## 1.0 Risk Assessment

Risk Assessment is a systematic process aimed at removing or minimizing hazards at work place to make it safer and healthier. Risk Assessment involves the following steps:

- Identify Hazard(s);
- Analyze / Evaluate the risk associated with the Hazard(s); and
- Determine appropriate measures to eliminate or control the Hazard.

## 1.1 Introduction

Hazard analysis involves the identification and quantification of various probable hazards (unsafe conditions) that may occur at the airport. On the other hand, risk analysis deals with the identification and quantification of risks, the airport equipment/facilities and personnel exposed to, due to accidents resulting from the hazards present at the airport.

Hazard occurrence may result in on-site implications like:

- Fire and/or explosion;
- Leakage of flammable material;
- Crash landing;
- Bomb threat; and
- Natural calamities like earthquake, cyclone etc.

Incidents having off-site origins can be:

- Air raids; and
- Crashing of aircrafts i.e. while landing or take-off.

Other incidents, which can also result in a disaster, are:

- Agitation/forced entry by external group of people;
- Sabotage; and
- Hijacking.

In the sections below, the identification of various hazards, probable risks in the airport operation, maximum credible accident analysis and consequence analysis are addressed either qualitatively or quantitatively, which gives a broad identification of risks involved in the airport operation. Based on the risk assessment of various hazards, disaster management plan has been formulated and presented here.

## 1.2 Hazard Identification

Identification of hazards at the project sit is of primary significance in the analysis, quantification and cost effective control of accidents. A classical definition of 'hazard' states that hazard is in fact the characteristic of system that presents potential for an accident. Hence, all the components of a system need to be thoroughly examined to assess their potential for initiating or propagating an unplanned event/sequence of events, which can be termed as an accident. The following two methods for hazard identification have been employed in the study:

- Identification of major hazardous units based on Manufacture, Storage and

Import of Hazardous Chemicals Rules, 1989 (as amended in 2000) of Government of India; and

- Identification of hazardous units and segments of airports and storage units based on relative ranking technique, viz. Fire-Explosion and Toxicity Index (FE&TI).

### 1.2.1 Fuel Storage at the Airport

The Aviation Fuel farm (AFF) is developed separately in one side of the Airport facility for arrange fuel delivery of Aviation turbine Fuel (ATF) at Airport. The storage, handling, operation and maintenance of AFF, supply of AFT to aircraft at airport is carried out by Reliance Industries Limited Petroleum Business (RIL PB). ATF is supplied to AFF by number of ATF suppliers, Viz., RIL PB itself, Indian Oil Corporation, Bharat Petroleum Corporation Ltd, Hindustan Petroleum Corporation and Shell. The total 13,500 KL (3 above ground storage tanks each of 4,500 KL capacity) capacity ATF storage facility is provided. It is proposed to add 3 more storage tanks of 6200 KL to cater to demand till 2025-26.

In addition, HSD will also be used for DG sets during emergency. However, as part of the proposed expansion, no additional DG sets are proposed. Hence, analysis of failure of HSD tank is not considered as the quantity is much less compared to one ATF tank.

### 1.2.2 Identification of Major Hazardous Units

Hazardous substances may be classified into three main classes: flammable substances, unstable substances and toxic substances. The ratings for a large number of chemicals based on flammability, reactivity and toxicity have been given in NFPA Codes 49 and 345 M. Characteristics of fuel are given in **Table-1.**

**TABLE-1**
**PROPERTIES OF FUELS TO BE USED AT THE AIRPORT**

| Fuel | Codes/Label | TLV | FBP | FP | UEL | LEL |
|---|---|---|---|---|---|---|
| | | °F | | | % | |
| HSD | Flammable liquid | Not listed | 360 | 32 | 5.0 | 0.5 |
| ATF | Flammable liquid | Not listed | 572 | 38 | 7.0 | 0.2 |

*TLV : Threshold Limit Value* *FBP : Final Boiling Point*
*FP : Flash Point* *UEL : Upper Explosive Limit*
*LEL : Lower Explosive Limit*

### 1.2.3 Fire Explosion and Toxicity Index (FE&TI) Approach

Fire, Explosion and Toxicity Indexing (FE & TI) is a rapid ranking method for identifying the degree of hazard. The application of FE&TI would help to make a quick assessment of the nature and quantification of the hazard in these areas. However, this does not provide precise information. Respective Material Factor (RMF), General Hazard Factors (GHF), Special Process Hazard Factors (SPHF) are computed using standard procedure of awarding penalties based on storage handling and reaction parameters. For each separate storage, which contains flammable or toxic substances, a fire and explosion index 'F' and/or a toxicity index 'T' may be determined in a manner derived from the method for determining a fire and explosion index developed by the Dow Chemical Company.

*1.2.3.1FE and TI Methodology*

Fire and Explosion Index (F and EI) is a product of Material Factor (MF) and hazard factor (F3) while MF represents the flammability and reactivity of the substances, the hazard factor (F3), is itself a product of General Process Hazards (GPH) and Special Process Hazards (SPH). An accurate plot plan of the airport/storages, Fire and Explosion Index and Hazard Classification Guide published by Dow Chemical Company are referred to estimate the FE & TI of a storage unit.

The degree of hazard potential is identified based on the numerical value of F&EI as per the criteria given below:

| F&EI Range | Degree of Hazard |
|---|---|
| 0-60 | Light |
| 61-96 | Moderate |
| 97-127 | Intermediate |
| 128-158 | Heavy |
| > 159 | Severe |

*1.2.3.2Toxicity Index (TI)*

The toxicity index is primarily based on the index figures for health hazards established by the NFPA in codes NFPA 704, NFPA 49 and NFPA 345 m.

*1.2.3.3Classification of Hazard Categories*

By comparing the indices F&EI and TI, the unit in question is classified into one of the following three categories established for the purpose as given in **Table-2.**

**TABLE-2**
**FIRE EXPLOSION AND TOXICITY INDEX**

| Category | Fire and Explosion Index (F&EI) | Toxicity Index (TI) |
|---|---|---|
| I | F&EI < 65 | TI < 6 |
| II | 65 < or = F&EI < 95 | 6 < or = TI < 10 |
| III | F&EI > or = 95 | TI > or = 10 |

Certain basic minimum preventive and protective measures are recommended for the three hazard categories.

*1.2.3.4Results of FE and TI for Storage/Process Units*

Based on the Manufacture, Storage and Import of Hazardous Chemical (MSIHC) Rules 1989 (as amended in 2000), the hazardous fuels used at the airport were identified. Fire and Explosion are the likely hazards, which may occur due to the fuel storage. Hence, Fire and Explosion index has been calculated for the storages in the airport premises. Detailed estimates of FE&TI are given in **Table-3**.

**TABLE-3**
**FIRE EXPLOSION AND TOXICITY INDEX FOR STORAGE FACILITIES**

| Sr. No. | Fuel | Total Quantity ($m^3$) | F&EI | Category |
|---|---|---|---|---|
| 1 | ATF | 32,100 | 92.0 | II (Moderate) |

1.2.4 Risk Quantification - Fuel Storage

Based on the storage of fuels and their properties, the following failure scenarios for the airport have been identified for quantification of risk, which are given in **Table-4.** The heat radiation contours are calculated around the source of failure to assess the extent of damage.

**TABLE-4**
**SCENARIOS CONSIDERED FOR MCA ANALYSIS**

| Sr. No. | Fuel/Chemical | Quantity ($m^3$) | Model Considered |
|---|---|---|---|
| 1 | Catastrophic failure of one tank | 6,200 | Pool Fire |

For the present study, the scenarios under consideration assume that the peak level of radiation intensity will not occur suddenly. Based on the past experience, it is found that 20-30 minutes time will be required before a tank fire grows to full size. For radiation calculations, pool fire has been considered. From the above considerations, the criterion of 4.5 $kW/m^2$ has been selected to judge acceptability of the scenarios.

1.2.5 Model Computations

The results of Maximum Credible Accident Analysis (MCA) for ATF are tabulated indicating the distances for various damages identified by the damage criteria.

- ***Pool Fire Due to ATF Tank Failure***

Calculations are done for radiation intensities levels of 37.5, 25.0, 12.5, and 4.5 $kW/m^2$ which are presented in **Table-5** for instantaneous pool fire. The distances predicted for various scenarios are from the center of the pool and is shown in **Figure-1.**

**TABLE-5**
**OCCURRENCE OF VARIOUS RADIATION INTENSITIES - POOLFIRE**

| Failures | Storage Capacity ($m^3$) | Radiation Intensities ($kW/m^2$)/Distances (m) | | | |
|---|---|---|---|---|---|
| | | 37.5 | 25.0 | 12.5 | 4.5 |
| ATF Tank | 6200 | 49.9 | 62.9 | 93.4 | 167.2 |

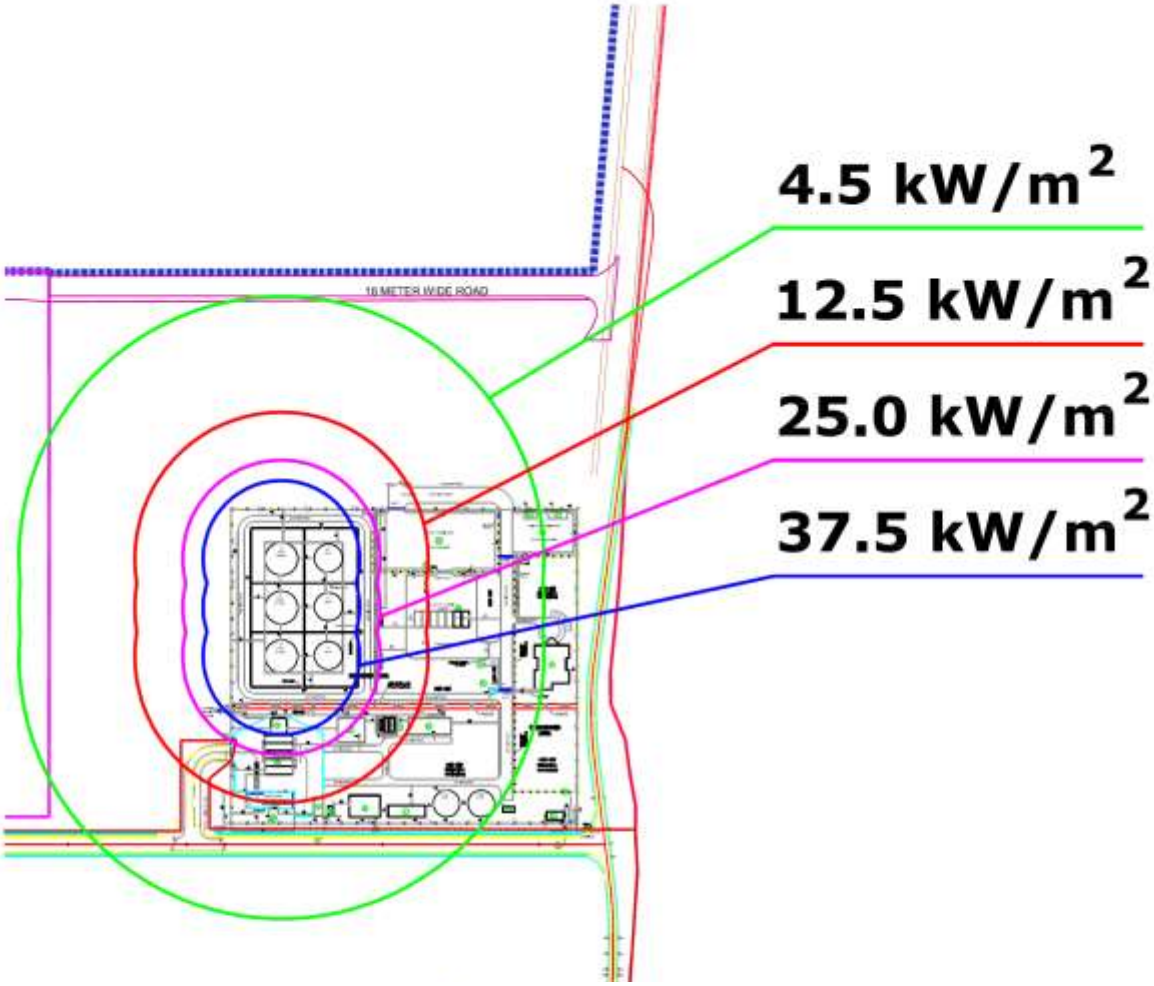


**FIGURE-1**
**RADIATION CONTOURS**

A perusal of the above table clearly indicates that 37.5 kW/m$^2$ (100% lethality), 25.0 kW/m$^2$ (50% lethality), 12.5 kW/m$^2$ (1% lethality) and 4.5 kW/m$^2$ (0% lethality with 1$^{st}$ degree burns from the center of the tank) will be occurring at a distance of 49.9 m, 62.9 m, 93.4 m and 167.2 m respectively.

- ***Pipe Failure and Continuous release of ATF which burn on meeting with source of ignition***

Calculations are done for radiation intensities levels of 37.5, 12.5, and 4.0 kW/m$^2$ which are presented in **Table-6** for instantaneous pipe failure and continuous release of ATF which burn on meeting with source of ignition. The distances predicted for various scenarios are given in meters.

**TABLE-6**
**OCCURRENCE OF VARIOUS RADIATION INTENSITIES – PIPE FAILURE**

| Sr. No | Pipe Dia | Quantity of ATF (kg/sec) | Radiation Intensities (kW/m$^2$)/Distances (m) | | |
|---|---|---|---|---|---|
| | | | 37.5 | 12.5 | 4.0 |
| 1 | 75 mm hose | 13 | 14 | 25 | 43 |
| 2 | 250 mm pipe 10 % failure | 82 | 32 | 55 | 97 |
| 3 | 450 mm Dia floating suction pipe 10 % failure | 118 | 38 | 65 | 115 |
| 4 | 450 mm dia fuel hydrant line 10 % failure | 432 | 67 | 115 | 204 |

- ***Damage due to Incident Radiation Intensities***

Calculations are done for radiation intensities levels of 37.5, 25.0, 19.0, 12.5, 4.5 and 1.6 kW/m$^2$ which are presented in **Table-7** for instantaneous damage due to incident radiation intensities.

**TABLE-7**
**OCCURRENCE OF DAMAGE DUE TO INCIDENT RADIATION INTENSITIES**

| Sr. No | Incident Radiation (kW/m$^2$) | Type of Damage Intensity | |
|---|---|---|---|
| | | Damage to Equipment | Damage to People |
| 1 | 37.5 | Damage to process equipment | 100% lethality in 1 min. 1% lethality in 10 sec |
| 2 | 25.0 | Minimum energy required to ignite wood at indentifinitely long exposure without a flame | 50% lethality in 1 min significant injury in 10 sec |
| 3 | 19.0 | Maximum thermal radiation intensity allowed on thermally unprotected adjoining equipment | -- |
| 4 | 12.5 | Minimum energy to ignite with a flame; melts plastic tubing | 1% lethality in 1 min |
| 5 | 4.5 | -- | Causes pain if duration is longer than 20 sec, however blistering is unlikely (1$^{st}$ degree burns) |
| 6 | 1.6 | -- | Causes no discomfort on long exposures |

- ***Vapour Cloud Explosion***

The containment failure of tank or pipe failure, ATF would evaporate. Such evaporated ATF would mix with air and forms an explosive mixture. On meeting with a source of ignition, explosion occurs and consequences of such explosion, in the form of over-pressure are computed and are tabulated in **Table-8**. In case of such explosion, the pressure wave has a damage potential and it creates different level of pressure on surroundings.

**TABLE-8**
**OCCURRENCE OF VAPOUR CLOUD EXPLOSION**

| Sr.No | Evaporated Quantity (kg) | Distance to Heavy Damage in Meters | Distance to Repairable Damage in Meters | Distance to 100 % Glass Breakage in Meters | Distance to 100 % Glass Breakage in Meters |
|---|---|---|---|---|---|
| 1 | 134 | 26 | 52 | 129 | 344 |
| 2 | 160 | 28 | 55 | 137 | 365 |
| 3 | 294 | 33 | 68 | 167 | 447 |
| 4 | 870 | 40 | 96 | 241 | 642 |

1.2.6 Effect of Thermal Radiation on Population

A perusal of **Table-5, Table-6, Table-7** and **Table-8** presented in above sections indicates that radiation contours (37.5 kW/$m^2$ and 25.0 kW/$m^2$) are restricted to RGIA boundary only and do not affect the surrounding human population.

In addition, the airport has watch towers to keep vigilance on all the activities occurring. The traffic movement is recorded by the security personnel. In case of any eventuality, the alarm is blown to alert the nearby work force.

The Passenger Terminal Building (PTB), cargo terminal etc. has adequate fire rescue system comprising of fire hydrants, emergency exits, and assembly points for safety of the occupants.

## 1.3 Aerodrome Emergency Plan (AEP) for Disaster Management

A comprehensive Aerodrome Emergency Plan is already in place for RGIA. The AEP is comprehensively prepared for specifying role of various groups / organizations/ agencies and plan of disaster management during various types of emergencies / disasters like in-flight mass casualities, medical emergencies, aircraft accidents, various fires on ground, accidents involving dangerous goods, natural disaster management, unlawful act of seizure of aircraft etc. The following most likely disaster scenarios are considered in the Aerodrome Emergency Plan.

Different types of emergencies are: emergencies involving aircraft, emergencies not involving aircraft, medical emergencies or combinations of these emergencies.

A) EMERGENCIES INVOLVING AIRCRAFT

1) Accident - Aircraft on-airport
2) Accident - Aircraft off-airport a) Land b) Water
3) Incident - Aircraft in flight a) Severe air turbulence b) Decompression
c) Structural failure
4) Incident - Aircraft on ground
5) Incident - Sabotage including bomb threat
6) Incident - Unlawful seizure

B) EMERGENCIES NOT INVOLVING AIRCRAFT

1) Fire - Structural
2) Sabotage including bomb threat
3) Natural disaster
4) Dangerous goods
5) Medical emergencies

C) COMPOUND EMERGENCIES

1) Aircraft/structures
2) Aircraft/fuelling facilities
3) Aircraft/aircraft

1.3.1 Emergency Action Plan for Accident/Incident

*1.3.1.1 Air Traffic Control (ATC)*

- Act as a warning & notification agency for an incident or emergency involving aircraft or other emergency;
- Manage air traffic in the area of the incident or emergency;
- Support the incident or emergency rescue and recovery operations as required;
- The hazardous cargo situation involving an aircraft in flight, the Air traffic Controller will obtain the following information:
  a) Location of the Aircraft.
  b) Presence of injured/ trapped persons
  c) Symptoms of injured/trapped persons
  d) Other pertinent facts as required
  e) UN Number and/or proper shipping name of the goods if possible.
- Provide emergency vehicles clearance/access corridor to the site. Divert all air/vehicular traffic away from the danger area.

*1.3.1.2 Aerodrome Rescue and Fire Fighting (ARFF)*

- As the combat agency, respond to and carry out the rescue and fire fighting as defined in the departmental SOP‟ s/working instructions;
- Provides the on-scene commander for all fire related incidents and other non-security related emergencies on airport;
- Provides and establishes the FCP;
- Provide transportation officer & manage transportation to and from the accident/incident site;

- On direction of the on-scene commander set up an appropriate site for a triage area;
- Ensure minimal disturbance of wreckage other than required for fire fighting and rescue; and
- Act as the initial combat agency for dangerous goods incidents till the arrival of Hyderabad Fire Brigade/concerned responding agency.

*1.3.1.3 AOCC*

- Send the Duty Manager – Airside Operations to the Mobile Command Post.
- Determine (in cooperation with the On-Scene Commander) the exact nature and scope of the incident and ensure that adjacent building(s) are evacuated.
- Ensure (in cooperation with the On-Scene Commander) that all personnel are provided with protective clothing suitable for the hazardous material involved.
- Ensure that all contaminated persons have been identified and isolated for appropriate treatment.
- Assist whenever possible.

*1.3.1.4 CISF*

- The Duty Supervisor of the Security Patrol Division will proceed to the Mobile Command Post and report to the On-Scene Commander.
- Actions will be taken based on the information provided by the On-Scene Commander.

SOCC shall notify:-

- Senior Commandant, CISF.

CISF shall:

- Upon receipt of the notification, the Security Control Centre will relay the information to concerned agencies.
- The Duty Supervisor of the Security Patrol Division will proceed to the Mobile Command Post and will report to the On-Scene Commander.
- If required, he will coordinate with the On-Scene Commander to:
  a) Establish a perimeter security control zone;
  b) Provide security around the controlled perimeter;
  c) Assist in evacuating and isolating contaminated persons;
  d) Provide crowd and traffic control;
  e) Cordon off the area to prevent any unauthorized entrance.
  f) Take action to prevent smoking, open flames, running engines or other ignition source within the area.
  g) If explosives are involved, call upon the services of the explosives
  h) Disposal Team.
  i) Liaise with the On-Scene Commander to determine whether to order an evacuation. If the situation dictates an evacuation, the security officer will direct the evacuation
  j) Keep all persons, except ARFF Personnel at least 600m away from the scene.
- Liaise with the ARFF Services or Telengana State Disaster Response & Fire Services on the requirement of CISF assistance at the scene.

- Facilitate the access of the external resources into the airside.

*7.4.1.5 Airport Medical Centre*

A Senior Medical Officer will respond to the incident site and take action(s) as required based on the type of dangerous goods involved and the scope of the incident.

- If requested, report to the staging area or the incident scene as directed.
- Deploy personnel and equipment according to type and severity of the incident, as required.
- Provide triage, treatment and transportation of any casualties as required.
- Coordinate medical activities with other agencies involved.
- Advice hospitals and other receiving Centers of the potential of contamination so that adequate steps may be taken in advance.
- Medical officer will provide examination, treatment, of any victims or persons exposed to the toxic effects of the substance.

*1.3.1.6 Chief Operating Officer*

- Monitor the situation and take decision as required
- Request Corporate Communications Department to prepare news/media releases in consultation with the agencies involved, if required
- On completion of the incident, schedule and conduct a debriefing
- Amend the Airport Emergency Plan based on the reports received and the comments made at the debriefing session.

*1.3.1.7 Airside Operations*

- Position one "Follow-Me" vehicle at (Gate No. 2) for escorting the Telengana State Disaster Response & Fire Services resources to the accident/incident site.
- Initiate action to re-allocate the parking bays and if necessary after consultation with the dangerous goods specialist, make arrangements to move the aircraft parked at the adjacent bays

*1.3.1.8 Telengana State Disaster Response and Fire Services*

- Dispatch personnel and equipment to the rendezvous point or incident site in accordance with instructions and support the Rescue and Fire Fighting Department as required.
- Send a Senior Officer to represent the Telengana State Disaster Rescue and Fire Services in the IMC, if activated.
- Send a Senior Officer to the Mobile Command Post who will report to the On-Scene Commander.

*1.3.1.9 Corporate Communications*

- When requested, coordinate any news release with the COO Rajiv Gandhi
- International Airport, as well as with the Airline or Handling Agency involved
- Receive all authorized press personnel in the media press Centre where the following will be provided:
    - Briefing session/s
    - press release/s

- Ensure that liaison is established with all government and security agencies in order to prevent any breach of security.

***Note:***

- Under no circumstances will the press or any other unauthorized persons be permitted inside security lines until authorized by the On-Scene Commander.
- At no time should the press be permitted access to the IMC.

*1.3.1.10 BHABHA ATOMIC RESEARCH CENTRE (BARC) (If Radiological Emergency involved)*

- When radioactive materials are involved the ARFF will immediately notify the Office of Bhabha Atomic Research Centre and take charge of the scene until they arrive.
- Upon notification, proceed to the Mobile Command Post and report to the On-Scene Commander
- BARC will decontaminate the area, personnel and equipment and take any other actions necessary to bring the incident to a successful conclusion.
- All non-qualified persons must be kept at a safe distance from the radioactive material.
- Take all appropriate actions to diffuse the situation.
- All other Departments/Agencies will support the BARC to the extent possible.

*1.3.1.11 Safety and Compliance*

- Inform the authority concerned within 48 hrs of occurrence, followed by a report as per the requirement under the Environment (Protection) Rules, 1986 for all accidents/incidents involving hazardous chemicals.
- Inform the District Level Committee/State Biotechnology Co-ordination Committee and the state medical officer as per the requirement under the Environment (Protection) Rules, 1986 for all accidents/incidents involving hazardous micro-organisms.

*1.3.1.12* Aircraft Operator, Ground Handling agency/Tenant

- When damaged consignments of dangerous goods are discovered during loading/unloading from an aircraft, the airline or the ground handling agent concerned shall notify the ARFF Service, stating the parking bay number, type of aircraft and airline, and type of dangerous goods (if known).
- If dangerous goods consignments are damaged in a cargo warehouse, the ground handling agent or the cargo operator shall notify the ARFF Service, stating the location, type of dangerous goods involved (if known) and the extent of damage.
- Shut down or remove any equipment that may affect the situation.
- Contain the area, if safe to do so.
- Standby until the arrival of Airport Rescue and Firefighting dept.
- Do not allow persons/vehicles to walk through the affected area.
- Prepare to evacuate the aircraft/facility.
- Co-ordinate cleanup operations with the on-scene commander and contact the responsible agency to arrange for cleanup costs.

- Once the incident has been contained by the Fire Service, the airline or the ground handling agent concerned shall arrange for the removal of the hazardous materials from the airport's premises as soon as possible.
- Inform Head, DRP, BARC, immediately if radioactive material is involved as per requirement under Air Safety Circular No.2 of 1989.
- Proceed to the accident/incident site quickly.
- Help identify the type of dangerous goods involved and provide his/her expert advice on the physical and chemical characteristics of the dangerous goods and the potential hazards, as well as the necessary precautionary measures to be taken.

Flow chart showing the emergency procedure during accident is shown in **Figure-2.**

7.4.1 Emergency Action Plan for Natural Disasters

*1.3.2.1 Air Traffic Services*

- Notify agents/departments as per the Emergency Procedures flow chart for Natural Disasters;
- Monitor and provide weather information as it becomes available;
- Control air and ground traffic;
- If the Air Traffic Control Tower is affected, transfer control to the ARFF Watch Tower;
- Direct all ground and air traffic away from the affected area; and
- Submit a report on actions taken to the DGCA, as soon as practically possible after the event.

*1.3.2.2 Aerodrome Rescue and Fire Fighting (ARFF)*

- Place personnel and equipment on standby alert to respond.
- Secure equipment, vehicles and facilities as best as possible
- Respond as required.

*1.3.2.3 AOCC*

- Notify airport personnel of the situation
- During extreme weather phenomena, liaise with the Chief Operating Officer for closing the airport
- Place airport emergency personnel on a state of readiness
- Dispatch personnel to secure airport facilities against impending "disaster"
- Monitor the situation as the events unfold.

*1.3.2.4 CISF*

- SOCC will notify the agencies concerned as per the notification chart of Section 3 "On Airport Accident" of this Plan.

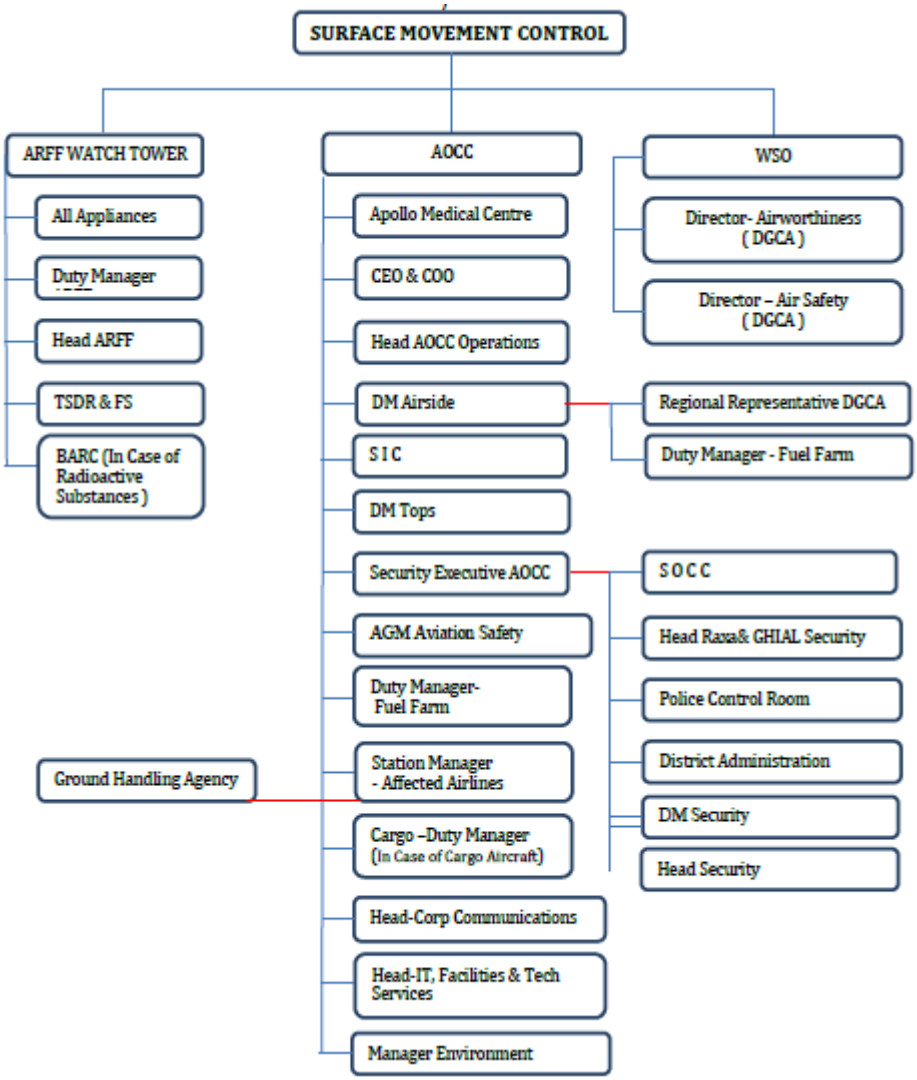


**FIGURE-2**
**EMERGENCY PROCEDURE FLOW CHART FOR ACCIDENT/ INCIDENT**

*1.3.2.5 Airport Medical Centre*

- Place personnel and equipment on alert status as required.

*1.3.2.6 Chief Operating Officer*

- Review arrangements/preparations with Senior Staff/Members of the
- Airport Emergency Planning Committee
- On termination of the event, schedule and conduct a debriefing
- Amend the Airport Emergency Plan based on the reports received and the comments made at the debriefing session.

*1.3.2.7 Technical Services*

Place personnel on a state of readiness

- Assist/provide critical services including utility support (activation/cutoff), as needed.
- Assist in facility restoration, including debris removal.
- Provide sanitation support services.
- Assist in provision of required resources.
- Set up emergency lighting upon request or cut off power as requested
- Assist wherever possible
- Liaise with other agencies as required.

*1.3.2.8 Corporate Communications*

- When requested, coordinate any news release with COO GHIAL, as well as with the Airline or Handling Agency involved
- Receive all authorized press personnel in the media/ press Centre where the following will be provided:
  (a) Briefing session
  (b) press release

- Ensure that liaison is established with all government and security agencies in order to prevent any breach of security.

***Note:***

- Under no circumstances will the press or any other unauthorized persons be permitted inside security lines until authorized by the On- Scene Commander.
- At no time should the press be permitted access to the IMC.

At no time should employees of Companies and Organizations based at Rajiv Gandhi International Airport and/or from the Airport Authority of India be allowed to speak (or speculate) to the media unless authorized to do so by the CEO/COO GHIAL.

Airlines/Ground Handling Agency/Tenant

Notify Air Traffic Control/AOCC if you are the first agency aware of an impending disaster

- Deploy personnel to secure company facilities, and ground equipment
- Prepare evacuation of company facilities, if necessary

- Coordinate all activities via the AOCC or through the IMC, if activated
- Submit a report on the actions taken to the Chief Operating Officer, GHIAL, as soon as practically possible after the event.

*1.3.2.9 All other Agencies*

Take whatever actions necessary to ensure maximum preparation. All departments, divisions and tenants should take all steps to secure their respective areas. This may include:

- Picking up loose objects
- Bolting up windows and doors
- Securing or removing antenna masts
- Anchoring or picketing aircraft and ground equipment
- Parking in hangar/garage equipment and vehicles.
- Lay sand bags if flooding is expected
- Take appropriate shelter timely

Flow chart showing the emergency procedure during natural disasters is shown in **Figure-3.**

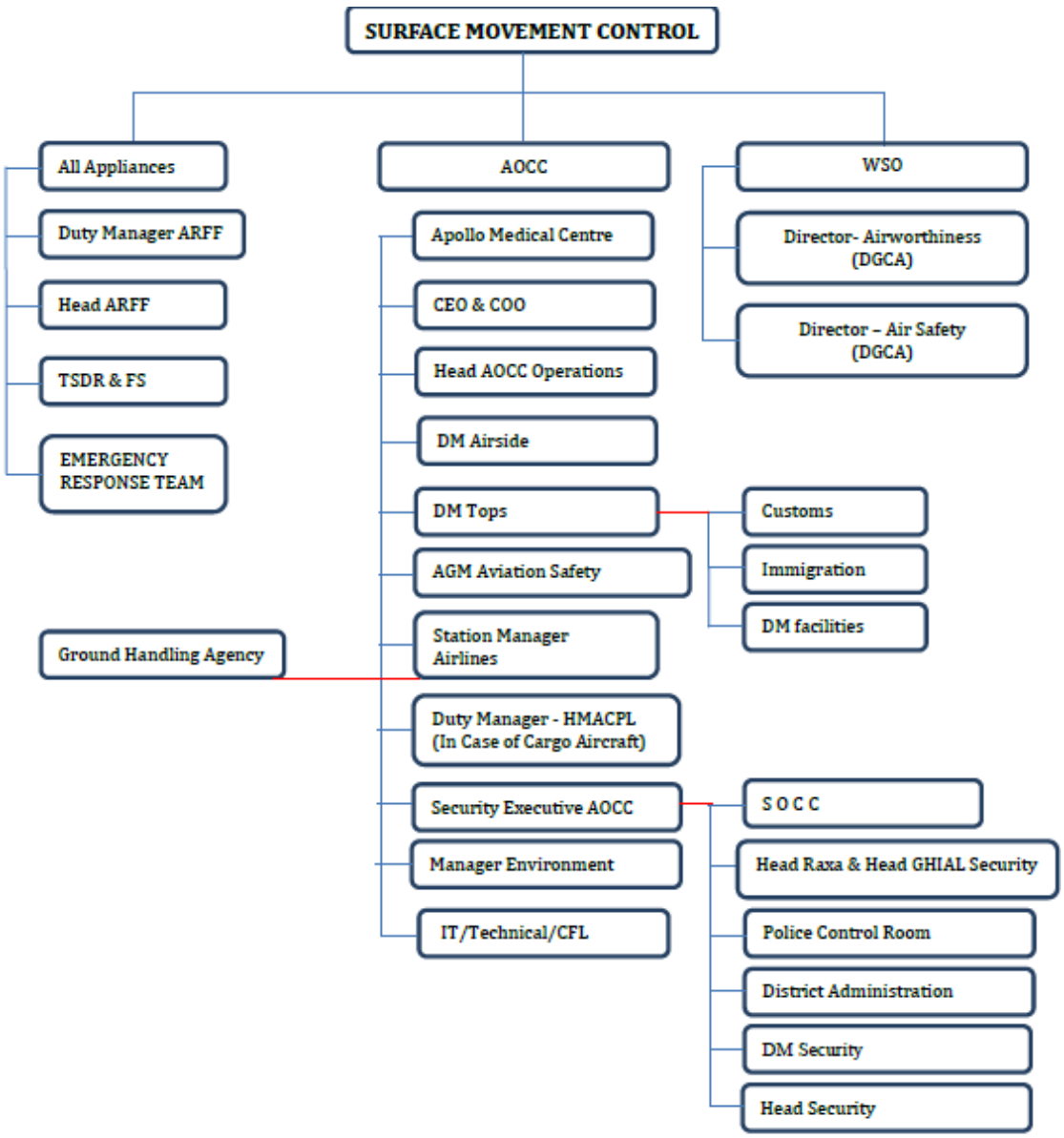


**FIGURE-3**
**EMERGENCY PROCEDURE FLOW CHART FOR NATURAL DISASTERS**

1.3.3 Emergency Action Plan for Salvage of crashed or Disabled Aircraft

Aircraft may become immobilized or disabled on an aerodrome for a number of reasons, ranging from major accidents such as crash-landing to minor incidents involving runway excursions or burst tyres.

1) If the aircraft is wrecked on water, the aircraft or any parts or contents thereof may be removed to such extent as may be necessary for bringing the aircraft or its contents to a place of safety;
2) The aircraft or any parts or contents thereof may be removed or interfered with to such extend as may be necessary for all or any of the following purposes:
   - Extricating persons or animals dead or alive;
   - Preventing the destruction of the aircraft and its contents by fire or other cause; and
   - Preventing any danger or obstruction to the public, to air navigation, or to other transport.
3) Goods shall not be removed from the aircraft except under the supervision and with the concurrence of an officer of the Civil Aviation Department;
4) Passengers' and crews' personal luggage may be removed from the aircraft under the supervision of an officer of the Police Department, a Magistrate, and an officer of the Civil Aviation Department; and
5) Mails may be removed under the supervision of an officer of the Police Department, a Magistrate, an officer of the Civil Aviation Department or an officer of the Posts & Telegraphs Department.
   - The Director-General may, for the purpose of any investigation or inquiry under these rules, authorize any person to take measures for the preservation of any aircraft involved in an accident, and such person may thereupon have access to examine or otherwise deal with the aircraft.
   - The registered owner of the aircraft or his nominated representative shall have the right to be present during any examination or other action taken as mentioned in the above paragraphs, provided that the Director-General shall not be bound to postpone any action which he may consider necessary under this rule by reason of the absence of the owner or his representative.
   - A detailed disabled aircraft removal plan, describing the responsibilities & actions of each agency for disabled aircraft removal at RGIA as well as indicating the contact numbers and list of equipment available with different agencies, is prepared & circulated separately.

Flow chart showing the emergency procedure for salvage of crashed/disabled aircraft during accident is shown in **Figure-4.**

7.4.4 Key Functions of GHIAL and Other Supporting Organizations/Agencies in Mitigation of Airport Emergencies

GHIAL and other external supporting organisations/agencies will be called upon as necessary to mitigate an airport crisis depending on the nature of emergency (e.g. aircraft accident, fire in airport building, and dangerous goods incident/accident). Table below summarises the general key functions of GHIAL and other supporting organisations/agencies during an airport crisis. External agency contact numbers is annexed as **Annexure-XI.**

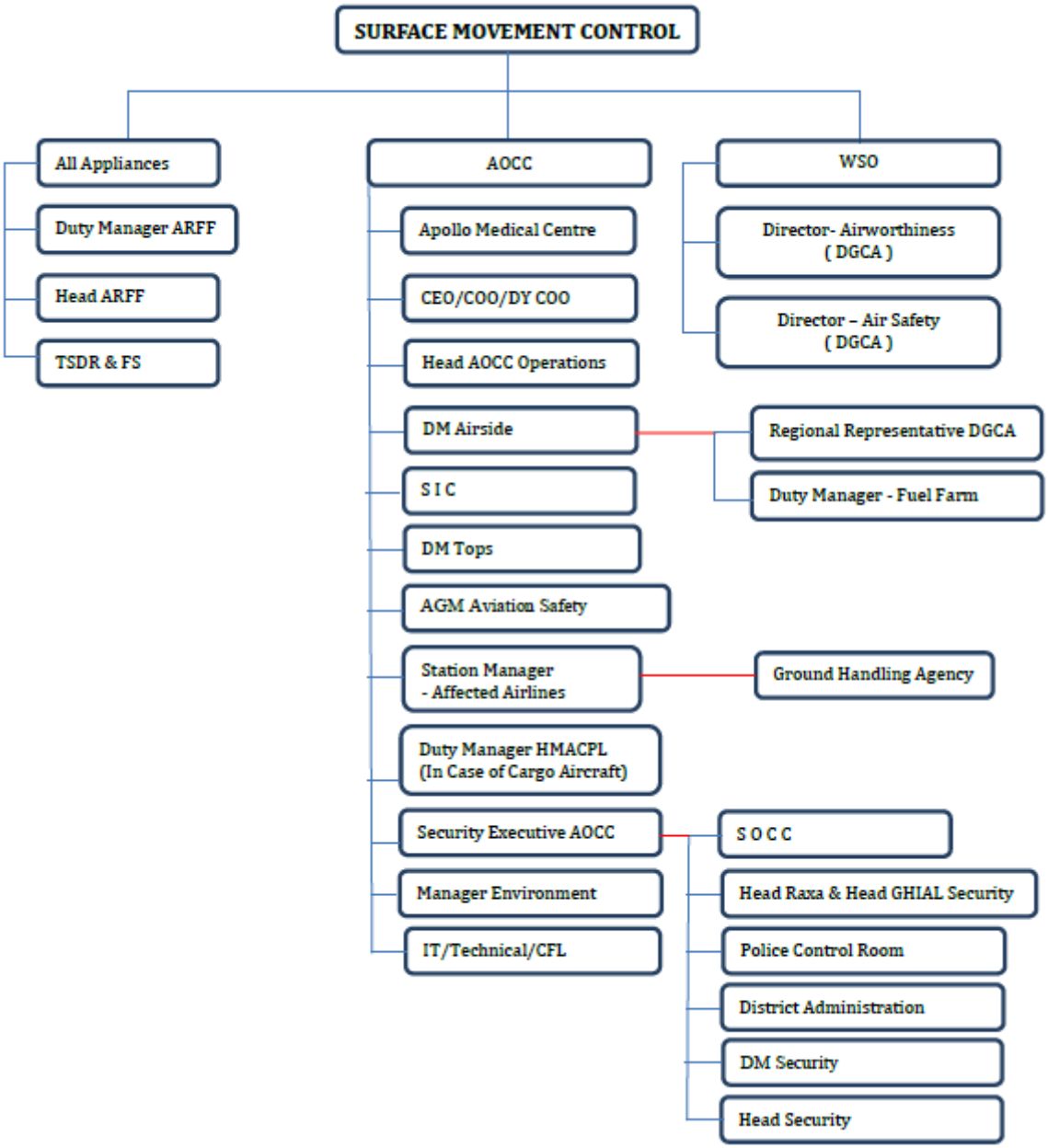


**FIGURE-4**
**EMERGENCY PROCEDURE FLOW CHART FOR SALVAGE OF CRASHED/DISABLED AIRCRAFT**

| Organization | Key Functions |
|---|---|
| GHI<br>AL - Airport Rescue & Fire<br>Fighting Service | • Aircraft rescue & fire-fighting operations<br>• Post-accident fire protection<br>• Support triage activities<br>• Evacuate injured passengers to hospitals<br>• Support structural fire-fighting and evacuation<br>• Mitigation of dangerous goods accidents/incidents |
| GHIAL – Airport Operations Control Centre | • Dissemination of aircraft accident message through phone / autocall<br>• Activation of IMC<br>• On-scene airport control and coordination.<br>• Airline information of Persons On Board and manifest details.<br>• Collating information on the rescue operation.<br>• Continued functioning of airport operations after handing over to IMC Chairman.<br>• Coordinate operations with ATC as needed.<br>• Contingency staffing. |
| GHIAL – Chief Executive Officer | • As Chairman of IMC<br>• To oversee the overall emergency situation and make decisions as required.<br>• Gives final approval for release of emergency instructions and information. |
| GHIAL- Chief Operating Officer | **As Chairman of IMC ( In absence of CEO)**<br>• To oversee the overall emergency situation and make decisions as required.<br>• Gives final approval for release of emergency instructions and information.<br><br>**During availability of CEO as IMC Chairman**<br>• Field Co-ordinator at accident site.<br>• Liaison with reporting Government Departments & Assisting Agencies.<br>• Coordination of operations at site.<br>• Termination of site operations. |
| Safety Investigation Coordinator | • Single point of contact for accident Investigations<br>• Preservation of evidence<br>• Facilitate investigation<br>• Ensure securing of records<br>• Make provision for videography/Photography<br>• Coordinate with police and district authorities<br>• Obtain the details of eye witnesses<br>• Ensure recording of evidences<br>• Ensure medical examination of crew |
| GHIAL – Airside Operations ☐ | • On-scene liaison<br>• Escort services to and from accident scene.<br>• Check availability of R/W & taxiways for restoration of operations. |

| Organization | Key Functions |
|---|---|
| | • Ensure completion of necessary airport inspections upon emergency termination.<br>• Restoration of aircraft movement area.<br>• Initiation of NOTAM action |
| GHIAL – Security | • Secretariat for IMC and Command Post.<br>• Assist in access control activities.<br>• Crowd control at Emergency Reception Centre(s) like SRC, FRRC and other areas, as required. |
| GHIAL – Traffic Management /Transportation | • Provide Traffic Control as needed.<br>• Provide Transport facilities as needed. |
| GHIAL – Technical Services | • Equipment and Resources.<br>• Clear debris, as necessary.<br>• Ensure the restoration of utilities to critical and essential facilities.<br>• Assist in facility restoration. |
| GHIAL – Facilities Management | • Transportation of resources.<br>• Provide procurement services.<br>• Provide personnel services (welfare measures). |
| GHIAL – Terminal Operations | • Reception and care of uninjured passengers.<br>• Public information announcements.<br>• Enquiry service.<br>• Terminal Operations. |
| GHIAL – IT | • Provision of necessary communication links between the various Emergency units.<br>• Ensure redundant communications capacity. |
| GHIAL – Corporate Communications | • Provide news releases relative to the airport's responsibilities and activities.<br>• Interface with the media.<br>• Provide preparedness information and any instructions, as cleared by the Airline authorities and CEO, GHIAL. |
| GHIAL – Safety and Compliance | • Support emergency operations and airport's activities. |
| AAI – Air Traffic Services | • Activation and Termination of Accident Action, Full Emergency, Local Standby, etc.<br>• Air traffic management including issuing NOTAM.<br>• Control aircraft and vehicle operations on airside of the airport in support of emergency response, if the airport remains open. |
| Telengana State Disaster Response & Fire Services | • Respond to aircraft incident/accident location in accordance with established policies and procedures.<br>• Ensure appropriate mutual aid emergency response organizations have been notified.<br>• Support post-accident fire protection<br>• Support triage activities<br>• Structural fire fighting & evacuation<br>• Mitigation of dangerous goods |

| Organization | Key Functions |
|---|---|
| | accidents/incidents |
| Airport Medical Centre | • Provide triage and medical functions at accident site.<br>• Coordinate health and medical response team efforts.<br>• Transportation of critically injured to medical facilities.<br>• Collation of casualty information<br>• Conduct medical examinations and collection of blood and urine samples for flight crew. |
| Medical Services (Designated Hospitals) | • Provide triage and medical functions.<br>• Support evacuation of casualties to hospitals.<br>• Collation of casualty information.<br>• Provide patient identification information to the Airport Medical Centre. |
| CISF | • Facilitate the access of external resources to the operational area.<br>• Support security, crowd control and traffic control at the accident site.<br>• Cordoning of accident site. |
| Cyberabad Police | • Security, crowd and traffic control at the accident site, terminal building and other affected areas.<br>• Facilitate aircraft investigation.<br>• Preservation of evidence at the accident site including eye-witness accounts and photography.<br>• Custody of flight data and cockpit voice recorders, cargo onboard including dangerous goods, and baggage/passenger belongings.<br>• Investigation and management of dead bodies including their identity establishment, mortuary arrangements, and release of the bodies.<br>• Arrange medical examination of the survived crew members as well as post-mortem examination of the deceased crew members and passengers. |
| Traffic Police | • Traffic control and regulation in the landside areas |
| Airline | • Support overall crisis mitigation efforts e.g. accountability of passengers, management of NOK, aircraft accident investigation, etc.<br>• Support media management.<br>• Provide staff to man SRC, FRRC and RA and CCV.<br>• Passenger and NOK facilitation.<br>• Facilitate reunion of survivors and NOK.<br>• Prepare and provide passenger and cargo manifests.<br>• Report the aircraft accident or serious incident to the authorities concerned as stipulated under |

| Organization | Key Functions |
|---|---|
| | Aircraft Rules, 1937, Part X – Investigation of Accidents.<br>• Provide for timely removal of wrecked or disabled aircraft as soon as authorised by appropriate authority. |
| Ground Handling Agent | • Provide ground service staff and facilities including passenger steps, coaches, and aircraft towing equipment. |
| DGCA | • Set standards and directions for dealing with all aviation related emergencies.<br>• Aircraft accident/incident investigation.<br>• Authorize removal of accident/ disabled aircraft. |
| Immigration Department | • Immigration control and clearance facilitation. |
| Customs Department | • Custom control and clearance Facilitation |
| Meteorological Department | • Ensure provision of official weather report and other records likely to be of use in an inquiry into the cause of the aircraft accident. |
| State Information Department | • Detail a senior member of staff to attend the IMC and Press Centre.<br>• Arrange for special announcement through the media. |
| District Collector, Ranga Reddy | • District Collector or his rep. shall attend the IMC.<br>• Co-ordinate the acquisition and mobilisation of additional manpower and resources, if required. |