

**ADVISORY CIRCULAR**  
**[AC/AD – 11]**

**Airside Safety Procedure for Ground Handling  
Operation at Airports**

**Second Edition**  
**March 2022**

**CIVIL AVIATION AUTHORITY OF NEPAL**



## REVISION HISTORY

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## TABLE OF CONTENTS

RECORD OF AMENDMENTS .....	i
REVISION HISTORY.....	ii
TABLE OF CONTENTS.....	iii
FOREWORD .....	iv
1. INTRODUCTION .....	1
2. DEFINITIONS .....	1
3. GROUND HANDLING SERVICES .....	2
4. PROCEDURE FOR SAFE GROUND HANDLING PRACTICES .....	2
4.1 Personnel Protection.....	2
4.2 Load Handling.....	3
4.3 Aircraft Loading and Unloading Operations .....	3
4.4 Aircraft Equipment.....	4
4.5 Fire Protection and Prevention .....	4
4.6 Chocking of Aircraft.....	4
4.7 Use of Marker Cones.....	5
4.8 Ground Support Equipment Operations .....	5
4.9 Aircraft Fuelling Interface.....	6
4.10 De/Anti-icing of Aircraft.....	6
4.11 Vehicles Striking Aircraft and/or People.....	6
4.12 Hazards to Passengers on Apron .....	8
4.13 Aircraft Parking Safety Issues .....	9
4.14 Engine hazards.....	13
4.15 Inadequate Lighting, Glare or Confusing Lights.....	14
5. Training Requirements .....	15
Appendix I .....	16

## FOREWORD

Nepal as a Contracting State to the Convention on International Civil Aviation has an obligation to the international community to ensure that civil aviation activities under its jurisdiction are carried out in strict compliance with the Standards and Recommended Practices contained in the nineteen Annexes to the Convention on International Civil Aviation in order to maintain the required aviation standards.


Ground Handling and Ramp Safety are the most important aspects of airport operations. The safe and efficient ground handling during the arrival and departure of an aircraft requires coordinated responsibilities amongst qualified persons. Where an airline chooses to provide these functions through ground handling service providers, it must lay down responsibility of its own personnel for execution, monitoring and verification of critical points of those functions.

This Advisory Circular deals with the airside safety procedure for ground handling operations at the airports, which may be used as a guidance material for all Service Providers engaged in providing ground handling services. The material contained in this circular is informative in nature and supplement the requirements laid down in the relevant legislation and standards.

Users of this Advisory Circular are requested that the provisions of the *Civil Aviation Authority Act - 1996 (2053 B.S.)*, *CAAN Airport Certificate Regulations - 2004 (First Amendment - 2016)* and *Civil Aviation Regulation 2002, (Third Amendment 2017)* rather than this Advisory Circular, determine the requirements of, and the obligations imposed by or under, the civil aviation legislation. Users should refer to the applicable provisions when any doubt arises.

It is also expected that the Aerodrome Operators will be benefited by this Advisory Circular as it explains the procedures for preparing Driving Handbook and training requirements. It also explains that Apron Management and its operating procedures shall meet the SARPs of Civil Aviation Requirements (CAR-14) Part 1 Aerodrome and Operations.

This Authority may, without any prior notice, change the content of this Advisory Circular as appropriate.

  
Director General  
Civil Aviation Authority of Nepal  
Babar Mahal, Kathmandu

March 2022

## 1. INTRODUCTION

### 1.1 General

Ground Handling and Ramp Safety are the most important aspects of airport operations. The safe and efficient ground handling during arrival and departure of an aircraft requires coordinated responsibilities amongst qualified persons. Where an airline chooses to provide these functions through ground handling service providers, it must lay down responsibility of its own personnel for execution, monitoring and verification of critical points of those functions.

### 1.2 Legislation and Standards

- Civil Aviation Authority Act, 2053 (1996).
- Airport Certification Regulations 2004 (First amendment 2016).
- Civil Aviation Requirements (CAR-14) Part 1 Aerodrome Design & Operations
- Ground Handling Directives 2072 (2015).
- Dangerous Goods Handling Requirement, Fifth Edition 2021.

This Advisory Circular deals with the airside safety procedure for ground handling operations at the airports, which may be used as a guidance material for all Service Providers engaged in providing ground handling services. The guidance material contained in this circular is informative in nature and supplements the requirements laid down in the relevant legislations and standards.

## 2. DEFINITIONS

**Airside** - Those parts of the airport that do not allow access for the general public. Airside includes Apron, hangars and perimeter roads.

**Apron** - A defined area on a land airport, intended to accommodate aircraft for purposes of loading or unloading passengers, mail or cargo, fueling, parking or maintenance.

**Dangerous Goods** – Articles or substances which are capable of posing a significant risk to health, safety or property when transported by air.

**Foreign Object Debris (FOD)** – Damage to aircraft, aircraft engines, tyres or aircraft components caused by foreign object debris. This does not include damage from natural causes such as lightning and hail.

**Ground Support Equipment** – Any motor vehicle or piece of equipment, fixed mobile or towed, whose use is exclusively for aircraft ground handling operations.

**Jet Blast Damage** – Any damage to an aircraft on the apron caused by jet blast interference from another aircraft.

**Load Control** – A function to ensure the optimum utilization of the aircraft capacity and distribution of load as dictated by safety and operational requirements.

**Loading Instruction** – Instructions given by load control to the person responsible for the aircraft loading.

**Maneuvering Area** - That part of the Airport used for take-off, landing & taxiing of aircraft, excluding aprons.

**Movement Area** - That part of the Airport to be used for the take-off, landing, taxiing and parking of aircraft, consisting of the maneuvering area and the apron.

**Powerback** – Moving of aircraft from parking position to taxi position by use of aircraft’s engines.

**Pushback** – Moving of aircraft from parking position to taxi position by use of specialized ground support equipment.

**Towing** – Moving of aircraft, other than pushback operations, with/without load on board by use of specialized ground support equipment.

**Unit Load Device (ULD)** – A unit in which dead load is bulk loaded and subsequently loaded as a unit into the aircraft.

### **3. GROUND HANDLING SERVICES**

The various ground handling services at the airport are as under:

- Ground administration and supervision
  - Representation and liaison services with local authorities
  - Load control, messaging and telecommunications
  - Handling, storage and administration of unit load devices
  - Automation/computer system
  - Any other supervision services before, during or after the flight
- Passenger handling
- Baggage handling
- Freight and mail handling
- Ramp handling:
  - Marshalling of aircraft on the ground at arrival and departure
  - Communication between the aircraft and the air-side supplier of services
  - Loading and unloading of the aircraft
  - Provision and operation of appropriate units for engine starting
  - Moving of aircraft at arrival and departure
  - Transport, loading on to and unloading from the aircraft of inflight kitchen
- Aircraft services comprising:
  - Fuel and oil handling
  - Aircraft maintenance
  - Flight operations and crew administration
  - Surface transport
  - Catering services
  - Cabin services

### **4. Procedure for Safe Ground Handling Practices**

Airside safety rules and procedures ensure safe handling. Therefore, safety regulations should be understood and applied on the apron, on and around the aircraft, in hangar, etc.

#### **4.1 Personnel Protection**

- 4.1.1 As manual handling of baggage and material is the primary cause of personnel injuries, sufficient risk assessment of the manual handling task should be conducted and appropriate control put into place.

- 4.1.2 Approved hearing protection should be used when working in noise-intensity areas such as on the apron, maintenance lines, etc.
- 4.1.3 Outer garments containing reflective material and high visibility colours should be worn by personnel whose duties require airside access.
- 4.1.4 On arriving aircraft, all personnel should remain clear of the propellers, engine inlets and exhausts until the engines have spooled down or propellers stop turning.
- 4.1.5 On departing aircraft, as soon as the anti-collision lights are 'ON', personnel should remain clear of propellers, engine inlets and exhausts.
- 4.1.6 The surface of the apron should be kept free of any objects that might cause damage to aircraft or equipment.
- 4.1.7 Personnel should not walk between ULDs which are being transported by vehicles.

## **4.2 Load Handling**

Recognized lifting techniques should be utilized at all times to reduce the risk of personnel injury. Following precautions should be taken while handling the load:

- Loads should not be lifted by metal strapping normally used to bind the heavy shipments.
- All loads should be set down rather than dropping to avoid personnel injury and/or damage to the aircraft.
- While moving pallets/containers, body parts should be kept clear of stops/locks/guides.
- While handling live animals, exposed body parts should be kept clear of the interior of the containers.
- Laid down guidelines shall be followed while handling dangerous goods.

## **4.3 Aircraft Loading and Unloading Operations**

- 4.3.1 Special precautions should be observed to prevent damage that may result from the following:
  - Exceeding aircraft floor load limitations.
  - Inadequate tie-down and failure to fasten separation nets and door nets.
  - Loading cargo on seats in the passenger cabin.
  - Incorrect opening or closing of door and operation of cargo doors during strong or gusty wind conditions.
  - Mishandling of catering equipment.
- 4.3.2 During loading and unloading operations, full allowance should be made for vertical movement of aircraft when the ground support equipment is positioned/ operated at the aircraft.
- 4.3.3 Care should be exercised to avoid damage to the doors or their openings.
- 4.3.4 The loading of any item bulk/ULDs onto an aircraft must be undertaken according to written load instruction to ensure correct weight and balance requirements.
- 4.3.5 ULDs should be cross checked by unit number with the load instructions, while loading.
- 4.3.6 The condition of the load including ULDs shall be checked prior to loading in order to protect leaking or otherwise damaged items. ULDs with any evidence of leaking contents should not be loaded.



- 4.3.7 The handling of dangerous goods must be undertaken with particular care to ensure that the integrity of the packaging is not adversely affected. Dangerous goods which are damaged should not be loaded. Loading and stowage of dangerous goods should conform to relevant regulations/standards like IATA Dangerous Goods Regulations and CAAN Dangerous Goods Handling Requirement, Fifth Edition 2021.
- 4.3.8 Spills of any sort in the holds should be reported immediately as it may result in damage to the aircraft floor or wiring.
- 4.3.9 Any spillage on the apron e.g. fuel, oil hydraulic liquids, etc. should be reported immediately and the area cleaned.
- 4.3.10 While maneuvering large or heavy items within the holds, crow bars and similar implements should not be used directly upon the aircraft floor.
- 4.3.11 When loading pallets or containers, it should be ensured that the edges are either guided by the side rails or fit under the stocks/ locks/guides and that the height of the pallet allow for the sufficient clearance in the door opening.
- 4.3.12 During manual handling of pallets/containers, full control should be exercised as their impact against locks and stops at high speed may cause damage.

#### **4.4 Aircraft Equipment**

- 4.4.1 Aircraft equipment such as ULDs etc. should be inspected before use to ensure its serviceability.
- 4.4.2 Unserviceable equipment having protruding bolts, torn metal, damaged doors etc. should be tagged, isolated and reported for maintenance action.
- 4.4.3 Maximum floor loads and maximum weights for pallets and containers should not be exceeded.
- 4.4.4 Aircraft floor locks for pallets and containers should be secured to prevent the load shifting during flight.

#### **4.5 Fire Protection and Prevention**

- 4.5.1 Location of firefighting equipments, fire alarms, etc. should be known to the ground personnel.
- 4.5.2 If fire is detected in a parked aircraft, the persons on board should be immediately evacuated.
- 4.5.3 If possible, doors and hatches, etc. on the aircraft should be closed.
- 4.5.4 If the fire is detected on any ground support equipment, it should be controlled utilizing the apron fire extinguishers or extinguishers on the equipment. As soon as practicable, the equipment should be removed from the vicinity of the aircraft.
- 4.5.5 Personnel should have knowledge of types of fire-fighting equipment available and trained on their use.

#### **4.6 Chocking of Aircraft**

- 4.6.1 Chocks should be positioned on an aircraft according to aircraft manufacturer recommendations.
- 4.6.2 Chocking of the aircraft main gear should be achieved by positioning the chocks in

the front and rear of the outboard tyres using an approach path directly from the front and rear.

- 4.6.3 Placing of chocks on an arriving aircraft should be performed after engine spool down, anti-collision lights switched off and clearance to approach the aircraft is given by the authorized person.
- 4.6.4 Chocks when positioned should be parallel to the wheel axle and only lightly touching the tyres.
- 4.6.5 In the event of high wind conditions additional chocking/other measures should be taken to secure the aircraft.
- 4.6.6 Chocks should not be removed from the aircraft until clearance is given by the authorized person.
- 4.6.7 After removal, the chocks should be removed to a designated storage area.

#### **4.7 Use of Marker Cones**

- 4.7.1 Marker cones should be used to create safety buffer around specific areas on aircraft that are susceptible to ground damage.
- 4.7.2 Cones should be positioned near each wing tip, in front of all wing mounted engines and in front of other areas near the aircraft that are in conflict with the normal flow of equipments during handling operations.
- 4.7.3 Cones should be removed just prior to the aircraft departure and stored in a designated storage area.

#### **4.8 Ground Support Equipment Operations**

- 4.8.1 Ground support equipment should be operated only by adequate trained, qualified and authorized personnel.
- 4.8.2 Use of portable devices like mobile phones are not permitted while operating the vehicles. Such devices should not be used unless a suitable hands free is available.
- 4.8.3 Equipment should not move across the path of taxiing aircraft or embarking and disembarking passengers. Aircraft and ground personnel should always have the right-of-way.
- 4.8.4 Apron equipment should be positioned behind the equipment restrained line with parking brakes 'ON' prior to the arrival of the aircraft at bay.
- 4.8.5 The passenger loading bridge should be always in fully retracted position prior to the aircraft arrival.
- 4.8.6 During bridge operations only the bridge operator should be in bridgehead. For safety reasons, all other staff should maintain sufficient distance from the bridgehead.
- 4.8.7 Equipment including passenger loading bridges should not move close to the aircraft until it has come to a complete stop, chocks are positioned, engines shut down, anti collision beacons switched-off and ground/flight deck contact established.

- 4.8.8 Equipment approaching or leaving the aircraft should not be driven at a high speed.
- 4.8.9 Attachment fittings/transfer bridges and platforms should be correctly deployed.
- 4.8.10 Ground equipment with interfaces with the aircraft passenger doors (e.g. passenger steps, catering vehicles, etc.) should have platforms of sufficient width which will allow the aircraft doors to be opened/closed with the equipment in place and the safety rails deployed.
- 4.8.11 Prior to movement of any ground support equipment, a walk around check should be carried out.
- 4.8.12 Hoses and cables on equipment should be properly stowed before the unit is moved.
- 4.8.13 Elevating devices must not be driven in the elevated position except for final positioning.
- 4.8.14 Unserviceable equipment should be clearly tagged 'out of service' and immediately sent for repair.
- 4.8.15 While positioning equipment, care must be exercised to ensure adequate clearance of vehicles, aircraft and other equipment.
- 4.8.16 Standard hand signals must be used to guide ground support equipment. The guide person must be positioned so that clearances can be accurately judged.
- 4.8.17 No vehicle shall be allowed to tow more than six carts, pods, or containers/baggage or pallet dollies at any one time. When left disconnected or parked, all dollies or group of dollies must be left with the parking brakes ON.
- 4.8.18 No vehicle shall be towed by another vehicle unless a suitable tow bar or tow-rope is used for that purpose.
- 4.8.19 The aircraft may be towed only by trained and qualified personnel having airside operations endorsement on their Airside Driving Permit (ADPs). The maximum permitted towing speed shall be 5 kmph.

#### **4.9 Aircraft Fuelling Interface**

As ground handling operations take place simultaneously with the aircraft fuelling, these activities should be compatible to ensure the safety and integrity of the operation. The ground handling personnel shall strictly follow the procedure during refueling of aircraft as contained in concerned airlines/aircraft refueling procedure of Nepal Oil Corporation's Quality Control and Assurance Manual on Aviation Fuel.

#### **4.10 De/Anti-icing of Aircraft (Reserved)**

#### **4.11 Vehicles Striking Aircraft and/or People**

- 4.11.1 Airport operators should keep vehicular and pedestrian activity on the airside to a minimum. Vehicles on the airside should be limited to those necessary to support the operation of aircraft services, cargo and passenger services, emergency services and maintenance of the aircraft.

- 4.11.2 Vehicles on the movement area should be limited to those necessary required for the inspection and maintenance of the movement area. The vehicular traffic, where required, should be carefully controlled at the airports.
- 4.11.3 The following should be strictly observed for vehicular access control at the airports:
- a) The aerodrome operator shall be responsible for developing procedures and providing training regarding vehicle operations to ensure aircraft and personal safety.
  - b) The aerodrome operator shall establish a system of issuance of airside vehicle permit and airside driving permit as a means of identification that would allow the operation of a vehicle on the airside of an airport.
  - c) The system established by aerodrome operators should ensure that a permit is not issued unless the individual or vehicle meets the minimum standards laid down by aerodrome operator.
  - d) Airport vehicle permit shall be granted to the vehicles which are properly insured. ADP shall be granted to only those drivers with current driver's license. Renewal of the ADP before the expiry shall be the responsibility of the holder.
  - e) Drivers shall carry valid ADP at all times when operating a vehicle/equipment within the airside areas and must present the same to the inspection team/person upon request.
- 4.11.4 It must be ensured that separate routes, preferably one way, be designated for movement of vehicles on airside. These routes shall be provided with adequate lighting and unambiguous markings.
- 4.11.5 Complete segregation of aircraft, pedestrians and vehicles in all areas of the airport shall be ensured. Alternatively, the layout area may be reorganized so that the interaction of pedestrians, aircraft and vehicles is minimized or the frequency of high risk activities such as reversing are reduced. Any changes to the layout of an airport which affect safety of aircraft operations should have prior permission from DGCAAN. The aerodrome operator should prepare a complete traffic plan for safe operations of ground handling activities at the airport and disseminate the same to all concerned.
- 4.11.5 A system should be developed in the interest of safety of aircraft operations and safety on the apron to include the following:
- a) Traffic discipline such as speed limits, especially on approach to aircraft and in the Apron.
  - b) Correct vehicle maintenance, especially of safety critical components such as brakes and steering.
  - c) Driver initial and refresher training.
  - d) Driving standards.
  - e) Competence and attitude of drivers.

- f) Apron management.
- g) Provision of assistance and/or audible warning devices for reversing vehicles.
- h) Procurement of suitable vehicles providing good vision for drivers.
- i) Safe parking of vehicles in such a way so as to prevent interference with aircraft maneuvering or other airport users.
- j) Wearing of reflector jackets by all ground staff during apron movement.

4.11.6 Where more than one organization is engaged in attending an aircraft, effective coordination and cooperation of contractors is essential to prevent vehicles striking people, other vehicles, equipment or aircraft.

4.11.7 The vehicles operation requirements on airside are as given below:

- a) Vehicles operating on maneuvering area should be radio-equipped or escorted by a radio-equipped vehicle.
- b) Prior approval shall be obtained from the aerodrome operator for operating a non-airport owned vehicles on the movement area.
- c) Following speed limits shall be strictly adhered to while driving on the airside:
  - 5 kmph (walking pace) within Equipment Restraint Area.
  - 10-20 kmph on the movement area and Baggage Handling Area.
  - 30 Kmph on the perimeter road.
  - Speed limits on all other roads as indicated by speed limit signs and road markings.

4.11.8 Following vehicles shall have speed limit exemption:

- a) Emergency vehicles such as fire vehicles, ambulance and security vehicles when responding to an emergency. Such vehicles should be given priority to move ahead quickly and safely.
- b) Follow-me, Airside vehicle, Maintenance vehicle and other vehicles that are escorting while attending to an emergency. However, these vehicles shall give way to taxiing and towing aircraft at all times.

#### **4.12 Hazards to Passengers on Apron**

4.12.1 Aerodrome operator, airline operator and ground handlers all have responsibility for ensuring that the movement of passengers is strictly supervised and controlled.

4.12.2 Aerodrome operator shall ensure that the layout and marking of airside areas are proper and conspicuous so as to enable safe movement of passengers to and from the terminal areas.

4.12.3 Following steps shall be taken to ensure passenger safety on the apron:

- a) Passengers shall not be permitted to roam free.

- b) Passenger routes to the aircraft should not pass below aircraft wings or beneath fuel vents, or close to propellers of the aircraft they are embarking/disembarking or those of aircraft on adjacent stands. Routes should also be clear of vehicular traffic around the aircraft, electrical cables, fuel hoses and other ramp equipment.
- c) Restrictions should be placed on the running of aircraft engines in the vicinity of passengers and positive measures should be taken to protect them from excessive engine noise and jet blast.
- d) The airline ground staff shall be so positioned on the apron to ensure that passengers follow a safe path to the terminal/aircraft.
- e) For remote stands or stands in a different location to the terminal lounge, passengers should be transported to the aircraft by bus.

4.12.4 Whenever passengers have to walk across the apron, there should be sufficient staff to ensure that passengers do not wander away from safe routes.

4.12.5 Safety of passengers between the aircraft and the terminal building shall be the responsibility of the airline, the airport operator and the ground handler. There shall be clear responsibility amongst the airline, the airport operator and the ground handler on provision of staff to supervise and/or escort passengers across the apron.

#### **4.13 Aircraft Parking Safety Issues**

4.13.1 The airport operator shall be responsible for safeguarding the arrival and departure movements of aircraft on stands and for the dissemination of information to airline operators.

4.13.2 Where a Visual Docking Guidance System (VDGS) is provided, the airport operator should arrange for the stopping guidance element to be calibrated and indicated, for all selected user aircraft, in a clear and unambiguous manner. The azimuth guidance should be regularly checked for accuracy. Such systems should be subject to daily serviceability checks and the results of such checks be recorded.

4.13.3 The airport operator shall ensure that aircraft stands remain serviceable, clean and free from obstruction.

4.13.4 When a stand is allocated for use to an aircraft operator and the arrival of their aircraft on stand is imminent, it is usually the responsibility of the handling staff to ensure that the stand and clearways are free from obstruction by vehicles or equipment. These staff should also ensure that the aerobridge is fully retracted or correctly parked with the drive wheels in the parking box provided before the arrival of the aircraft. These actions must be completed by the airport operator before the VDGS is switched on. Once the VDGS is switched on, the stand must remain under supervision until the aircraft arrives on stand in order to ensure that it remains safe for use by the aircraft. If for any reason the stand becomes 'unsafe' or unattended before the aircraft has arrived on stand the VDGS should be switched off.

4.13.5 When turnaround operations have been completed and the aircraft is ready to depart, the airline staff should ensure that the stand is free from obstruction by

vehicles and equipment before push-back commences.

- 4.13.6 Before leaving the stand, the handling staff must ensure that the VDGS is switched off.
- 4.13.7 Ground equipment should be/remain parked in the equipment areas provided. Service vehicles and baggage trolleys should hold clear and equipment such as ground power units or any other equipment with cables or hoses should be fully retracted and stowed. The stand must be clear of all obstructions when an aircraft is in motion.
- 4.13.8 Ground Handling Agency/airport operator shall be responsible for the parking/docking operation once the aircraft has entered the stand. Where a marshaller is responsible for guiding the aircraft on to the stand, instructions should clearly indicate the point at which responsibility is transferred from the marshaller to the handling staff.
- 4.13.9 No person shall guide an aircraft unless trained, qualified and approved by the concerned organizations to carry out the functions of a marshaller.
- 4.13.10 The marshaller shall wear a distinctive fluorescent identification vest to allow the flight crew to identify that he or she is the person responsible for the marshalling operation.
- 4.13.11 Daylight-fluorescent wands, table-tennis bats or gloves shall be used for all signaling by all participating ground staff during daylight hours. Illuminated wands shall be used at night or in low visibility.
- 4.13.12 Prior to using the following signals, the marshaller shall ascertain that the area within which an aircraft is to be guided is clear of objects which the aircraft.
- 4.13.13 Staff should be aware of the dangers of the movement of aircraft flaps and other underwing devices when an aircraft is on stand. These areas should be avoided by staff and vehicles and equipment should not be driven or parked in such a way so that the damage due to flap or other control surface movements is avoided.
- 4.13.14 When an aircraft is in motion staff should keep well clear of all wheels to avoid becoming trapped. Ramp staff should exercise care when required to work in the vicinity of aircraft wheels. Where there is some free movement of aircraft wheels, care must be exercised to ensure that clothing and hands or feet do not become trapped.
- 4.13.15 Except where full self-maneuvering is permitted, a marshalling service should be provided automatically on stands not equipped with VDGS or where the VDGS, or other stand facilities are unserviceable.
- 4.13.16 To reduce noise and contamination from oil and exhaust emissions, the running of all types of engines on the apron should be kept to the minimum necessary to maintain operational needs. Where Fixed Electrical Ground Power (FEGP) units are provided on stands, they should be used in preference to other forms of auxiliary power. The running of aircraft Auxiliary Power Units (APUs) and engine driven Ground Power Units (GPUs) should be strictly controlled to the minimum operational requirement.
- 4.13.17 To ensure aircraft and personnel safety upon arrival of aircraft for passenger boarding bridge docking and for prescribed safe clearances between aircraft and

bridge are maintained, it is mandatory that passenger boarding bridge is operated by the authorized person only. Airport Operator should impart proper training and provide requisite Permit to the persons authorized for passenger boarding bridge operations. While operating the passenger boarding bridge, following precautions should be observed:

- a) Before the aircraft enters the stand, the drive wheels of an apron-drive bridge must be positioned in the marked parking box provided or, in the case of a rail-drive passenger boarding bridge, must be fully retracted.
- b) Before the aircraft enters the stand, it shall be confirmed that the stand is set up for the approaching aircraft type.
- c) A careful check should be made to ensure that no vehicles or equipment are obstructing the horizontal or vertical movement of the bridge.
- d) The passenger boarding bridge cab should be adjusted vertically and in azimuth to suit the incoming aircraft type.
- e) Only when the aircraft has stopped with wheel chocks are in place, the engines have stopped and the aircraft anti-collision beacon has been extinguished, the aerobridge be driven from its parking position and docked to the aircraft.
- f) The aircraft passenger door should remain closed until the passenger boarding bridge had been docked, the canopy has been lowered on to the fuselage and the auto- leveler device has been set;
- g) The passenger boarding bridge operator should remain in attendance in the cab until passenger disembarkation is completed.

4.13.18 To avoid damage during departure and to maintain the prescribed safe clearance from the passenger boarding bridge, the following precautions shall be observed before the aircraft push back:

- a) The aircraft passenger door must be closed.
- b) The passenger boarding bridge canopy and auto-leveler must be retracted.
- c) The passenger boarding bridge safety barrier should be erected or the doors should be closed.
- d) Apron drive bridge should be withdrawn and the drive wheels placed in the parking box provided.
- e) A rail drive bridge should be fully retracted.
- f) A check should be made that there are no vehicles, equipment or personnel obstructing the movement of the aerobridge before it is moved. A check should also be made to confirm that the ground equipment is configured to meet any specific settings for the aircraft type.

4.13.19 Where self-manuevering is employed, all responsible personnel at ramp should ensure that the following arrangements and requirements are met:



- a) Stand entry routes, parking positions and departure routes should be marked with standard paint markings in accordance with the appropriate standards.
- b) Buildings and installations adjacent to self-maneuvering stands should be constructed to withstand the engine blast or be protected by blast screening.
- c) Vehicles and equipment should not be placed in a position where they can be affected by blast.
- d) Equipment parking areas should be protected by blast screens or located remote from the stands.
- e) Safety instructions should be issued, specifying the maximum aircraft sizes to be permitted on individual stands so as to ensure that the prescribed safe clearances are maintained. Pilots should also be required to exercise caution and use the minimum engine power settings needed to complete a satisfactory maneuver.
- f) Self-maneuvering stands should be inspected regularly and kept clear of any FOD in order to minimize the risk of ingestion.

4.13.20 As a part of safety management system, all responsible personnel at ramp should ensure the following for safe conduct of push-back operations:

- a) Unless required to ensure the safety of the aircraft, all personnel involved should stay within the aircraft tug.
- b) All tug drivers should be qualified to drive aircraft tugs in all weather conditions.
- c) Push-back crews should be thoroughly familiar with push-back procedures.
- d) The airline personnel should, ideally, be in communication with the flight deck crew throughout the push-back operation. Where there is a possibility that communication will not be available for any reason, the supervisor should be trained to use internationally agreed hand signals.
- e) All push-back crew members should wear reflector garments.
- f) In the case of a departing aircraft being pushed back from its stand, the pilot of the aircraft will obtain approval to push back from ATC and pass this information to the tug driver.

4.13.21 Before approving power-backs, the airport operator should take into consideration aircraft characteristics, apron layout/stand density, the stand clearances available and any gradients involved on stands or taxiways.

4.13.22 Before approval is issued to an airline, for a particular aircraft type, the airport operator should satisfy that the intended operation will be safe and will not give rise to unacceptable levels of noise, vibration, blast or fumes on the adjacent apron areas. The following shall be ensured:

- a) The procedures to be used are incorporated in the airline's operations manual.

- b) Pilots are trained and experienced in power-back operations.
- c) The aircraft is directed by a trained marshaller using standard power-back marshalling signals.
- d) Wing walkers are employed to safeguard the rearward movement of the aircraft, particularly wing tip clearances, to prevent collisions with other aircraft or vehicles or personnel.
- e) Procedures, training and personal protective equipment should be employed which ensure the safety of these personnel during power back operations.

#### **4.14 Engine hazards**

- 4.14.1 The aerodrome operators shall ensure that rules and procedures for safe engine running on the airport are promulgated and understood by flight crew and handling staff.
- 4.14.2 Engine running on the apron and adjacent taxiway areas shall be limited to the minimum necessary to meet aircraft operational needs.
- 4.14.3 It shall be ensured that vehicles and personnel do not pass behind running engines. Staff must not approach running engines unless it is part of their job function.
- 4.14.4 The aircraft anti-collision beacon(s) must be switched on before an engine is started. However, the absence of such illumination should not be regarded as proof that the engine is safe to approach.
- 4.14.5 Where possible, blast screens should be provided to protect buildings, installations and vehicle and staff areas that are vulnerable to jet blast.
- 4.14.6 When turning on to a stand, it is desirable that the flight crew use the minimum power needed to carry out a normal arrival maneuver.
- 4.14.7 Thrust levers should not be exercised for any purposes when the arriving aircraft is on stand, unless specifically approved by the aerodrome operator.
- 4.14.8 The aircraft anti-collision beacon(s) must remain on until engines have run down or propellers/rotors have stopped rotating.
- 4.14.9 During start up and push-back, engine power settings should not normally exceed ground idle.
- 4.14.10 Engine runs and check starts should be controlled and only carried out with the prior approval of the airport operator.
- 4.14.11 The area behind and adjacent to the cone of the jet blast should be clear of equipment and the ground must be firm and without loose tarmac, stones or other material.
- 4.14.12 The airport operator should establish a programme to educate all apron users on the hazards and requirements associated with FOD and to stress the responsibilities of all personnel employed on the apron to minimize risks from FOD.

- 4.14.13 The aerodrome operator must ensure that there are programmes of regular apron sweeping, cleaning and inspection, including rapid reaction to fuel and other liquid and chemical spillages. They should also provide facilities for the disposal of solid and liquid aircraft waste and FOD protection.
- 4.14.14 All vehicles and equipment used on the aprons should be maintained in a clean and serviceable condition.
- 4.14.15 The aerodrome operators should ensure safeguarding apron operations around propeller driven aircraft. Ground staff should be alert to the dangers of running propellers.
- 4.14.16 Aerodrome operators should ensure that the safeguarding of 'propeller areas' is included in airline operating procedures.
- 4.14.17 Aerodrome operators should provide suitable apron layouts and facilities that provide proper clearances for the operation of propeller aircraft types, with particular emphasis on ground clearance for propeller tips and the proximity of passenger boarding bridges and other ramp equipment when the aircraft is at, or approaching, its parking position.
- 4.14.18 Passengers should not be allowed to walk on the apron when propellers are turning. Where it is operationally essential to have the propellers turning, passenger movement must be effectively controlled.

#### **4.15 Inadequate Lighting, Glare or Confusing Lights**

- 4.15.1 During darkness and periods of low visibility apron areas should be provided with a good standard of lighting of sufficient coverage and brilliance to enable pilots and ground staff to operate safely and effectively.
- 4.15.2 Care must be exercised to ensure that no lighting installation can give distracting or confusing signals to pilots or cause dazzle or glare for any people on the airfield, including ATC staff.
- 4.15.3 It is equally important that every workplace has suitable and sufficient lighting to ensure people can work safely.
- 4.15.4 Apron flood lights should be regularly checked for damage and disturbance of the settings of the luminaires.
- 4.15.5 Any lights used on the apron must not conflict with aircraft guidance systems and if coloured lights are used they must not be capable of confusion with colour coded aviation lights.
- 4.15.6 Illuminated aircraft stand identification signs should, where possible, be prominently placed at a standard position at the head of stand to give unambiguous indication to pilots of stand location/identification.
- 4.15.7 Traffic lights controlling crossings of taxiways/taxilanes should be clearly identifiable to vehicle drivers but must be shielded from the vision of pilots.

## **5. Training Requirements**

- 5.1 To ensure safety of all personnel engaged in airside activity, the organization shall establish minimum training requirements. The objective of training is to ensure that required personnel are provided with requisite skills and knowledge to handle ground handling operations efficiently.
- 5.2 The elements of training programme shall cover safety training, driver training and aircraft handling training. The training shall be a combination of theoretical and practical skill to verify the personnel understanding of the task being trained.
- 5.3 All training records shall be documented and made available for review by the authorized person of the organization and/or CAAN.
- 5.4 To maintain ongoing competence, all personnel engaged in airside activity shall undergo recurrent training periodically.

## Appendix I

### Training Module

#### a) Safety Training

- Safety philosophy
- Safety regulations
- Hazards
- Human factors
- Airside markings and signs
- Emergency situation
- FOD prevention programme
- Runway Safety programme
- Personnel protection
- Accidents and incidents
- Airside safety supervision

#### b) Driver Training

- Role and responsibilities of vehicle operator
- Vehicle/equipment standards
- Hazards of airside driving
- Reduced visibility procedures
- Accident and incident reporting procedures
- Familiarization with apron layout
- Airport rules, regulations and procedures
- Procedures for crossing aircraft movement area
- Pedestrian crosswalk rules
- Identification of obstacle free area
- Aircraft familiarization
- Driver evaluation

#### c) Aircraft Handling Training

- Assembly of load in bulk or ULDs
- Loading and unloading of aircraft
- Manual handling of load
- Aircraft movement
- Provision and operation of ground support equipment
- Provision and operation of passenger and crew vehicles
- Cabin servicing
- Safety during aircraft fueling
- Airside safety