

***STANDARD OPERATING PROCEDURE***

***FOR***

***FIRE PREVENTION  
&  
PROTECTION ON RAMP AREA.***

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***AERODROME SAFETY AND STANDARDS DEPARTMENT***

***CAAN***

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# Chapter 1

## 1.1 General:

Ramp safety is a major safety concern in the aviation industry. The airport's ramp area thus involves lots of activities and movements from various aircraft, vehicles, equipments and people. Moreover, it accommodates personnel from different departments like airport operation and maintenance staff, airport police, fire brigade, airport and airline engineers, planners and other regulatory and security personnel all performing different activities and task every day. Ramp accidents are considered one of the major problems in the industry and a major concern all airports are taking seriously nowadays. Ramp area is a very dynamic, complex and intensely busy area of the airport wherein the majority of all accidents and incidents has probability to occur.

Ramp accidents vary and range from ordinary to serious and dangerous. All these can be primarily attributed to human error. The IATA says that about 92% of these incidents resulted from failure to follow standard procedures, lack of proper and adequate training and airfield congestion.

The Airport authority, airline operators and other stakeholders form part of the Airport Ramp Safety group that aims to identify hazards and create a better and safe work environment at all airports and its primary objective it to prevent injuries and reduce the economic loss.

**1.2 Objective:** Objective of this SOP is to ensure the actions (on the part) of employees in relation to the role and responsibility of the ground staffs of different unit who work on Ramp Area during routine and non routine circumstances involving day to day works, accidents and incidents affecting the fire safety of the aviation at airports of Nepal. Standard operational procedure for aircraft ground service for initial

intervention is a procedure that includes aviation best practices and guidelines for a wide range of fire prevention and fire safety.

This SOP document is intended to assist ramp and ground safety personnel in the initial intervention on any type of fire related incidents or accidents that occur on aircraft ramp and ground service area. It will further facilitate them with the different operational procedures and responsibilities that are directed and documented in this manual.

### **1.3 Abbreviation**

RFFS: Rescue and fire fighting services

FOD: Foreign Object Debris

SOP: Standard Operating Procedure

CAR: Civil Aviation Requirement

ICAO: International Civil Aviation Authority

PPE: Personnel Protective Equipment

IATA: International Air Transport Association

FPO: Fire Prevention Officer

## **Chapter 2**

### **2.1 Legal requirements**

In accordance with ICAO Annex 14, Vol. 1.9.6, and CAR 14 Fire extinguishing equipment suitable for at least initial intervention in the event of a fuel fire and personnel trained in its use shall be readily available during the ground servicing of an aircraft, and there shall be a means of quickly summoning the rescue and fire fighting service in the event of a fire or major fuel spill.

Similarly, when aircraft refuelling operations take place while passengers are embarking, on board or disembarking, ground equipment shall be positioned so as to allow:

- a) the use of a sufficient number of exits for expeditious evacuation; and
  
- b) a ready escape route from each of the exits to be used in an emergency.

## Chapter 3

### 3.1 General consideration on Ramp safety

The following procedures and considerations should be applied to all operations on the ramp:

- Always be aware of your surroundings.
- Always wear personal protective equipment (PPE).
- No smoking.
- 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 Aerodrome Safety office.
- Do not operate any equipment that has been declared unserviceable.
- Keep the ramp area clear of foreign object debris (FOD).
- 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.
- 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.
- 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.

**3.2 Aircraft Fueling:** Aircraft refueling operations can be hazardous and therefore require constant attention of all personnel involved. Team work is essential to prevent the incident/accident particularly during aircraft refueling operations. During refueling operation the following precautions should be followed:

Fuelling of aircraft shall only be done outdoors and not less than 15 meters from any building.

Fuelling staff shall ensure that clear path is maintained to permit removal of fuelling equipment in case of emergency.

**"No smoking"** signs shall be prominently displayed.

Smoking or, the use of any appliance employing naked flame or, capable of producing a spark or, in any other way igniting the fuel vapor shall not be permitted within 30 meters of aircraft of fuelling equipment.

Aircraft engines shall not be started and the ignition switches shall be in the "OFF" position.

Aircraft electrical radar and radio system shall not be operated and pertaining switches shall be in the "OFF" position. However electrical switches are permitted to be put "ON" for the following:

- i.) Power and light essential for fuelling.
- ii.) Minimum amount of cabin lighting.
- iii.) Steady parking lights. Parking light switches shall not be operated during fuelling operation.
- iv.) Ground power supply, air conditioning units and similar equipment shall be permitted to operate only if they are located outside the danger zone. Danger zone is defined as the area within the largest polygon obtained by joining points 3 meters away from the wings and the fuelling vehicle. And if the operating units including their electrical equipment shall be flame proof and of a type approved by the Chief Inspector of Explosives.
- v.) The fuelling equipment and aircraft shall be bonded to each other.
- vi.) During fuelling operations, every fuelling vehicle shall be constantly attended by at least one competent person appointed by the fuelling company. Adequate manpower shall be constantly made available to shut off the flow of fuel in emergency.
- vii.) Fire extinguisher of adequate capacity and of approved type shall be made available for immediate use. The fire extinguisher shall be unclamped and kept at appropriate place near refueller/Dispenser.
- viii.) Prior to recommencing of fuelling, action shall be taken to clean the spilled fuel.
- ix.) The fuelling equipment shall not be positioned until the airline authorities are satisfied that there is no risk from heated components.

- x.) Fuelling operations shall cease when a turbo-jet aircraft maneuvers so as to bring the rear blast within 50 meters of the fuelling equipment or the aircraft fuelling point and vent system.
- xi.) Fuelling of aircraft shall be avoided during severe electric storms.
- xii.) In such cases when the fuelling vehicle is parked under the aircraft, it shall be entrusted that any accidental spillage from the aircraft air vent does not fall on the refueling equipment.

If fuel vapor is detected inside the aircraft, or if any other hazard occurs, refueling or defueling must be stopped immediately.

If passengers have to board or disembark during fueling drills, this must be achieved under the supervision of a responsible person.

The "No Smoking" rules should be reinforced during all such movements.

Passengers should not be allowed to stay near or outside of the aircraft.

**3.3 Fuel spillage:** During a fuel spill and the associated clean-up and disposal of all fuel spills and absorbent clean-up activities, all sources of ignition must be removed and terminated, All fuel or fuel spills must be immediately controlled and contained with fuel absorbing materials.

- All electric tools likely to produce sparks should be avoided.
- Electrical ground power supplies should be disconnected.
- Flash equipment should not be used within 3 m of fuelling operation.

- Evacuate the area up to 15 m from the spillage and prevent the movement of unauthorized people or vehicles within the affected area.
- To reduce any ignition sources switch off all the electrical apparatus.
- In the event the fuel spills over 2 meters in any direction or of continuous nature, fuelling of the aircraft shall be discontinued and the engine of ground power supply unit shall be stopped but the electrical circuits and switches shall on no account be touched except for stopping the power unit.
- In case of minor spills, the Aviation Gasoline shall be immediately covered with sand or dry earth, which shall be removed to safe place at the earliest opportunity for disposal and for JetA-1, the spilled fuel, shall be soaked off with soak mat.

# Chapter 4

## 4.1 Fire prevention

Ramp personnel and staffs must know fire prevention procedures, emergency evacuation plans and procedures for inspecting and maintaining fire protection equipment.

Airport authority, Airlines Operators and Ground handling agencies should ensure that:

- Appropriate types and numbers of fire extinguishers are serviceable and positioned in well-marked areas, and that access to them is kept clear.
- Fire alarm stations are well marked and accessible.
- Fire hydrants and hoses are well marked and accessible.
- Emergency shutoff points for in-ground fueling systems are clearly marked and accessible.
- All personnel know the locations of fire extinguishers, hydrants, alarms and emergency fuel shutoff systems, and are familiar with their operation.
- Emergency exits and escape routes are clearly marked and unobstructed, and illuminated exit signs are functional.
- Flammable materials are properly stored and disposed of.
- No-smoking areas are defined, and signs alert personnel to smoking restrictions.
- Aircraft and fuel servicing equipment are securely bonded before refueling or defueling commences.
- If possible, doors and hatches, etc, on the aircraft should be closed.
- Unserviceable fire equipment shall be reported immediately to a supervisor.

- If the fire is detected in 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 aircraft.
- If fire is detected in the parked aircraft, the persons on board should be immediately evacuated.

## **4.2 Protective Clothing**

Ramp personnel should wear safety footwear, gloves, knee pads, high-visibility clothing. High-visibility clothing should be mandatory on the ramp for the safety of employees. Clothing should fit snugly to prevent becoming snagged.

## **4.3 Fire Prevention in Ramp Area**

- Portable and mobile radio should not be operated within 10 ft. (3m) of fueling equipment or of the fill or vent point of the aircraft.
- Hot works within 75 m of fuelling is ceased.
- All vehicles other than those performing fuel servicing are not be driven or parked under aircraft wings.
- All employees should have the knowledge of Fire extinguisher.
- Employees have to inform about the unserviceable extinguisher to the Aerodrome safety Office.
- Emergency door should be always clear /No obstacle.

## **4.4 Provision of Fire extinguishers**

Portable fire extinguishers are required in the immediate vicinity of all flammable and combustible liquid storage, use and dispensing: welding and cutting; spray finishing and other maintenance operations, service vehicles and as well as on aircraft refueling area. A minimum of one portable fire extinguisher shall be provided for each permanent takeoff and landing area and for the aircraft parking areas. The portable fire extinguisher for the

takeoff and landing area must be effective for the extinguishment of a flammable liquid fire and for electrical components.

Ramp area shall be provided and maintained for all fire protection equipment to permit safe operation and maintenance of such equipment. Different types of fire protection systems like automatic fire detection systems, fire alarm systems, automatic fire extinguishing system and portable fire extinguishers should be installed.

Storage, trash and other materials or objects shall not be placed or kept in such a manner that would prevent such equipment from being readily accessible.

Portable fire extinguisher is required on aircraft fuel servicing vehicles. Each aircraft fuel servicing tank vehicle must have two fire extinguishers one must be mounted on each side of the vehicle. And the provided fire extinguisher must have a rating of at least 20-B:C. The installed fire extinguisher must be readily accessible from the ground.

Additionally, the portable fire extinguishers are should be installed on following areas:

1. Aircraft towing area.
2. Aircraft welding area.
3. Aircraft refueling area.
4. Aircraft servicing vehicles area.
5. Aircraft fuel dispensing stations.
6. Helipads and heliports.

The installed fire extinguisher must be readily accessible from the ground.

## **Chapter 5**

### **5.1 Training**

The majority of accidents and incidents can be attributed to lack of attention to or failure to carry out or deviations from prescribed procedures. It is the responsibility of the Manager to ensure that the personnel under his control are adequately trained.

New personnel shall be thoroughly trained in all operations and procedures, which they will be called upon to perform in the course of their duties and in all actions to be taken in the event of an emergency. Existing personnel called upon to undertake new tasks shall be similarly trained before undertaking the new task without supervision.

Employees shall be instructed in the proper use of portable fire extinguishers and other manual fire suppression equipment. An initial fire responder is expected to know which type of fire extinguisher should be operated on what type of fire.

Fuel servicing personnel shall receive approved training in the operation of fire extinguishing equipment.

Staffs involved in the fuel servicing must have adequate training with extinguishers to use them effectively in the event of an emergency

All the staffs working on ramp and ground safety shall be trained to know the locations and proper use of portable fire extinguisher for its safe and proper use. They shall also be familiar with the location and operation of emergency stop switches and controls. Any time employees are to take specific action during a fire event, proper training is required.

The training is required of new employees before they can begin their official duties. Refresher training shall be provided for all the staffs at least annually.

## Chapter 6

### 6.1 Duties and responsibilities:

#### 6.1.1 Agencies responsible for the provision of fire extinguishers:

Airport authority should provide the fire extinguishers for the safety of aircraft on the ramp area.

During start up procedure of aircraft, the Ground Handling agent and Airlines should provide appropriate fire extinguisher.

During fueling operation, Nepal Oil Corporation should provide appropriate fire extinguisher near the browser.

#### 6.1.2 Agencies responsible for the recharge of fire extinguishers:

The discharged and unserviceable fire extinguishers should be immediately recharged and make serviceable by those respective agencies who have provided fire extinguishers.

**6.1.3 Responsibility of daily Inspection staff:** During the daily inspection of fire extinguisher if any defect is seen, the daily inspector staff should immediately report to airport authority. Daily inspection log is maintained according to Daily inspection report form (Appendix 1).

Portable fire extinguishers are required to be visually inspected when initially placed in service and at least monthly thereafter. This visual inspection, intended to help ensure that each extinguisher is in its designated place and will operate if needed, can be performed by facility staff.

**6.1.4 Responsibility of Fire Prevention Officer:** Fire Prevention officer (F. P. O.) is an individual whose assigned duty is to inspect and enforce

all international, national, state and local laws and ordinances pertaining to fire prevention. F. P. O. shall be appointed by the Airport Authority. All fire protection equipments installed in airport should be inspected, checked, facilitated and replaced as per directed by the F. P. O.

## Chapter 7

### **Fire extinguisher Installation, Inspection and Maintenance:**

**7.1 Installation:** The installation of appropriate fire extinguisher should be based on the weight of the extinguisher.

Extinguisher weighing less than 18 kg: These types of extinguisher should be installed on the wall so that their tops are not more than 5 feet.

Extinguisher weighing more than 18 kg: These types of hand held fire extinguisher should be installed on the wall so that their tops are not more than 3.5 feet.

Wheeled fire extinguishers should be conspicuously located in a designated location.

The clearance between the floor and the bottom of installed hand held extinguishers must not be less than 4 inches to facilitate cleaning beneath the unit and reduce the likelihood of the extinguisher becoming dislodged during cleaning operation.

**7.2 Inspection:** Portable fire extinguishers are required to be visually inspected when initially placed in service and at least monthly thereafter. This visual inspection, intended to help ensure that each extinguisher is in its designated place and will operate if needed, can be performed by facility staff.

The monthly inspection verifies a number of things including:

- a. Extinguishers are in their designated places.
- b. There are no obstructions to access or visibility
- c. Safety seals are not broken or missing

- d. There is no evidence of physical damage, corrosion, leakage or clogged nozzle.
- e. Fullness of cylinders is confirmed by weighing or lifting.
- f. Daily visual inspection should be carried out.

**7.3 Maintenance:** Extinguisher should be charged immediately after use. In recharging all parts should be washed thoroughly and flushed out. The chemicals must be thoroughly stirred and dissolved. Extinguishers should be examined at regular intervals to detect deterioration, damage, clogged, gasket, and to see that the appliances are filled to the proper level.

*Appendix 1*

**RAMP SAFETY  
TIACAO  
Daily Inspection report form**

*Date: .....*

<i>S.No.</i>	<i>Fire extinguisher type/capacity</i>	<i>Location of fire extinguisher</i>	<i>Details of problem</i>	<i>Reporting time</i>	<i>Remarks</i>

**Inspected by:**

**Signature:**

**Reported by:**

**Signature: .....**

**Name: .....**

**Designation: .....**

**Reported to:**

**Signature:.....**

**Name: .....**

**Designation: .....**