous goods are regularly and routinely carried as cargo on passenger and all cargo aircraft; they present little hazard in transport provided they are correctly identified, packaged and

AIRPORT GROUND HANDLING

handled. In addition, passengers and crew are permitted to have small quantities of some dangerous goods, subject to certain restrictions.

Definition of dangerous goods

Dangerous goods are articles or substances, which are capable of posing a significant risk to health, safety or to property when transported by air. It is necessary to have a definition of dangerous goods in order to identify what is meant by the term. They are defined as articles or substances which are capable of posing a significant risk to health, safety or to property when transported by air and which are classified according to the criteria in the Technical Instructions.

Dangerous goods are carried on aircraft:

- By passengers and crew
- As part of the airworthiness or operating equipment
- In cargo

Passengers and crew can have certain items of dangerous goods in their baggage. These include alcoholic beverages, medicinal and toilet articles (including aerosols-hair spray, deodorant, shaving foam, etc.), safety matches or a lighter and gas powered hair curlers. Some of these items are subject to restrictions on quantity and where they can be packed (e.g. in carry-on baggage, checked baggage, etc.).

Items of airworthiness or operating equipment which are also dangerous goods (e.g. fire extinguishers, life-rafts, batteries, aerosols, etc.) are excluded from the requirements; except for replacements which must comply, in most respects, with the normal provisions for transport as dangerous goods. Dangerous goods are carried on aircraft in cargo. They are subject to requirements concerning:

- Classification
- Packing
- Marking and labeling of the package
- Documentation
- Acceptance for air transport
- Handling and stowage

Classes of Dangerous Goods

In order that the potential hazards in transport are identified, dangerous goods are divided into classes. These are:

Class 1: Explosives

Class 2: Gases

AIRPORT GROUND HANDLING

Class 3: Flammable liquids

Class 4: Flammable solids and reactive substances

Class 5: Oxidizers and organic peroxides

Class 6: Toxic and infectious substances

Class 7: Radioactive material

Class 8: Corrosive articles and substances

Class 9: Miscellaneous articles and substances



Fig 4:- Classes of Dangerous Goods

Some of the Classes are sub-divided into Divisions, because of the wide scope of the class. For example, Class 2 has three Divisions:

Division 2.1: Flammable gas

Division 2.2: Non-flammable, non-toxic gas

AIRPORT GROUND HANDLING

Division 2.3: Toxic gas



There are many items of dangerous goods that have subsidiary risks- that is there is more than one hazard associated with them. A primary class hazard is allocated with the significant additional hazards identified as subsidiary risks. For example, Benzyl bromide (UN 1737) is both a toxic liquid and a corrosive (i.e. Division 6.1, with subsidiary risk 8). Although dangerous goods with more than one hazard are allocated to a primary hazard with subsidiary risks, it should not be assumed that if a package is damaged or leaking the subsidiary risk is of less importance.

Some classes/divisions also have Packing Groups, which relate to the degree of danger within a class/division:

- Packing Group I: Great danger
- Packing Group II: Medium danger
- Packing Group III: Minor danger

List of Dangerous Goods

Dangerous goods in air transport are identified both by a proper shipping name and a UN or ID number. The Technical Instructions and the Dangerous Goods Regulations contain the same list of dangerous goods; this shows all the proper shipping names with their UN/ID numbers, primary class/division, subsidiary risk(s) (when appropriate), label(s) to be used on the package, packing group (when assigned), whether the item is permitted on passenger aircraft or is restricted to cargo only aircraft or is forbidden for transport, and the methods of packing (Packing Instructions) with quantity limitations for transport on passenger or cargo aircraft.

Packaging of Dangerous Goods

With few exceptions, dangerous goods must be packed for transport, according to specific Packing Instruction. Packagings must be of good quality, to be compatible with their contents and be able to withstand the normal conditions of air transport. They must meet general packing requirements and, in addition, most of them are required to meet prescribed specifications and performance tests for the design type of the packaging. These packagings bear a packaging specification marking.

AIRPORT GROUND HANDLING

Packagings may be combination packaging (e.g. a 'bottle in a box') or single packaging (e.g. a drum). Generally, on passenger aircraft only combination packages are permitted, but some single packagings are also allowed for certain low hazard (i.e. Packing Group III) dangerous goods.

Many dangerous goods in small quantities can be contained safely good quality combination packagings, which meet construction requirements and are capable of withstanding drop and stacking tests but are not subject to a full testing regime. Such dangerous goods are said to be in limited quantities.



Fig 5:- Packing

Markings on Packages

Packages are always marked to indicate what they contain; there may be other markings giving further information about the contents. The standard markings found on all packages of dangerous goods are:

- Proper shipping name
- UN/ID number

Other markings that may be found in specialised circumstances include the net quantity and gross mass of the package for explosives, the type of package and identification mark and trefoil symbol (when required) for radioactive materials, and the net mass for dry ice.

Labeling of packages

The packages are labelled to indicate the hazard(s) the contents present in transport. In addition, other labels may specify handling conditions. Hazard labels convey information by colour and symbol; they are diamond shaped, with minimum dimensions of 100 mm X 100 mm.

Packages may have more than one hazard label when:

AIRPORT GROUND HANDLING

- There are different dangerous goods of different primary hazards in one package; or
- The one item of dangerous goods has a primary hazard and one or more subsidiary risks.

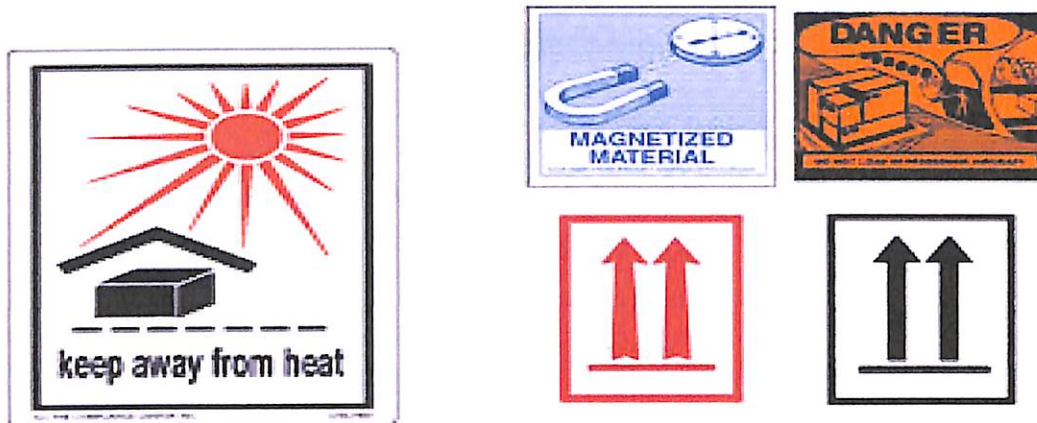


Fig 6:- Labels of DGR

The primary hazard is identified by the label bearing the class or division number in the bottom corner. Subsidiary risk labels do not show any class or division number. Handling labels are affixed to a package when:

- It contains a liquid and must be kept upright (orientation label)
- It is for transport only on a cargo aircraft (cargo aircraft only label)
- It is magnetized material (magnetized material label).

Handling labels vary in color, symbol and size.



Fig 7:- Handling Labels

Documentation Needed in Dangerous Goods

AIRPORT GROUND HANDLING

With few exceptions, dangerous goods must be accompanied by a Dangerous Goods Transport Document (Shipper's Declaration for Dangerous Goods).

The document is prepared by the shipper; it gives the operator details about the dangerous goods and declares they comply with all applicable requirements. The information on the Shipper's Declaration includes:

- Whether for passenger or cargo aircraft only
- Proper shipping name
- Class/division
- UN/ID number
- Packing group
- Subsidiary risks (if applicable)
- Net quantity, type of packaging, number of packages
- For radioactive materials: name or symbol of radionuclide, activity and category of the package.

A few dangerous goods do not require a Shipper's Declaration for Dangerous Goods; these include dry ice when used for perishables which are not themselves dangerous goods.

SHIPPER'S DECLARATION FOR DANGEROUS GOODS																	
Shipper				Air Waybill No.													
Consignee				Page of Pages													
				Shipper's Reference Number <i>(optional)</i>													
<i>Two completed and signed copies of this Declaration must be handed to the operator.</i>				WARNING													
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: left; padding: 2px;">TRANSPORT DETAILS</th> </tr> <tr> <td style="padding: 2px;">This shipment is within the limitations prescribed for: <i>(delete non-applicable)</i></td> <td style="padding: 2px;">Airport of Departure</td> </tr> <tr> <td style="padding: 2px;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px; text-align: center;">PASSENGER AND CARGO AIRCRAFT</td> <td style="padding: 2px; text-align: center;">CARGO AIRCRAFT ONLY</td> </tr> </table> </td> <td style="padding: 2px;"></td> </tr> <tr> <td colspan="2" style="padding: 2px;">Airport of Destination:</td> </tr> </table>				TRANSPORT DETAILS		This shipment is within the limitations prescribed for: <i>(delete non-applicable)</i>	Airport of Departure	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px; text-align: center;">PASSENGER AND CARGO AIRCRAFT</td> <td style="padding: 2px; text-align: center;">CARGO AIRCRAFT ONLY</td> </tr> </table>	PASSENGER AND CARGO AIRCRAFT	CARGO AIRCRAFT ONLY		Airport of Destination:		Failure to comply in all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties. This Declaration must not, in any circumstances, be completed and/or signed by a consolidator, a forwarder or an IATA cargo agent.			
TRANSPORT DETAILS																	
This shipment is within the limitations prescribed for: <i>(delete non-applicable)</i>	Airport of Departure																
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px; text-align: center;">PASSENGER AND CARGO AIRCRAFT</td> <td style="padding: 2px; text-align: center;">CARGO AIRCRAFT ONLY</td> </tr> </table>	PASSENGER AND CARGO AIRCRAFT	CARGO AIRCRAFT ONLY															
PASSENGER AND CARGO AIRCRAFT	CARGO AIRCRAFT ONLY																
Airport of Destination:																	
				Shipment type: <i>(delete non-applicable)</i>													
				<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px; text-align: center;">NON-RADIOACTIVE</td> <td style="padding: 2px; text-align: center;">RADIOACTIVE</td> </tr> </table>				NON-RADIOACTIVE	RADIOACTIVE								
NON-RADIOACTIVE	RADIOACTIVE																

NATURE AND QUANTITY OF DANGEROUS GOODS							
Dangerous Goods Identification							
Proper Shipping Name	Class or Division	UN or ID No.	Pack- ing group	Subsidi- ary Risk	Quantity and type of packing	Packing Inst.	Authorization

Fig 8:- Shipper's Declaration

Acceptance for transport

Dangerous goods for air transport must be subjected to an inspection on accepted designed to check, as far as possible, that the packages and documents meet all applicable requirements. An acceptance checklist must be used and the findings of the inspection should be recorded.

AIRPORT GROUND HANDLING

Loading and Stowage

Dangerous goods must not be loaded in an aircraft cabin occupied by passengers. Those packages bearing 'Cargo Aircraft Only' labels must not be loaded on an aircraft carrying passengers. Some packages of radioactive materials need to be stowed on an aircraft so there is adequate separation between them and the passengers and crew. These packages have a Transport Index (TI) quoted on the labels; this is a figure representing the radiation level measured at 1 meter from the package. The TI is used in calculating how far away from passengers and crew the packages must be stowed. Magnetized materials must not be stowed where it can have a significant effect on the direct-reading magnetic compasses or on the master compass detector units. Dangerous goods in some Classes/Division are known to react if they come into contact with others in a different Class/Division.

In order to ensure there is no reaction in the event of leakage, such incompatible goods must be segregated on an aircraft. With some exceptions, explosives which do not have the same compatibility group must not be stowed together; although those in Division 1.4S may be stowed with all other explosives, but not necessarily with all other Classes/Divisions. Most packages bearing 'cargo Aircraft Only' labels must be accessible during flight. Packages containing liquid dangerous goods and bearing package orientation arrows must be loaded and stowed in the correct orientation. Packages must be secured in flight to prevent movement which could cause them to be damaged. For packages of radioactive materials, the securement must ensure they do not move to the extent that the separation distance to passengers and crew becomes less.

Damaged Packages

An inspection of packages must be made before loading to ensure damaged packages are not found on an aircraft. If a leaking package is found on an aircraft, specialist assistance should be sought to ensure its safe removal.

LIVE ANIMALS

All persons who ship, accept or load animals should be familiar with the specific handling requirements for the individual species to ensure that animals always travel in safe, healthy and human conditions. To ensure this welfare of live animals at all stages of transportation, IATA publishes the IATA Live Animals Regulations (LAR), which set out the minimum standards required for animal carriage. This publication and the application of the rules contained herein regulate the acceptance of live animal shipments. It is therefore necessary to become thoroughly familiar with this publication.

Container requirements

AIRPORT GROUND HANDLING

Animals must be carried in specially designed animal containers. When building such containers, ventilation, safety, food, water and other requirements must have been taken into consideration. Information on stocking densities and container requirements is also included.

Handling procedures

IATA Live Animals Acceptance Check-list, enables carriers to verify whether the regulations have been complied with and, most importantly, ensures that animals do not get blocked at transfer points and that their welfare is taken care of. It also gives general and particular loading requirements, handling, feeding and watering requirements, and health and hygiene procedures. It concludes with some general recommendations from the Office International des Epizooties (OIE).

Documentation

The shipper or his authorized agent must complete a Shipper's Certification for Live Animals for each shipment. For the purpose of the LAR, an authorized agent is a person expressly authorized in writing by the shipper to execute the Shipper's Certification for Live Animals, who must not include IATA Cargo Agents, consolidators, forwarders and surface carriers.

When animals are carried as baggage, the requirement for the shipper's certification for Live Animals is optional and at the carrier's discretion.

Similar to the Shipper's Declaration for Dangerous Goods, this document must be completed in English and two original copies must be given to the airline. One signed copy will be kept by the carrier that accepts the shipment from the shipper; the other copy will be sent with the shipment (stapled with other documents, such as the air waybill) to its final destination (the consignee).

The document must have the same wording as the documents reproduced on the next two pages (front and back).

Air waybill (AWB)

Live animals require a separate waybill from other commodities. In the "Nature and Quantity of Goods" box in the air waybill, the class of the animal must be written in English and, where possible, must correspond to those classes specified in the LAR. The quantity of animals in the consignment must also be stated.

Special Load Notification to Captain

The captain must be advised of all special cargo on board the aircraft. To comply with Live Animals regulations, the captain must be aware of the specie, location and quantity of all live

AIRPORT GROUND HANDLING

cargo on board the aircraft. This is done through the use of the Special Load Notification to Captain (NOTOC).

Marking and Labeling

The shipper is responsible for all necessary marking and labeling on live animal containers. Each container must be of such size that there is adequate space to affix all these required markings and labels.

Any labeling, especially on small containers, must not occlude or block ventilation openings. All labels used on live animal containers must conform in shape, color, format, symbol and text to the specimen designs reproduced in Live Animal Regulation. Any labeling, especially on small containers, must not occlude or block ventilation openings.

‘Live Animals’ Label

It is mandatory to attach at least one IATA “Live Animals” as illustrated here or one “Laboratory Animals” label or tag, properly completed, to each live animal container, unless otherwise stated in the individual container requirements. Animal containers may have the appropriate labeling or markings imprinted.



Fig 9:- Live Animals

“This Way Up” or “Package Orientation” Label

In addition to the “Live Animals” label, it is mandatory that the “This Way Up” labels or markings be placed on at least two opposite sides. Labels may be imprinted on the container.

Minimum dimensions: 74 X105 mm (3x4 in).

AIRPORT GROUND HANDLING

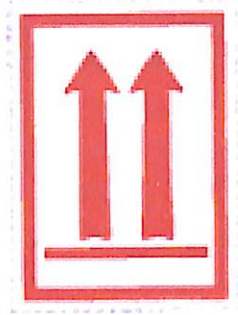


Fig 10: "This Way Up"

"Laboratory Animals" Label

Consignments of Specific Pathogen Free (SPF) axenic (germ free) or genotoxic (defined flora) animals for laboratory use shall have the special laboratory animals label attached instead of the green "Live Animals" label. Labels may be printed on the container.

Minimum dimensions: 10 x 15 cm (4 x 6 in).



Fig 11: Laboratory Animals

VALUABLE CARGO

Valuable cargo means a consignment which contains one or more of the following articles:

- a) Any articles having a declared value of carriage of USD 1000.00 (or equivalent) or more, per gross kilogram; except in the United Kingdom GBP 450.00, or more per gross kilogram;
- b) Gold bullion (including refined and unrefined gold in ingot form), dore bullion, gold specie and gold in the form of grain, sheet, foil, powder, sponge, wire, rod, tube, circles,

AIRPORT GROUND HANDLING

- moldings and castings, platinum, platinum metals (Palladium, iridium, ruthenium, osmium and rhodium) and platinum alloys in the form of grain, sponge, bar, ingot, sheet, rod , wire, gauze, tube and strip (but excluding those radioactive isotopes of the above metals and alloys which are subject to restricted articles labeling requirements;
- c) Legal banknotes, traveler's cheques, securities, shares, share coupons and stamps (excluding mint stamps from United Kingdom) and ready for use bank cards and/or credit cards;
 - d) Diamonds, (including diamonds for industrial use), rubies, emeralds, sapphires, opals and real pearls (included cultured pearls);
 - e) Jewellery consisting of diamonds, emeralds, sapphires, opals and real pearls (included cultured pearls);
 - f) Jewellery and watches made of silver and/or gold and /or platinum
 - g) Articles made of gold and/or platinum, other than gold and/or platinum plated.

Documentation

The shipper is responsible for providing the applicable certificates or permits required by the national authorities of the country of import.

The documents attached to the air waybill together with any other applicable handling information should be marked in the 'Handling Information' box of the air waybill. Always make sure to securely attach these documents to the air waybill.

If an import license and/or a letter of credit are required (in case of a commercial shipment), their details must be known in advance in order to ensure that transportation is performed in accordance with their contents.

Labeling and Marking

Apart from the air waybill identification label, no other special label is cargo. Valuable consignments are usually not marked as such, in order not to disclose the contents to potential thieves.

Airport Facilities and Storage

To store valuable cargo securely in the cargo terminal, a separate, preferably video monitored area, with a register of the in-and outgoing consignments, is used. This flow of in and outgoing consignments is recorded with the name and the signature of the person removing or depositing the cargo.

Ensure that facilities such as a safe or a cage for valuables are available at the airports of departure, transshipment and arrival. Depending on the size and packing of the consignment, it

AIRPORT GROUND HANDLING

may be necessary to see whether suitable handling equipment is available at the airports involved in transportation.

Air waybill (AWB)

when issuing an air waybill for valuable cargo consignments, particular attention must be given to the following points:

- The air waybill must show the exact name and address of both shipper and consignee;
- The airport of departure must be shown in full in the respective box of the air waybill.

Some airlines required a declared value for carriage for valuable cargo. The shipper should always be advised to indicate a declare value for carriage.

Note that consignments consisting of valuable cargo should not be included in mixed consignments.

PERISHABLE CARGO

Perishable cargo includes all commodities that by their nature are liable to deteriorate or perish because of:

- Changes in climate, temperature or altitude;
- Ordinary exposure; and
- Length of time in transit (including delays)

Newspapers are also regarded as perishable cargo for this reason.

Articles that are considered perishable cargo include:

- Fresh flowers
- Fresh meat
- Live plants
- Fresh seafood
- Fresh fruits
- Hatching eggs
- Fresh vegetables
- Vaccines and medicinal supplies

Documentation

The shipper is responsible for providing the applicable certificates or permits required by the national authorities of the country of import. When such documents are forwarded with the

AIRPORT GROUND HANDLING

consignment, they should be securely attached to the air waybill. These documents and any other handling information should be indicated in the "Handling Information" box of the air waybill.

If an import license and/or a letter of credit is required, their details must be known in advance in order to ensure that transportation is performed in accordance with their contents.

Labeling

The "Perishables" label is attached to each package containing perishable cargo. Where space permits, it should be attached next to the consignee's address. Also, "This Way Up" labels must be attached to the package, if applicable.

The minimum dimensions of the "Perishable" label are not less than 74mm in width by 105mm in height.

The "Time and Temperature Sensitive" label is a shipment label specific to the healthcare industry that must be affixed to shipments booked as temperature controlled cargo. The lower half of the label must indicate the external transportation temperature range of the shipment, which must only be shown in Celsius.

The standard size of this label is 10 cm x 10 cm (4x4 in). Labels having dimensions not smaller than 5 cm x 5cm (2x2 in) may be used when the packages are of such dimensions that they can only bear smaller labels.

Air waybill (AWB)

It is essential that air waybills for perishable shipments are complete and accurate in all respects. It is very important that both the shipper's and the consignee's full name and address are shown in full with no abbreviations. Furthermore it is recommended that the phone number of both shipper and consignee be shown in case of any regularities.

In the "Handling Information" box, only handling information that is required from the carrying airline is to be inserted. Also any additional documents that are attached to the air waybill, like health certificates or other official permits, should be listed in this box.

The "Nature and Quantity of Goods" box should show an accurate description such as "Fish Frozen".

Keep in mind that if dry ice (also called: carbon dioxide, solid) is used as a refrigerant, the dangerous goods regulations (DGR) apply and that the proper air waybill entries as required by the DGR must be inserted.

WET CARGO

AIRPORT GROUND HANDLING

Shipments containing liquids or shipments that by their nature may produce liquids, but which are not subject to the IATA Dangerous Goods Regulations, are designated as wet cargo.

The following types of cargo are considered to be wet cargo:

- Shipment of liquids in watertight containers;
- Shipments of wet materials not packed in watertight containers, e.g. fish or selfish;
- Shipment packed in wet ice, such as fresh or frozen meat; and
- Goods that may produce liquids, e.g. Live animals.

Wet cargo is vulnerable to spillage or leakage that may corrode or cause damage to the aircraft or to other cargo. To prevent spillage or leakage, special requirements for shipments containing wet cargo must be applied.

The majority of commodities regarded as wet cargo are also perishable cargo. If this is the same, then the requirements for perishable cargo must also be met.

Documentation

The shipper is responsible for providing the applicable certificates or permits required by the national authorities of the country of import. When such documents are forwarded with the consignment, they shall be securely attached to the air waybill. Referral to these documents and any other handling information shall be marked in the "Handling Information" box of the air waybill.

Labeling

The IATA "Perishable" label and also, where applicable, the "This Way Up" label should be attached to each package.

HUMAN REMAINS

When shipping human remains, a very important factor that you should take into account is the emotional aspect involved in the shipping process. That is what makes this type of cargo very delicate and of an urgent nature.

Usually human remains are forwarded from/to an approved undertaker and they are rarely part of an agent's business. However, if an agent does handle any shipments of human remains, special care and attention must be taken so as to treat the deceased's family with the utmost tact and courtesy.

Human remains are transported as either cremated (ashes) or as not cremated (corpses in a coffin) remains.

AIRPORT GROUND HANDLING

Cremated remains must be shipped in funeral urns that are efficiently protected against breakage by a cushioning packaging. They will be accepted in any aircraft without advance arrangements.

Not cremated remains must be contained in a soldered inner coffin of lead or zinc, which must be packed in a wooden coffin. This may again be packed, to be protected from damage, in a case and/or may be covered up by canvas or a tarpaulin so that the nature of the contents is not apparent. Strong handles must be bolted to the outer packing.

Human remains cannot be consolidated with other goods.

Documentation

The shipper is responsible for providing the applicable certificates or permits required by the national authorities of the country of export, import and/or transit/transfer, if applicable. When such documents are forwarded with the consignment, they should be securely attached to the air waybill. These documents together with any other handling information shall be marked in the "Handling Information" box of the air waybill.

Labeling

Apart from the air waybill identification label, no other special labeling is required.

Air waybill (AWB)

Be sure to have the full and correct name and address of shipper and consignee as well as the full name of the deceased.

Human remains should not be included in mixed consignments and require a separate waybill from other cargo.

PERSONAL BAGGAGE (UNACCOMPANIED BAGGAGE)

At the time of departure, a passenger's checked-in baggage is normally carried on the aircraft free of charge if the weight of the baggage is within the free baggage allowance.

If the total weight of the checked-in baggage exceeds the free baggage allowance, the passenger either can pay for the excess weight of the baggage or he may choose to send the baggage by air cargo. This is unaccompanied baggage.

Baggage carried in excess of the free baggage allowance and charged at the excess baggage rate will be carried on the same flight as the passenger together with his other checked-in baggage. Baggage forwarded by air cargo will not necessarily be on the same flight as the passenger.

Documentation

AIRPORT GROUND HANDLING

It is always recommended to ask for a list of the contents of the baggage (i.e. packing list), with the approximate value indicated next to each item on the list. This is mandatory if the shipment is to be insured. In some countries, the list of contents must be presented to the Customs authorities for customs clearance.

Labeling and Marking

Apart from the air waybill identification label, no other special labeling is required.

Ensure that the shipper's and/or consignee's name and address are clearly shown on unaccompanied baggage.

Air waybill

Wherever possible, the flight number and the date of the passenger's arrival at the airport of destination should be entered in the "Handling Information" box of the air waybill. When carried at reduced rates, the passenger's ticket number must also be entered in this box.

If the keys of the baggage are attached to the air waybill, this also must be indicated in the "Handling Information" box of the air waybill.

Advance Arrangements

If the shipper requests that the unaccompanied baggage is shipped on the same flight as him/her or that the baggage is ready for customs clearance at destination before the arrival of him/her, advance arrangements must be made.

STRONGLY SMELLING GOODS

Strongly smelling goods can only be accepted when packed in watertight containers sealed in such a way that no odor of any kind can escape from the package.

Insufficient packaging of strongly smelling goods (such as sulphides, essential oils and some tropical fruits) can have annoying or even expensive consequences, as the smell may not only annoy passengers on board the aircraft, but it may also penetrate and 'destroy' other cargo.

For example, a consignment of garlic concentrate in barrels is shipped from the Middle East to Europe. Because of a packaging error, one of the containers leaks into the lower deck cargo hold of passenger aircraft, making the aircraft unusable for several days until the pungent (sharp) odor has been eliminated.

Accepted for Carriage

It is must to check that the outside of the package that contains strongly smelling goods does not show any evidence of spillage or leakage of the contents.

AIRPORT GROUND HANDLING

OUTSIZED OR HEAVY CARGO

Ordinary cargo consisting out of various sizes and weights can be accommodated depending on the type of aircraft that is operated.

As a general rule, “outsized cargo” is an item that must be loaded on more than one aircraft pallet or which, due to its size or weight, requires special handling/equipment for loading and unloading.

“Heavy cargo”, on the other hand, is generally an item that exceeds 150 kg, although this may vary (higher or lower) depending on the carrier. The maximum permissible weight for each heavy item depends on the aircraft type, airport facilities and scheduled ground time of the aircraft.

Advanced Arrangements

For each oversized or heavy piece of cargo, the weight and the dimensions must be available in advance so that all necessary arrangements can be made.

You should make advance arrangements for the transportation of oversized and heavy cargo be made with the carrier concerned. Some carriers will not accept these types of consignments unless advance arrangements have been made and confirmed.

ARMS, AMMUNITION, WAR MATERIAL

Special attention must be given to the restrictions in acceptance of arms, ammunition, and war materials. In addition to the government regulations of the countries of export, transit and import, the regulations of the countries over which the aircraft is flying must be checked.

Non-compliance to the rules may:

- Jeopardize Safety
- Put An Airline’s Traffic Rights At Risk; and/or
- Have Political Consequences.

The acceptance of ammunition and/or explosives for carriage by air is subject to the requirements outlined in the latest edition of the IATA Dangerous Goods Regulations.

When organizing transportation of such materials, remember that restrictions for ground transportation might also exist. Therefore careful coordination is necessary to ensure that all necessary permits have been made obtained prior to transportation.

OTHER CARGO NEEDING SPECIAL HANDLING

AIRPORT GROUND HANDLING

Several other types of cargo can be identified that require some form of special handling, often because of priority reasons.

The main types are listed below with notes on their peculiarities.

Drugs to Save Life

Drugs to save lives have the highest priority in traffic! The movement of this kind of goods is often arranged at very short notice.

Air Mail, Newspapers

These commodities represent a regular traffic, which has an obvious degree of urgency.

Vulnerable Cargo

Some consignments are considered to be particularly vulnerable to damage or pilferage and are allocated to an area within the terminal that provides an additional degree of protection.

Easily pilfered items such as cigarette lighters, watches and high duty items such as tobacco or spirits are often treated as vulnerable cargo.

3.1.4 PASSENGER HANDLING

The passengers carried in the company aircraft are, first, fellow associates and, second, guests or clients of the company. As such, they deserve courtesy and consideration while they are in and around company aircraft. More important, they often are not familiar with aircraft operations, and their safety. Passenger handling includes services inside the airport terminal such as:

- Providing check-in counter services for the passengers departing on the customer airlines.
- Providing Gate arrival and departure services. The agents are required to meet a flight on arrival as well as provide departure services including boarding passengers and closing the flight.
- Staffing the transfer counters, customer service counters and airline lounges.

In addition to technical training on passengers' check-in codes and conducts as well as check-in system operation, dangerous articles handling, safety and security standards. It gives paramount importance to its personnel code of conducts and ethics especially when handling passengers. Maintenance personnel section is often the first contact that passengers have with corporate aviation. Therefore, maintenance personnel carry a special burden because they must ensure that the passengers are cared for properly. Although passenger service

AIRPORT GROUND HANDLING

representatives and the flight crew normally are responsible for passenger handling, maintenance personnel are an integral part of their care.

PASSENGER ARRIVAL AND DEPARTURE PROCEDURES

(INTERNATIONAL AND DOMESTIC)

The procedure for arrival and departure can be summarized as follows:

- Before entering the Airport Entry terminal passenger has to show his/her tickets (the printout of the e-ticket) to the security in order to enter the airport.
- Inside the airport passengers will find various airlines boarding pass issuance counter. At the counter passenger has to produce the e-ticket printout and his photo ID.
- If passenger has any check-in luggage, passenger has to place it on the conveyor next to the boarding pass issuance counter and the weight, etc. will be checked and the baggage will be passed for check-in. The common weight limit for the check-in baggage will be around 20kg. Different airlines have different weight limits. The limits may vary between airlines.
- Passenger can also mention their seat preference (Window, Center or Aisle) and would be allotted as per availability.
- In case where a passenger has a cabin baggage a tag will be fixed to the same. Without the tag the bag will not be allowed in the cabin. The cabin bag allowed would be around 6 to 7 kg. But the weight will not be checked.
- Subsequent to this passenger will have to go to the check-in terminal (specified on boarding pass) and go through security. Passengers should avoid carrying any foods/liquids with them.
- after the security scan of passenger & the cabin baggage, passenger has to wait near the boarding counter for the check-in.
- the airlines personal would announce the boarding and passenger can then go to the terminal for boarding. Once through passenger might either have to travel to the plane by a bus or sometimes the plane will be connected to the boarding terminal. After entering the plane, the cabin crews would guide passengers through the flying procedures.

AIRPORT GROUND HANDLING

PASSENGER MANAGEMENT

Passenger flows at airports display two particular features which lead to an inevitable build-up of queues: variability in the time between successive passengers arriving for service at a particular process (such as check-in, security screening, or the inwards or outwards control points); and the fact that passengers often arrive in groups rather than individually. Processing times at each stage are also subject to variability. This variability can lead to delays (i.e. queues) even when average passenger flow rates are lower than average processing rates. A particular characteristic of airport queues is that they can develop relatively quickly, over a period of as little as a few minutes, and take a much longer time to dissipate. Since queues are unavoidable, effective management of waiting passengers is important to provide an acceptable passenger experience. Issues such as infrastructure availability and configuration affect not only the amount of queuing passengers are subjected to but also the quality of that experience. Passenger management is especially important when there are infrastructure limitations to overcome. Effective passenger management can also have flow-on efficiencies in terms of Customer processes. By removing delays caused by passengers being unprepared for forthcoming procedures, the whole process can operate more smoothly and quickly.

PASSENGER FLOW IN THE AIRPORT

“Passenger Flows” is a record for all employees from check-in, security, manning of passport controlling, baggage handling to customs. It gives an overview of airport-areas which are used by passengers and which distances the passengers have to cover within the airport. It distinguishes between departing and arriving local passengers, as well as arriving and departing transfer passengers. The below mentioned figure 3.2 of passenger flow in airport will help you to understand the processing of passengers from arrival to departure.

There is an overview of the various areas of the airport, the number of passengers seen in each area, and the routes the passengers have taken between areas.

TRANSIT OF PASSENGERS

Transit passengers connecting from a domestic flight to an international flight must complete baggage check-in 30 minutes prior to the departure time at the airport baggage counter. Transit of passengers is performed only after the clearance.

Different procedures may apply according to:

- Transit via passenger boarding bridge
- Transit via buses and passenger stairs

The flow of the passenger can be controlled by the responsible personnel:

AIRPORT GROUND HANDLING

- The ramp agent
- The flight crew
- The passenger service agent

Embarkation

Transit should start 30 min. before departure time but not without first having obtained boarding clearance from flight-deck and cabin crew. Specialized passengers as disabled passengers, unaccompanied minors and families with infants and WIPs, VIPs, physically challenged should be pre-boarded, if possible.

If the aircraft is parked in such a way that the passengers have to pass the wing area in order to reach the entrance door care must be taken to direct passengers around the wing.

It must further be ensured that the passengers:

- Board the right aircraft
- Do not mix with arriving passengers
- Do not leave items in security areas
- Boards the aircraft and do not abscond and
- No unauthorized persons board the aircraft .

The handling agent shall check that the number of checked-in passengers correspond to the number of passengers on board the aircraft.

The cabin crew shall check that the number of passengers onboard correspond to the passenger manifest.

Disembarkation

Before initiating the passenger disembarkation it is required that:

- the engines are shut-down
- the stairs or loading bridge are properly placed
- Passenger should be advised to remain stay in the airplanes until the engines have been shut down.

AIRPORT GROUND HANDLING

During the passengers disembarkation the cabin attendants control the assigned doors

□ In case no loading bridges available, the passengers shall be either taken to the terminal by vehicle or escorted, ensuring that they remain in a group, refrain from smoking and be kept clear of dangerous areas while on the aero plane movement area.

Transfer/Transit Passengers: (International Transfer Passengers with a Domestic Connection Flight)

Passengers arriving from abroad are subject to visa and passport controls to enter the country at the Arrivals Floor before they proceed for their domestic connection flight. The passenger then proceeds to the Domestic Terminal and finalizes his/her transfer procedure in the relevant lounge by presenting his/her boarding card issued in the country of origin. If a boarding card is not issued at the origin airport then the passenger needs to go through check-in at the Domestic Terminal. If the journey continues on a different airline, please ensure that you have the adequate information on whether or not you need to claim your luggage and check your ticket.

Some airlines transfer the luggage automatically onto the connection flight. Therefore, the passenger does not have to claim their luggage in between flights. Please ensure that luggage is labeled until the final destination to ensure that it is not left in the terminal.

Transit Passengers: (Domestic Transfer Passengers with an International Connection Flight)

A passenger arriving on a domestic flight to continue flying abroad proceed to the International Terminal and finalize his/her transit procedures by going through passport control with the boarding card issued in the origin country and going to the relevant lounge. If a boarding card is not issued then one should be obtained at the International check-in counters. Please ensure that the luggage is labeled till the final destination to ensure that it is not left in the terminal.

you have the adequate information on whether or not you need to claim your luggage and check your ticket. Some airlines transfer the luggage automatically onto the connection flight. Therefore, the passenger does not have to claim their luggage in between flights. Please ensure that luggage is labeled until the final destination to ensure that it is not left in the terminal.

Transfer Passengers: (Domestic Transfer Passengers with a Domestic Connection Flight)

A passenger arrives on a domestic flight and has a domestic connection flight, she/he proceeds to the Domestic Terminal Isolated Area and then into the relevant lounge provided that he/she has a boarding card for the entire journey and that the baggage is checked in until the final destination. If the baggage is not checked in until the final destination and / or he/she has not got a boarding card then he/she claims the baggage and goes through check-in again at the relevant counter within the Departures Lounge.

AIRPORT GROUND HANDLING

Transit Passengers: (Passengers Continuing Their Journey on the Same Flight)

The grounding time of the relevant flight should be excessively long; both international and domestic transit passengers are issued a transit card and taken to the T3iislounge. They are taken back on board the same aircraft once refueling and/or maintenance procedures are complete. Should the grounding time not be sufficient the passengers remain on board. Refueling is done while passengers wait on board. 9o^gage remains in the aircraft during transit flights.

Problems with Passengers:

The plane can only take off if the owner of the checked-in baggage is on board, if not, the agent has to find and remove the checked-in baggage. This takes a lot of time and –just flight delay which can lead to further problems and delays costing the airline a significant amount of money and efforts.

There are several possibilities why a passenger is late at the boarding gate: the passenger can get lost, cannot find the way to the correct gate, it is stocked at the long queue of border control or security check, arrived simply too late at the airport, it was lost within the shops or any of the airport facilities, forgot the time and the flight, cannot understand or hear the loud speaker in case of gate change, or is simply to absent-minded, the signs of the airport are not clear enough, or even some medical problem or emergency occurred etc. Whatever the real reason, it costs money for the airline.

3.1.5 BAGGAGE HANDLING SYSTEM

Baggage is any item a passenger carries on his journey for his comfort or convenience. Baggage admitted for carriage as passenger baggage containing such articles, effects and other property of a passenger as are necessary for wear, use, comfort and convenience in connection with his or her trip. The purpose of the baggage handling process is to accept the baggage from the passenger, transport it from station A to B. and returns it to the passenger in the exact same condition as when it was checked in.

Whether the baggage handling is proper or not can be checked by observing if the bags are moving at the same pace as the traveler, or not. At the situations where the luggage is traveling

AIRPORT GROUND HANDLING

slower than the owner, then would irritate passengers because I they need to wait too long for their bags. The situation can get worse if the luggage misses the connecting flight on time.

In the contrary scenario, if the bags move too fast, then too passengers would feeling irritated. There is a probability that the luggage makes it to the connecting flight but the passenger misses it. Thus, there must be adequate balance so as to prevent this. The baggage-handling system essentially has three main objectives:

1. Luggage needs to be transferred from check-in area to departure gate.
2. Bags are required to be shifted from one gate to another.
3. Transferring the bags from the arrival gate to the baggage-claim counter.

In the remaining part of time when passengers are at the airport, the luggage remain with them. Though, the point that every airport has its own needs cannot be neglected. The time taken by the passenger to move from check-in area to the gate can differ various airports. At few airports, it is just a walk where others, the passengers may have to take a train. The luggage of the passenger travels according to the time take by the passenger to reach the suitable terminal. In general, baggage handling system incorporates some remarkable technologies for the shifting of bags. There is requirement of any manual intervention and the luggage is shifted from the check-in counter to the departure gate in an automated way. The following steps are initiated:

- Initially, the destination coded vehicles or the automated carts loads and unloads bags. This is without any manual intervention and it continues without stopping.
- Next is the job for the automated scanners that scans the labels on the luggage, again without any manual help.
- Lastly, the conveyers equipped with junctions and sorting machines channel the bags to the gate.

All above handling mechanisms are conducted automatically. It would be very tiresome if heavy luggage of each passenger is carried manually. A baggage handling system can exactly be compared to a road system in a city in which case the conveyers are the local roads, DCV tracks are highways and your bags are of course the vehicles. Though, unlike a road system, the baggage handling system has the freedom to make the decision as to where your bag will be going

Types of Baggage

1. Checked baggage: This is the baggage the airline takes sole responsibility of and is characterized by the following:

AIRPORT GROUND HANDLING

◆ It bears a tag (baggage) showing the station of arrival, serial number, name of passenger and flight numbers.

◆ A portion of the tag is given to the passenger (the claim tag) to enable the passenger to identify his baggage at the point of destination arrival).

◆ It is weighed at counters and carried in the baggage hold compartment of the aircraft.

◆ Checked-in baggage is not accessible to the passenger during the flight.

2. Unchecked baggage:

This is the baggage for which a passenger takes sole responsibility during the flight and is carried in the cabin of the aircraft. It is carried free of charge and it should weigh 7kgs (IATA Standards). IATA stipulated certain articles to be carried free of charge by passengers during their flight. You may carry some baggage, free of charge, subject to our conditions and limitations, which are available upon request, include:

- Ladies handbags
- Jewellery purse
- An umbrella
- A few reading materials e.g. magazines, novels
- Laptop

With a design team of more than 90 engineers and technicians, Automated Baggage Handling Systems is a system integrator with all in-house technical expertise starting with system design, including simulation, mechanical and electrical engineering. The quality system is focused on customer satisfaction with a strong emphasis on the implementation of efficient and reliable processes to guarantee a timely delivery of a system that will meet all customers' specifications. Following are the Automated Baggage Handling Systems:

AUTOMATED BAGGAGE DROP-OFF MACHINE

As part of the evolution of airport check-in systems towards more fluidity and speed, BAGXpress is an automatic baggage drop-off machine. The design is based on a patented, innovative concept defined by Aeroports de Paris with the intention of offering better service to passengers.

BAGXpress is outstanding when compared to other automated baggage drop-off systems. It is able to process a high number of passengers per hour, requiring only a short time to process each bag. BAGXpress can process up to 120 bags per hour, with an average of 20 seconds per bag checked in and a delay of only ten seconds between two bags.

AIRPORT GROUND HANDLING



Fig 12: Automated Baggage Machine

CONVEYOR SYSTEMS AND CAROUSELS

A full range of baggage handling conveyors (check-in, collector, transport conveyors) are designed to meet the demanding specifications of airports. Carrousel based on Caterpillar, friction drives and linear drives. The main references include Paris CDG, Lyon St. Exupery, Bsel-Mulhouse, Abidjan and Istanbul.

BAGGAGE HANDLING TECHNOLOGY

The belt is driven by its outside edge by the precision belt drive chain. This low-tension, positive-drive arrangement, is unaffected by changes in loading, belt-tension, temperature, humidity and foreign material getting between the bottom of the belts and the end rolls.

Unlike friction-driven belt conveyors, exact belt tension and adjustment is not required to continue operations when environmental conditions change. The chain/belt system uses loose belt technology that greatly increases the life expectancy of the conveyor belts and end roll components, such as bearings, shafts and pulleys. The chain/belt design runs quietly, meeting or exceeding required noise design criteria.

The low-tension chain/belt system is very conducive to using mechanical belt lacing, because concerns of damage to the end roll lagging are non-existent. Even in difficult access areas of a conveyor system, mechanical lacing allows for fast and efficient belt changes. Unlike conveyors that use vulcanized endless belts, extensive disassembly of the conveyor is not required. In the event of belt damage, only the damaged section needs to be replaced.

AUTOMATED BAGGAGE SORTING CONVEYOR

The automatic baggage sorting conveyor provides a simple sorting system to eject parcels/baggage off one side of the conveyor. Multiple ejection points can be included to offer multiple line feeds.

AIRPORT GROUND HANDLING

Features of this automatic baggage sorting conveyor include:

- Diverts product to one side
- Multiple position sort facility.
- Smooth product transfer
- No jamming plough points
- Angled roller belt technology

90° TRANSFER BAGGAGE CONVEYORS

A modular belt alternative to traditional powered curves, the Corna 90° transfer baggage conveyor provides smooth product transfer through 90° whilst offering simple low maintenance features. A major advantage of our design is the compact size, which allows 90° transfers in areas where conventional belt bends are unable to fit.



Fig 13:- 90° Transfer Baggage Conveyor

Other features of the 90° transfer baggage conveyor include:

- Smooth product transfer
- Space saving footprint
- Modular construction to suit any application
- Low downtime for maintenance purposes
- Rapid belt segment replacement
- Lower cost of ownership

QUICK BELT-CHANGE BAGGAGE CONVEYOR

With a belt change time of less than 10 minutes, the unique baggage conveyor ensures minimum downtime, saving significant maintenance costs per year. A further benefit is that only one person is required to carry out the belt replacement.

AIRPORT GROUND HANDLING

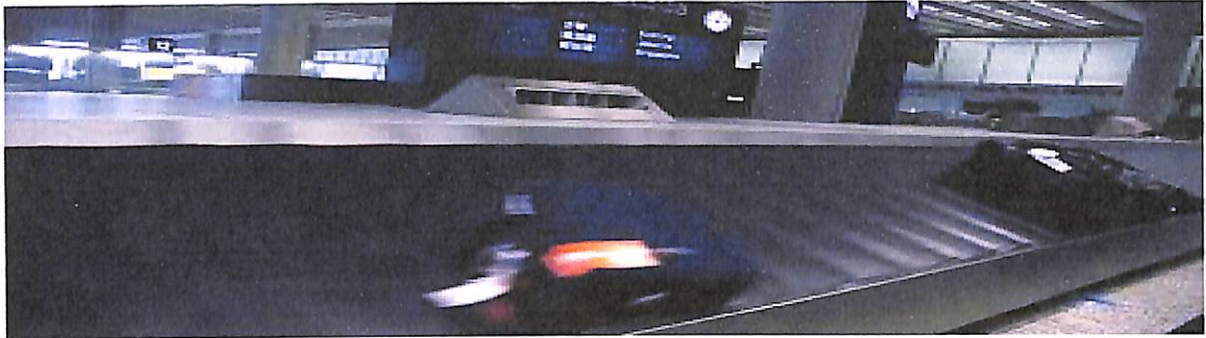


Fig 14: Conveyor belt

Features of this quick belt-change baggage conveyor include:

- Low total cost of ownership
- Easy belt tensioning from one side
- Designed by engineers for engineers
- Any length available
- Incline and decline models available
- Minimal downtime
- Ultra-fast belt replacement
- Modular construction

LONG-LIFE BAGGAGE/PARCEL CONVEYOR

The long-life baggage conveyor has been designed to minimize the belt wear and belt misalignment issues normally associated with standard baggage conveyors. The specialist modular belt of this long-life baggage conveyor provides positive tracking, reducing the need for replacement and offering an extensive life span.

The long-life baggage conveyor range includes a non-reversing model and is available in various lengths. Its simplistic design allows for easy installation. Other features of this product include :

- Zero onsite vulcanizing
- No tracking problems
- Positive sprocket drive
- Long lasting belt
- Rapid belt segment replacement
- Modules available in any length.

BAGGAGE HANDLING SYSTEM

AIRPORT GROUND HANDLING

A baggage handling system (BHS) is a type of conveyor system installed in airports that transports checked luggage from ticket counters to areas where the bags can be loaded onto airplane.

A BHS also transports checked baggage coming from airplanes to baggage claims or to an area where the bag can be loaded onto another airplane.

A baggage handling system has three main jobs:

- Move bags from the check-in area to the departure gate
- Move bags from one gate to another during transfers
- Move bags from the arrival gate to the baggage- claim area.

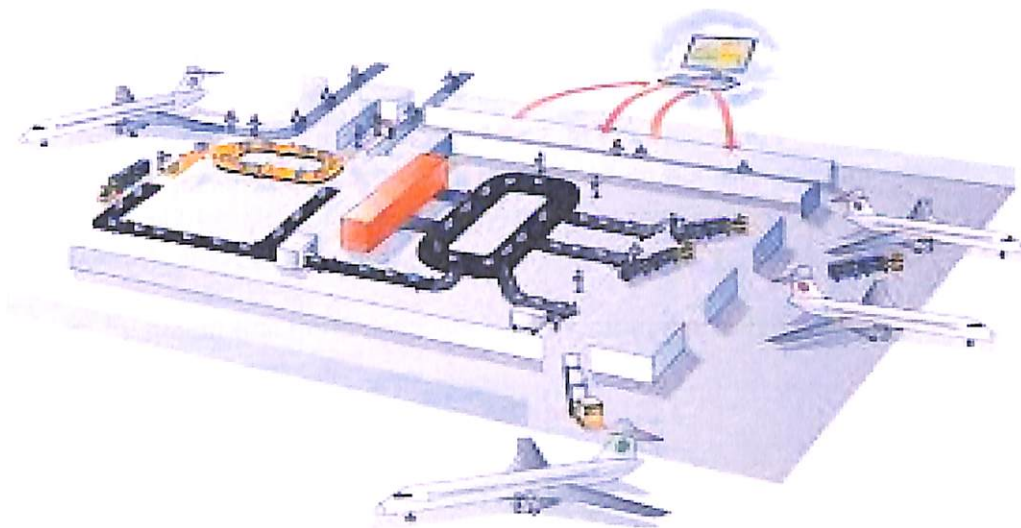


Fig 15 :- BHS

FUNCTIONS:

BHS perform the following functions.

- Detection of bag jams
- Volume regulation (to ensure that input points are controlled to avoid overloading system).
- Load balancing (to evenly distribute bag volume between conveyor sub-systems)
- Bag counting
- Bag tracking
- Redirection of bags via pusher or diverter.

CATEGORIES OF MISHANDLED BAGGAGE:

AIRPORT GROUND HANDLING

- Delayed baggage (put on a later flight)
- Damaged baggage
- Items missing from the baggage
- Lost or missing in its entirety.

3.1.6 CHECK-IN COUNTER

Check-in uses service counters found at commercial airports handling commercial air travel. The check-in is normally handled by an airline itself or a handling agent working on behalf of an airline. Passengers usually handover any baggage that they do not wish or are not allowed to carry on to the aircraft's cabin and receive a boarding pass before they can proceed to board their aircraft.

Check-in is usually the first procedure for a passenger when arriving at an airport, as airline regulations require passengers to check in by certain times prior to the departure of a flight. This duration spans from 15 minutes to 4 hours depending on the destination and airline. During this process, the passenger has the ability to ask for special accommodations such as seating preferences, inquire about flight or destination information, make changes to reservations, accumulate frequent flyer program miles, or pay for upgrades.

The airline check-in's main function, however, is to accept luggage that is to go in the aircraft's cargo hold and issue boarding passes.

FUNCTIONS OF CHECK-IN COUNTER:

When passenger presents himself/herself at the check-in counter the following checks must be done. Along with that always wish passengers with a pleasant or warm smile and wish the time of the day followed by:

- Check for the security sticker and conditions of the baggage. Make sure baggage has been screened and does not contain any dangerous goods articles.

AIRPORT GROUND HANDLING



UNITED		A STAR ALLIANCE MEMBER	Confirmation: AB123C
<small>Issue Date: February 02, 2015</small>			
Traveler	eTicket Number	Frequent Flier	Seats
SAMPLE/JOHNMR	0164564567890	UA-XXXXX123 PREMIER 1K	1D
SAMPLE/JANEMS	0164567890123	UA-XXXXX456 PREMIER 1K	3D
FLIGHT INFORMATION			
DAY, DATE	Flight	Class	Departure City and Time
Fri, 10APR15	UA14	F	HONOLULU, HI (HNL) 8:10 PM
			Arrival City and Time
			NEWARK, NJ (EWR - LIBERTY) 11:57 AM (11APR)
			Aircraft Meal
			767-400 Snack
FARE INFORMATION			
<small>Tare Break</small>			

Fig 16:- check ticket , boarding pass

- Request for ticket if not already presented. Check ticket details- validity of ticket, sector of travel etc
- Check photo id card of the passenger without any mistake.
- Ask for seat preference
- Provide assistance according to passenger status (be more active for SSR passengers).
- Weigh baggage and ask about the fragile item.
- Charge for excess baggage (only then passenger baggage weight is more than FBA (Free Baggage Allowance)).
- Issue Boarding Pass and Baggage Tag.



Fig 17:- baggage tag

AIRPORT GROUND HANDLING

- confirm passenger about sector, seat number and baggage.
- Inform passenger about flight status, gate numbers.



Fig 18:- gates

3.1.7 RESERVATION

Reservation counter means a counter, where from a passenger can purchase his/her ticket for travel. Generally we can see reservation counter in airports.



Fig 19:- Airlines E- Ticket

AIRPORT GROUND HANDLING

FUNCTIONS / RESPONSIBILITIES:

- Reservation
- Cancellation
- Rescheduling/Rebooking
- SSR(Special request)booking
- Meal request
- Changing sector
- Help desk
- Refund(depending on point of purchase)

The overview of various actors and their equipment that are involved during ground handling of aircraft is compiled from knowledge and literature. After the various actors are defined, their tasks during ground handling are divided by phase. The (sub) phases as defined by CICTT in table 1 are considered relevant for the purpose of this assignment.

Table 1 CICTT phrase definitions

Phase	CICTT definition
Taxi from runway	Begins upon exiting the landing runway and terminates upon arrival at the gate, ramp, apron, or parking area, when the aircraft ceases to move under its own power.
Standing	Prior to pushback or taxi, or after arrival, at the gate, ramp, or parking area, while the aircraft is stationary.
Pushback/towing	Aircraft is moving in the gate, ramp, or parking area, assisted by a tow vehicle.
Taxi to runway	Commences when the aircraft begins to move under its own power leaving the gate, ramp, apron, or parking area, and terminates upon reaching the runway.

To accomplish a more detailed analysis, the phase "Taxi from runway" is divided into 'taxi in' and 'docking'. Docking is defined as the phase when flight crew parks the aircraft on the aircraft stand marking under guidance of a marshaller or visual docking guidance system (VDGS). This phase ends when the aircraft ceases to move under its own power.

AIRPORT GROUND HANDLING

Also the phase 'Pushback/towing' is divided, in which pushback is defined as aircraft movement from the gate, ramp, or parking area, assisted by a tow vehicle. Towing is defined as aircraft movement to the gate, ramp, parking area, and movements from or to the hangar, assisted by a tow vehicle.

Table 2 Customized phrase definitions

Phase	Definition
Taxi in	begins upon exiting the landing runway and terminates upon arrival at the gate, ramp, apron, or parking area, when the flight crew is parking the aircraft on the aircraft stand marking under guidance of a marshaller or visual docking guidance system.
Docking	Begins when the flight crew parks the aircraft on the aircraft stand marking under guidance of a marshaller or visual docking guidance system and terminates when the aircraft ceases to move under its own power.
Standing	Prior to pushback or taxi, or after arrival, at the gate, ramp, or parking area, while the aircraft is stationary.
Pushback	Aircraft movement from the gate, ramp, or parking area, assisted by a tow vehicle.
Towing	Aircraft movement to the gate, ramp, or parking area, and movements from or to the hangar, assisted by tow vehicle.
Taxi to runway	Commences when the aircraft begins to move under its own power leaving the gate, ramp, apron, or parking area, and terminates upon reaching the runway.

Only normal operations during ground handling are reviewed, as several complicating factors may arise during actual ground handling operations, such as the presence of:

- Security staff
- Cargo specialists (load controllers, dangerous goods specialists, grooms)
- Wing walkers
- Police
- Ambulance
- Rescue and Fire Fighting (RFF)
- Aviation/ Airport Authorities (IVW, AAS, other parties)

Data analysis

AIRPORT GROUND HANDLING

The purpose of the data analysis is to:

- Identify phases and interfaces in which an increased risk of aircraft damage exists;
- Investigate casual factors.

Data is collected and analyzed from past incidents and accidents. Absolute incident numbers, as well as incident rates are assigned to the various phases and interfaces. The analysis identifies what interfaces (and thus actors) are most frequently involved in aircraft damage and during which phase of the ground handling process aircraft damage is most frequently inflicted.

Data sources

The NLR Air Safety Report database is used to provide a dataset of incidents of aircraft damage inflicted during ground handling. Flight crew report unsafe occurrences they have encountered during operations by means of an Air Safety Report (ASR). The NLR ASR database is compiled from several databases from different European and non-European airlines. It contains data of commercial operations with Western built aircraft of more than 5,700 kg maximum take-off weight. A number of parameter/descriptors have been included in the databases, e.g. date of occurrence, aircraft type, flight phase, a narrative and descriptive factors. Especially the narrative contains relevant information for the review and analysis.

Inclusion criteria- overall dataset

Data is collected according to the following criteria:

- The incident results in aircraft damage;
- The incident takes place in one of the following phase: Taxi-in, Docking, Standing, Pushback, Towing or Taxi to runway.
- Incident data companies main airports in the United States, Canada, Europe, Australia, Far East and Africa.

Incidents in which damage is inflicted to helicopters during handling are excluded from the dataset, because they are considered not relevant in the context of his assignment.

The query results 2841 incidents. Each record of the data sample is reviewed to identify the phase in which the incident occurs and what interface or actor is involved. The analysis of casual and contributing factors depends on the quality of the ASRs. Many incidents could not be

AIRPORT GROUND HANDLING

analyzed in more detail because reporters did not report any factors, causes, or did not specify the circumstances in the report.

Inclusion criteria- Schiphol Airport dataset

The same methodology is used to compile a specific dataset for Schiphol Airport. This query results in 378 incidents. The incident distribution in the overall dataset is compared with the Schiphol Airport dataset. A Chi² analysis is performed to verify whether there is a significant difference in the incident distribution between the two datasets.

Regulatory framework

The current regulatory framework and the applicability to ground handling are reviewed by means of a literature review of ICAO documents and an internal search.

AIRPORT GROUND HANDLING

CHAPTER – 4

FINDINGS AND ANALYSIS

We can distinguish two major types of ground handling procedures which are designed as either terminal or airside operations. For our technical analysis, we will focus on airside operations as the complexity of tasks and the diversity of required equipment are great. First, we should define the whole range of operations that ground handlers deal with. The following list is an exhaustive for common commercial flights.

4.1 GROUND HANDLING PROCEDURES

4.1.1 RAMP SERVICES

- Supervision
- Marshaling
- Start-up
- Moving/towing aircraft
- Safety measures

4.1.2 ON-RAMP AIRCRAFT SERVICES

- Repair of faults, fueling, wheel and tire check
- Ground power supply
- Deicing, cooling/heating
- Toilet servicing, potable water, demineralized water
- Routine maintenance
- Non- routine maintenance
- Cleaning of cockpit windows, wings, nacelles and cabin windows

4.1.3 ONBOARD SERVICING

- Cleaning
- Catering
- In flight entertainment
- Minor servicing of cabin fittings
- Alteration of seat configuration

4.1.4 EXTERNAL RAMP EQUIPMENT

- Passenger steps

AIRPORT GROUND HANDLING

- Catering loaders
- Cargo loaders, mail and equipment handling.

4.2 OPERATIONAL ANALYSIS

As we can see on figure , ground handling is a multi-task procedure. Since managers want to save some money for the airlines they work for, they endeavor to perform simultaneously as many as operations as they can,.

a. Layout operation

This layout raises the important issue of equipment damages that can occur during operations. The equipment density around aircraft is very high and may lead to frequent incidents, in fact, a survey was conducted by ACI in November 1998 with 313 participating airports. The survey reported 671 incidents during handling of 2 133 398 movements, giving a rate of one incident per 3180 movements. It shows that the frequency of accidents is low but a further analysis proved that a majority of accidents could have been avoided if fixed ground systems would have been used. On figure below, all equipment to equipment damage and parts of equipment to facilities damages as well as damage to/by moving aircraft would have been avoided.

These results illustrate the trade-off between fixed systems and mobile units that ground handlers and mostly airport authorities have to deal with. On the hand, mobile units are more adaptable, they require less investment but they may cause severe damages. On the other land, fixed ground systems are safer and reduce gas emissions, but they cost a lot of money and they are not as adaptable to any type of aircraft as mobile units. In conclusion, the equipment handling listing provided by ADP shows that a large stock of mobile units in necessary to ensure the tremendous flexibility required in ground handling.

b. Timing

For example, the B747 servicing at an end station turnaround. As we can see, many tasks are performed simultaneously given the layout of operations above. The turnaround time is about 60 minutes but this time can be much shorter in the case of regional jets. Usually, ground handling operations are supposed to be finished within 20 minutes which leaves no room for error.

c. Management and organizational issues

The tighter the operational schedule, the more important the operational management is. Table 2 shows that ground handlers have sometimes to deal with uncertainty. If a breakdown occurs because of an equipment failure, the operation manager has to make a choice depending upon

AIRPORT GROUND HANDLING

the importance of the interrupted operation. If the flight does not rely on this operation, the manager may decide to cancel or to shorten it. Particularly, we think about, freight and mail loading. Indeed, delays experienced by the aircraft may cost more than loading can make. Moreover, managers take care of coordinating all workers on tarmac in order to ensure safety of staff and equipment and to be time-efficient.

Regis Lacote gave us some more information about staff and managers working on tarmac. In fact, ADP hires employees who provide only supervision and load mastering of flights. All other operations are outsourced and performed by two companies. Regis Lacote confirmed the order of magnitude of engagement time. For a typical 767-200 arriving flight, staff are engaged between T-15 and T+45 in minutes. For a typical 767-200 arriving flight, staff are engaged between T-60 and T+15. Usually, the team is composed of 4 workers and one manager. Each worker has specific driving licenses and ground handling managers have to make sure their teams can operate the required equipment.

Conclusion

Ground handling deals with very complex operations. Even though heavy equipment is required to perform the tasks during a turnaround, flexibility is the key point to reach maximum efficiency. Therefore, adaptability skills of ll workers and managers are crucial.

AIRPORT GROUND HANDLING

CHAPTER – 5

INTEPRETATION OF RESULTS

Ground handlings are the preliminary services of an airport which starts from the check-in process and ends to the final destination. These ground handling services starts from the point of departure to one's arrival on ground and are generally parked at a terminal gate of an airport.

According to International Air Transport Association (IATA), approximate 50 per cent of the ground handling at the world's airports are outsourcing by airlines. Ground handling addresses the requirement of many ancillary services from the times of arrival to departure at a terminal gate.

Ground handling covers a wide variety of services for airlines delivered at airports in support of the operation of air services. It includes not only highly technical services such as maintenance, fuel and oil services and freight handling, but also services which are essential to passenger's safety and comfort, such as passenger check-in, catering, baggage handling and surface transport at the airport.

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AIRPORT GROUND HANDLING

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AIRPORT GROUND HANDLING

CHAPTER – 6

CONCLUSION AND SCOPE FOR FUTURE WORK

Ground operations covers all airport handling activities related to customer services, aircraft and baggage handling. In the world of increasing competitiveness, performance and quality of service offered in airports are hallmarks of success and differentiation for a company.

As air traffic continues to grow, fuel prices rise, security remains strict and capacity is stretched to the limit, the need for efficient airport operations is at an all-time high. The problems created by poorly run system are felt by everyone involved in air travel-in terms of delayed flights, long queues, lost baggage, wasted time and rising costs. From this point of view, the airport operation seems to be critical in the whole industry.

There are many commercial products which help an airport to make its operation more effective. Lots of them are IT solutions. These suites comprise systems of planning, rostering and real time control of ground handling staff and equipment. Furthermore, gates and terminal resources like check-in counters and baggage belts can be planned and dispatched. Mobile communication systems (e.g. WAN or cell phone technology) are integrated for staff dispatching, and interfaces to flight information and display systems ensure seamless integration with other airport and airline systems. Additional components include, e.g. airport operational databases, billing and contract management as well as data analysis tools.

When airports are involved in ground handling activities, staff costs are an essential cost factor, representing 50% and more of total costs. Optimizing staff scheduling- making available sufficient staff with sufficient qualifications at the right times and locations- is therefore of utmost importance. This is true for passenger-related services in the terminal such as check-in, security or boarding, as well as ramp handling services on the apron, e.g. baggage transportation and loading.

On the real time level, hub control systems integrate information from the different handling services. This allows for tracking and monitoring of the different handling processes, displaying interdependencies and analyzing critical chains. Additionally, interdependencies between the flights (e.g. transfer passengers) can be displayed. Providing an aggregate view on handling activities, hub control provides decision support that is essential in avoiding flight delays and increasing service quality.

Improved tracking and management of ground-based assets, including more efficient sharing of common resources by the operators (e.g. ULDs, catering trolleys, pallets), faster clearance through security of aircraft spare parts needed items in new special areas closer to the ramp, information consolidated from all stakeholders and “pushed” to the dispatchers, as well as to

AIRPORT GROUND HANDLING

other decision- makers involved in the turn-around processes, early warning about arising disruptions via real-time monitoring of turn-around progress, less paper-based documentation of maintenance combined with Auto-ID enabled traceability of spare parts and their usage history, automated tracking and management of safety and ancillary equipment, reducing the need for manual checks, and better coordination and sequencing of access to the aircraft, reducing ramp congestion are the improved sectors of ground handling operations.

Airport ground operations can be improved at any moment. When the airport finds and solves the bottleneck in its operation, the new bottle neck occurs at the same time. Thus, continuous operation monitoring must be on daily basis to help an airport keep its competitiveness. Nowadays, airports are implementing various kinds of solutions which are designed to improve control process, staff planning or better usage of ground handling equipment. They are also searching for operational areas to be optimized. All these steps can lead to lowering delays and financial saves for all stakeholders involved in the aviation industry.

Airports and ground service providers must utilize the available resources in the best possible way in order to cope with the new trends. This is the case for the staff and equipment concerned with ground handling on the ramp and in the terminal, as well as for infrastructure and building resources-such as runways, taxiways, apron and terminal resources such as stands, gates or check-in counters- which typically can only be extended in the long run and with large financial effort. Also, wastage of scarce Air Traffic Flow Management slots must be minimized

AIRPORT GROUND HANDLING

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AIRPORT GROUND HANDLING

APPENDIX

Abbreviations :

- AWB – Air waybill
- BHS – Baggage Handling System
- CICTT – CAST/ICAO Common Taxonomy
- DGR- Dangerous Goods Regulations
- FBA- Free Baggage Allowance
- ICAO – International Civil Aviation Organization
- IATA – International Air Transport Association
- RAMP – Region of Aircraft Movement & Parking
- RFF- Rescue & Fire Fighting
- VDGS- Visual Docking Guidance System
- WAN – Wide Area Network