

DISASTER MANAGEMENT PLAN

(Doc. No. UTPS-DMP-16)

GUJARAT STATE ELECTRICITY CORPORATION LIMITED

UKAI TPS-HPS-MINI HPS



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SECTION-1

PREAMBLE

"Disaster" is defined as an event, which brings sudden great misfortune bringing disruption to normal life including that of the power supply. Disasters are situations of great calamity. Natural or other disasters can strike suddenly anytime and anywhere. As far as this document is concerned the word "Disaster" is synonymous with "Crisis".

India has experienced many natural disasters such as drought, floods, earthquakes and cyclones during the history of its civilization. Electricity is the lifeline of the economy as well as of the society. Power supply is the major input for the social and economic welfare of the society of any country. Any disruption in the supply of electricity causes not only loss to the economy, but also creates hardship to human beings, as every aspect of human life is connected with electricity. As such any crisis / disaster in the power sector has great impact and needs special attention.

Power sector is one of the important infrastructures, which may get affected due to any crisis / disaster leading to disruption in generation, transmission and distribution of electricity. It, therefore, becomes extremely important to evolve crisis / disaster management plan to restore the generation, transmission, and distribution of power in the affected areas in the shortest possible time.

This document deals with the various events, which may cause crisis or disasters in the power sector, preventive measures which need to be adopted to avoid any crisis / disaster, ways and means to tackle a crisis / disaster, if it occurs in spite of preventive measures and outlines a hierarchical set up of crisis / disaster management at various levels for effectively and efficiently dealing with crisis and disaster.



CHIEF ENGINEER (GEN.)
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AMENDMENT HISTORY

Version	Section / Para	Nature of Amendments	Date	Approved by
00	All Sections	First Release	01-01-2008	CE
01	All Sections	Changes in telephone directory	01-05-2009	CE
02	All Sections	Changes in telephone directory	20-10-2010	CE
03	All Sections	Changes in telephone directory	01-01-2011	CE
04	All Sections	Changes in telephone directory	20-02-2014	CE
05	All Sections	All chapters are changed	28-01-2016	CE
06	All Sections	Name & Phone Nos. Changes & new Key members name are added. & Rescue items stock updated	10-04-2018	CE
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SECTION-02

MAJOR AREAS PRONE TO DISASTER IN POWER STATIONS

Causes of Disaster and Crisis in Power Sector

(1) Natural Disaster

(2) Man-made Disaster

Disaster in power sector can occur due to natural / man-made calamities such as:

- Earthquakes
- Floods
- Storms
- Cyclones
- And crisis situation can arise in Power Sector in the event of :
 - Terrorist threats/ attack & sabotage
 - Bomb threats & bomb explosions
 - Strike
 - Fire etc.

Natural Calamities:

Floods along with cyclone are the main water related natural disasters. Landslides / avalanches mainly occur due to geo-technical instability aggravated by lubricating and infiltrating water. The water related disasters are climate related, on which mankind has but little control. One can only try to manage them and reduce their severity (mitigate them) only to certain extent. Floods cyclones and their impacts occur in a relatively much shorter time. The impact of this disaster and their multiplier effects economies, national development and severity of affected infrastructures are well known but needs to be adequately quantified to provide financial justification for undertaking imitative measures. Events like earthquake, floods, hurricanes, cyclones etc. have been instrumented and studied statistically and scientifically so as to predict their occurrence and intensities with certain degree of confidence. However, there is no certainty that these events would not exceed the predicted values based on past history and cause disaster. However, if various equipment and systems of power generating plant and transmission system are designed after site-specific studies, taking into account stipulations of the various codes / standards on the subject, the damage to plant and equipment could be greatly averted.

Crisis Situations:

Terrorist Threats and Attacks:

Of all the form of disasters, terrorism happens to be the deadliest form in terms of loss of life and damage to the property. Acts of terrorism have grown over a period of time. Power generation and transmission installations form the prime target for such terrorist groups. The basic infrastructure in power sector such as dams, generating stations, EHV Sub stations, load dispatch centers, distribution stations are vital national assets and these need to be protected against acts of terrorism. The terrorist related aspects could be dealt with by making use of advancement of technology in the areas of surveillance and proper intelligence network.

Bombs Threats, Hoax & Bomb Explosions:

Bomb explosion in Generating stations / Sub stations / Load Dispatch Centers, etc can lead to major crisis through disruption in power supply. In the event of bomb explosion or a bomb threat, special measures need to be adopted under the expert's guidance.

Following area in a Thermal Power Stations is prone to various kinds of disasters:

- Coal Handling Plant.
- Main Plant (Boiler, Turbine Generator, Lube Oil Tanks)
- Water Treatment Plant
- Chlorine Feeding plants
- Hydrogen Generation Plant
- Chimney
- Cooling Tower
- Switchyard including sub-station and transformers
- Fuel oil handling plant
- Cable Galleries
- Store where hazardous flammable and explosive material are stored
- Balancing Reservoir
- Ash dykes.

Earthquake:

- Chimney, Cooling Tower and other tall structure.
- Boiler & its structures.

- TG building, various floors, foundation of various equipments
- Control room
- Transmission towers & substation area.
- Coal Handling plant crushers, crusher buildings, belt conveyers, coalbunkers etc.

Storm & floods:

- Any or all the parts of the power station
- Switchyard & Power lines
- Basement / underground facilities.
- Cable trenches
- Coal handling plant underground conveyors, coal unloading systems

Fire:

- Boiler furnace, coal burner, flue gas duct.
- Coal handling Plant and conveyor galleries including points
- Cables in galleries and on trays in all plant sections
- Fuel oil handling and oil tanks in main plant.
- Transformer oil and lub oil storage facilities.
- Burners area in boilers & ESP
- Central stores / Godown
- Control Room
- Turbine Hall
- Any part of the main plant
- Turbine oil tanks in Units.
- All power Transformers & switch gear rooms
- Mill Plant & milling area.

Strike:

- Any part of the plant or entire plant.

Strikes:

Strike by any section of the employees in a generating station / sub-station / load dispatch centers or construction workers could lead to a crisis and can bring the system to a grinding halt if adequate measures to run the generating station / sub station / load dispatch centers are not taken. This could ultimately lead to black out in areas, which could be as small as a locality or as large as State or Region. It could also lead to disruption in movement of traffic through railways, medical / health services, water supply and an overall situation of chaos and disturbances. It is, therefore, essential that strikes and threats are dealt with appropriately.

Fire Accidents:

Like natural calamities, fires are big threat and cause loss to human life and property, However, disasters due to fire normally remains localized to a particular power station until and unless tripping of the said power station causes disturbance in the transmission grid by way of over loading and leading to tripping of other power stations / transmission lines connected with the grid.

A little negligence and lack of awareness of the fire safety measures have often led to loss of life and property. An in-depth study and analysis of cause of the incidents reveal that majority of the fires could perhaps be prevented and extent of damage minimized, had the fire safety measures been strictly enforced. Early detection of fire and swiftness in fighting it can definitely turn a major disaster to minor accidents. The other source of disaster in power sector can be accidents taking place on account of human error or due to malfunctioning of any equipment.

Disaster potential assessment:

The major disasters, in thermal Power Stations usually take birth form one or any combination of the following.

ACCIDENTS:

The other source of crisis in power sector can be accidents taking place on account of human error or due to malfunctioning of any equipment.

Major Accident:

A major accident is a sudden, unexpected, unplanned event, resulting from uncontrolled developments during an industrial activity, which causes, or has the potential to cause:

- Serious adverse effect immediate or delayed (death, injuries, poisoning or hospitalization) to a number of people inside the installation and/or to persons outside the establishment, or,
- Significant damage to crops, plants or animals or significant contamination of land, water or air or,
- an emergency intervention outside the establishment (e.g. evacuation of local population, stopping of local traffic) or,
- significant changes in the process operating conditions, such as stoppage or suspension of normal work in the concerned plant for a significant period of time, or,
- Any combination of above effects.

Areas Prone to Disaster / Crisis in Power Sector:

Disaster potential Assessment:

The major disasters in Thermal Power Stations usually take birth form one or any combination of the following.

- Slow isolated fires
- Fast spreading fires
- Explosions
- Bursting of pipe line / vessels.
- Uncontrolled release of toxic / corrosive / flammable liquids
- Uncontrolled release of toxic / flammable gases / dusts.
- Each of these any constitute a crisis:

Identification of disaster prone areas:

Explosion Hazard Areas:

- Hydrogen Plant
- Turbine Generators where Hydrogen is used for cooling generator
- Transformer (oil cooled)
- Boiler (Coal / Oil fired)
- Liquor ammonia tank
- Highly inflammable gas cylinder storage area
- FO / LOD tanks
- Coal dust in mills and Boilers

Bursting of pipe lines & vessels Areas:

- Steam pipes due to high pressure / temperature.
- H₂ Gas lines and Acid lines.
- Acid / Alkali tanks.
- H₂ gas cylinders.
- Compressed air receivers.
- H₂ gas holder.

Release of Gases / Dust / Mists – Areas:

- Chlorine in Water treatment plant.
- Hydrogen in Turbo Generator area of main plant and H₂ plant.
- Pulverized coal dust from mills and associated piping and flue gases
- Coal dust in transfer points of CHP, Crushers, Water tipplers and mill area.
- Flue gases from the ducts.
- Ammonia gas from tank at service bay of Unit#6.
- Release mist / gases of H₂SO₄

Release of chemical – Areas:

- Chemical tanks and Chlorine toners in water treatment plant
- Acid & Alkali storage tanks in DM Plant
- Fuel oil tanks in fuel oil handling section.
- Liquor Ammonia tank at service bay of Unit#6.
- Oil tanks turbine.

Electricity:

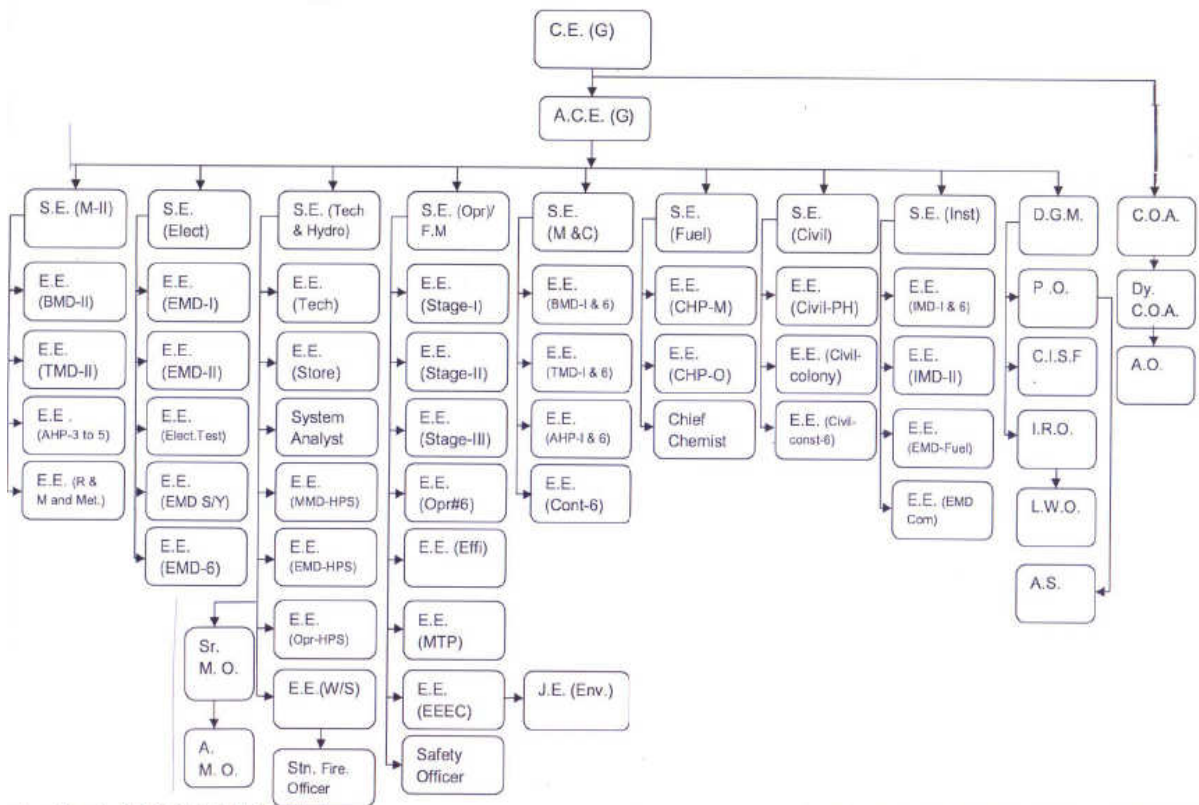
Natural calamities have much more devastating effect on Electricity Grid on account of its spread and exposure. Under extreme wind conditions, the conductors of transmission lines may get snapped or transmission line towers may collapse. The floods, landslides and earthquakes cause damage to or failure of foundations of towers, which may sometime lead to disruption of the

transmission network due to uprooting of foundations and consequent collapse of the tower. The floods also cause uprooting of foundations and consequent collapse of the tower. The floods also cause disruption in power transmission to case substations are affected by the floods.

In addition to this, terrorist attack, bomb attack, strike, fire accident may also cause damage to transmission lines, sub-stations which, in certain cases, may in turn lead to grid failure, various faults, equipment failure / mal-operations are other common causes of grid failure. Possible mishaps in transmission system in the event of disasters due to various natural calamities and crises are:

- Snapping of conductor
- Collapse of transmission tower.
- Washing away of foundation for river crossing towers.
- Landslides in hilly terrains affecting towers of the line.
- Flooding of sub stations.
- Destruction / Fire in sub station, control room switchyard, cable gallery and switchgear room.

Organization and Responsibilities



RESPONSIBILITIES OF VARIOUS PERSONS

ROLE OF SITE MAIN CONTROLLER – CHIEF ENGINEER (Gen)

- 1 In Consultation with “Incident Controller” he will decide a major emergency exists or does not exist as the case may be and will declare its emergency.
- 2 He will proceed to Emergency Control Room and take Charge of the incidence.
- 3 Ensure that key personnel are called and informed.
- 4 Direct the shutdown and evacuation of the plant in consultation with incident Controller (ACE).
- 5 Inform and liaise with Govt. authorities and police.
- 6 If situation demand evacuation of neighboring population will be arranged.
- 7 Ensure that sincere search for casualties within the affected area have been carried out and arrange the hospitalization of victims and provide all necessary help to them.
- 8 On prolonged emergency situation monitor and arrange for relief of personnel and provision of catering facilities.
- 9 Arrange for up to date recording of emergency situation.
- 10 Do not permit restarting of the plant and equipment unless it is declared safe.

ROLE OF INCIDENT CONTROLLER - ADDL. CHIEF ENGINEER (Gen)

- 1 His Primary duty is to take charge at the site of incidence
- 2 On being aware of the emergency and its location well immediately proceed to the site.
- 3 Access the scale of emergency and decide if a major emergency exists or is likely to happen and activate the site Disaster Management Plan.
- 3 “Incident Controller” will work under the direction of Site Main Controller
 - a) Direct the Shutdown and evacuation of Plant if absolutely necessary and areas likely to be affected by emergency.
 - b) Direct rescue operation.
 - c) Evacuate non-essential workers to assembly point.
 - d) Set-up Communication point and establish telephone and other Communication facilities.
 - e) Brief the site main controller and keep him informed of the developments from time to time.
 - f) Arrange effectively control of traffic movement inside the plant / factory areas.
 - g) Issue authorized statements to news media if absolutely necessary.
 - h) Give the full information, advice to concerned staff to organize rescue and fire fighting operation and other emergency services operation.
 - i) Preserve evidence that would be necessary for subsequent inquiry into the case of the emergency and concluding preventive measure.

ROLE OF FACTORY MANAGER

- 1 In Consultation with “Incident Controller” (ACE) of Ukai TPS, he will instruct Main Gate / TK Office on Mobile No. 8238384722 and Internal Telephone No. 4493 / 4492 to sound the Emergency / Fire Siren.
- 2 Help in shut down of plant affected and arrange for safe evacuation of non-essential workers from affected plant area.
- 3 Arrange to guide and direct the non-essential employees to take a safe route to reach the assembly point.
- 4 Arrange to call “Off Duty” essential staff for controlling the emergency / fire satiation.
- 5 Co-ordinate and assist Sector commanders i.e. SE's or EE's to arrange to take attendance of the employees and workers in the plant (Both GSECL & contractors).
- 6 Ensure safety of essential workers working in the plant to control emergency situation and doing various other works in effected plant.
- 7 Assist in sending the causality if any to first aid center or to hospital depending upon the severity.
- 8 He will ensure that valuable items / documents listed are salvaged first in the case of fire.

ROLE OF SUPERINTEND ENGINEERS

- 1 Direct and guide the essential workers for effective area of emergency / fire in his sector.
- 2 Communicate calmly to adjacent plant employees about the nature of hazard and remedial measures taken to deal with it.
- 3 In case of out break of fire / emergency in his area, will arrange to properly inform fire staff and guide and co-operate with the fire staff in controlling the fire / emergency.
- 4 In case of the fire in the area outside his section or unit, will ensure that essential persons of his section does not leave the work place and other non-essential persons remain calm with readiness to assist the staff of other area under fire if required.

- 5 He should have the list of valuable items / documents to be salvaged first in the event of fire in his section.
- 6 He is also responsible to ensure that they can assist fire service in a big fire.

ROLE OF SHIFT IN CHARGE ENGINEERS

1. Ensure safe shutdown of the plant under the instructions of CE /ACE/Factory manager if situation demands.
2. In Consultation with "Incident Controller" or "site controller" he will decide a major emergency exists or does not exist as the case may be and will declare its emergency
3. Will try to control any leakage i.e. coal dust, steam, H₂Cl₂, HCL, H₂SO₄ etc. in a safe manner using personal protective equipments and keeping personal safety.
4. Inform Senior Official & Key Personal of the incidence on telephone
5. Assist in evacuation of non-essential workers.
6. Safe transfer of material first aid and medical help as and when required.
7. Call for fire & rescue services as & when required.
8. Isolations of equipments & system for safety.

ROLE OF DY. COMMANDANT (CISF)

1. He should immediately rush to the place of incidence and arrange for "Security Cordoning"
2. He should see that no unwanted personal approach the place of incidence and take over the charge of security of "Gujarat State Electricity Corporation Limited" property.
3. He will arrange to depute adequate security staff to control the assembly point.
4. He should inform to police in case of serious accident when casualties area involved, in consultation with CE (G)/ACE/Factory Manager.
5. If casualties are involved, he should make quick arrangement to shift them to hospital by ambulance or any other suitable means.

ROLE OF ON DUTY INSPECTOR (CISF)

1. On hearing of emergency siren he will report to Dy. commandant and work under his direction.
2. Inspector of Main gate will immediately sound the fire alarm / siren in wavering sound up to 3 minutes.
3. Close the main gate.
4. He will not permit any one to enter / leave main gate except fire vehicles and essential persons after through check and verification.
5. Arrange to keep Power station roads clear for assistance of outside fire fighting parties.
6. He will make necessary arrangements of security guards for suitable guide for outside fire fighting and other assistance arriving at main gate and help them to reach to scene of firer / accident. On receipt of "ALL CLEAR" message from CE / ACE / Factory manager will sound All Clear Siren by continuous blast of two minute.

ROLE OF UNIT FIRE OFFICER

1. He will rush to the place of incidence immediately and arrange rescue & fire fighting immediately. He will arrange rescue & fire fighting operation in consultation with Main Incident Controller/Incidence Controller / Factory Manager.
2. He will suggest action for calling outside fire services if he deems necessary & will co-ordinate with them.
3. He will make sure that necessary fire fighting agents i.e. water; foam, DCP, CO₂ & other fire rescue equipment are available at the incident spot for effective control of incident.
4. He will take appropriate action simultaneously to protect the unaffected area.
5. He will keep himself in constant touch with CE/ACE/and other Key Personnel.

ROLE OF FIRE SUPERVISOR

1. He will immediately reach to the scene of incident with the fire tender / rescue gears and crew.
 2. Position the Fire tenders at proper place depending upon wind direction.
 3. Decide time of action in consultation with Shift Engineer and take appropriate measure to fire / rescue operation.
 4. Till the arrival of station fire officer he will guide the fire crew in fire fighting and rescue emergency.
- Ensure that his crew members work with safety equipments for tackling the emergency.

ROLE OF FIRE CREW MEMBER

1. On hearing fire alarm / emergency siren they shall immediately make a turn out with Fire tenders to scene of emergency and work under the direction of Fire Supervisor.
2. Person in fire Control Room will ensure that Station Fire officer is informed about the incident. Inform main security gate and shall see that pressure in fire hydrant system is maintained.

ROLE OF MEDICAL OFFICER

1. He will immediately report to site Main Incident Controller / Incident Controller.
2. He will render "First Aid Treatment" and arrange all necessary medical attending for saving the lives of casualties, till they are shifted to Power Station or other hospital considered appropriate by Medical Officer of GSECL.
3. He will make arrangement for treatment the public affected either plant or outside.

ROLE OF SAFETY OFFICER

1. He will make available all safety and personnel protection equipment etc. according to situation at the scene of incidence.
2. Ensure that people take safe route to go to assembly point.
3. He will see that all persons entering the place of occurrence are wearing personal protective equipment.
4. He will ensure that fire fighting personnel and other persons are in safe place & position. He will alert the Fire Fighting persons, if personal safety of these persons is endangered due to possibility of explosion, heavy splash of burning liquid, falling of heavy structure.
5. He will make complete note of the incident and inform about the incident to the concerned. Authority as per statutory provision in consultation with CE (G) / ACE / Factory Manager / DGM.
6. He will make arrangement for evacuation of staff if necessary in consultation with CE (G) / ACE / Factory Manager and will be in consistence touch with site Main Incidence Controller & Key Personnel.

ROLE OF EXECUTIVE ENGINEER (WORKSHOP)

1. He will arrange adequate number of vehicles along with drivers to meet the situation.
2. He will direct his persons with necessary tools tackles & equipments to carry out the assistance work where situation demands.
3. He will arrange to evacuate the persons from incidence site & assembly point whenever required.
4. He will arrange urgent repairs to fire vehicles or fire pumps & other requirements if required.
5. He will assist in salvage job of cutting, breaking or demolishing of the thing if so warranted.
6. He will arrange any other jobs of repairing / restoring any system required for situation.

ROLE OF EXECUTIVE ENGINEER (STORE)

1. He will arrange adequate number of vehicles (Truck, Forklifts, Hydra & mobile cranes) along with drivers to meet the situation.
2. He will direct his persons with necessary tools tackles & equipments to carry out the assistance work where situation demands.
3. He will arrange to evacuate the persons from incidence site & assembly point whenever required.

ROLE OF EXECUTIVE ENGINEER (ELECTRICAL & INSTRUMENTATION)

1. Mobilize manpower if required for emergency electrical and instrumentation work.
2. Direct concerned personal for providing extra-lighting isolating electrical supply as per requirements.

ROLE OF ADMINISTRATION SERVICES (Dy GM / IRO / LWO)

1. He should make an arrangement for augmentation of Transport, Ambulance, Canteen, Security and Welfare activities etc. and any other facilities as required.
2. He will make liaison with local and civil authorities.
3. H will make note of the events and report the same to GSECL Corporate, Office Baroda in consultation with CE (G) / Site in-charge.
4. He will inform Factory Inspector / Collector etc. in consultation with CE / ACE.
5. Ensure that press does not publish unauthentic news about the incidence.
6. He should immediately convey message/information received regarding the incidence to the CE (G) / ACE and other key personnel
7. He will arrange for alerting outside general public about incident if required.

SECTION-03

DISASTER MANAGEMENT PLAN FOR NATURAL CALAMITIES

NATURAL CALAMATIES:

Disasters resulting from natural phenomena like earthquakes, volcanic eruption, storm, surges, cyclones, tropical storms, floods, landslides, forest fires and massive insect infestation. Also in this group, violent draught which will cause a creeping disaster leading to famine, disease and death must be included. These types of disasters are not under the purview of this plan.

(1) **CYCLONE: -**

The contingency actions during a cyclone are based on the weather forecasts obtained from the local meteorological department.

Some of the important actions to be carried out are as follows: -

BEFORE

- Establish regular contact with the local meteorological department.
- Establish distances from storm in order to execute preparatory actions in a shorter time.
- Appraise the TPS operations/ installations and consider the consequences that the emergency might have on operation and personnel.
- Check the availability of tools, batteries, non-perishable foods and other materials that might be required.
- Review all operations carefully.
- Ensure the readiness of emergency vehicles, Medical center, medicines etc.
- Metallic sheets, loose materials empty drums and other light objects shall be properly secured.

DURING

- Remain calm
- Do not go outdoors.
- Do not seal the office completely as the suction created by the difference in atmospheric pressure inside and outside can rip open a window or door by breaking window glass panes.

AFTER

- Do not touch electric lines.
- Stay away from the disaster area.
- Boil drinking water before consuming.
- Take special precautions in driving vehicles since the under pavement could cave in due to the weight of automobile.

(2) **FLOOD:-**

Though flood in this region is rare by virtue of its locations there is every possibility that the TPS can be flooded due to a heavy downpour. As a result, the low-lying areas like cable cellars, sub-stations, are likely to be affected. Following actions may be considered during such situations: -

BEFORE

- Modify the floods i.e. do not allow water to accumulate. In other words, keep flood water away from people or plant.
- Modify the susceptibility of the people to flood damage i.e. keep the people away from flood water.
- Modify the loss burden inflicted by the floods on the people.
- Strengthen warning systems and metrological studies.
- Evolve appropriate information education and communication activities for community.
- Setting up safe havens
- Inclusion of disaster awareness,
- Preparedness at all levels.
- Keep ready all rescue equipments.

DURING

- Warning protocols to be user - friendly. Warning is to be communicated as quickly as possible to Corporate Office, GSECL, Vadodara and TPS / HPS plant.

- Search and use rescue equipments like life buoy, diesel dewatering pump motor etc.
- Make available first aid services, relief activities including emergency shelters, medical treatment, food, and security arrangements.
- Rapid response teams to be formed and send rescue personnel along with emergency medical teams.

AFTER

- Transfer Temporary transition shelter in post disaster situations.
- Make provision for drinking water, emergency health and sanitation in post disaster situations.
- Post trauma stress management and care.
- Assessing the damage after the occurrence and restoring transport, power and communication systems.
- Promote participation of Corporate Sector in finding out technologies, solutions for disaster risk reduction

(3) EARTHQUAKE: -

Earthquakes cannot usually be forecast and therefore precautions immediately prior to such an event are not usually possible. Apart from some of the counter-measures to be taken in foreseeable cases, emergency recovery shall be considered by the emergency management team of UTPS as per situation and site conditions.

Objectives and Scope of Disaster Management Plan:

Disaster Management encompasses the activities that enable the various agencies to plan for, quickly respond to and to recover from unexpected events and situations. Disaster Management Plan is a tool to provide necessary guidelines for assistance to organization engaged in generation, transmission and distribution of electrical power for ensuring safety of people, protection of environment, protection of installation and restoration of power supply. It has the following objectives:

- To improve state of preparedness to meet any contingency
- To reduce response time in organizing the assistance.
- To identify major resources, man power, materials & equipment needed to make the plan operational.
- Making optimum use of the combined resources.
- A well defined and comprehensive disaster management plan should typically as possible so that normal operation is resumed.

a) Operational response -

To get the disruption under control as quickly as possible so that normal operation is resumed.

b) Management response

To allocate resources and making critical decisions needed to resolve the situation.

c) Communication response –

To communicate with employees, their families, officials, other agencies and media.

The various activities in response to a disaster shall include:-

- Exchange of information in terms of event description, its severity and action plan.
- Identification of resources need and their deployment viz. technical experts, manpower, equipment, spare parts & other material
- Early restoration and to facilitate re-inspection as needed.
- Field / Site surveys, damage assessment.
- Post event investigation & analysis and strategy for the future.

Plant Level Emergency Management Group (EMG)

- ❖ Chief Engineer (Gen.)
- ❖ Addl. Chief Engineer (Gen.)
- ❖ All Superintend Engineers
- ❖ DGM
- ❖ EE (Workshop) & EE(Efficiency)
- ❖ Safety Officers.
- ❖ Firer Officer (Station).
- ❖ I.R.O. with L.W.O.
- ❖ All Shift Charge Engineers.

Responsibilities of EMG:

- To direct actions within the affected area taking in to consideration the priorities for safety of plant personnel, minimize damage to plant, property and the environment.
- To direct fire and security personnel for immediate action.
- To ensure that all non-essential workers / staff in the affected area are evacuated to safer places.

Set up communication points:

- Report all developments and requirements / assistance needed.
- Preserve all evidences so as to facilitate any inquiry into the cause and circumstances which caused or escalated the emergency.

EMG shall maintain the following:

- Safety data pertaining to al hazardous materials likely to cause emergency.
- Procedure of major and special firer fighting rescue operations, first aid etc.
- Procedures for tackling harmful gases and other chemical leakages.
- Emergency call out list of persons drafted for emergency control, key personnel, Fire safety, and First aid, Medical, Security, Police and District Administrative Authorities.
- Emergency manuals, Blown up area maps, District phone directory, Public address, system Emergency lights etc.

Pre-disaster preparedness:

A trigger mechanism must be established in the Disaster Management Plan to initiate the action for mitigation of Disaster, as soon as the information is received from any person or organization in respect of any calamity which is likely to occur or has occurred. The information should immediately reach the Emergency Management Group who in turn through chain of command be made known to all the key personnel in the organization. A chart for the flow of information is attached at annexure XVII. An illustrative check list of who has to do what is required to be prepared by organization in case of emergency. The rescue operation for any disaster has to start right from the warning received from the Emergency, control room Unit No.1, 2 at TPS, Ukai.

Pre-Disaster Actions:

This stage occurs when the prior information is available about a situation that may lead to a disaster in near future. Organizing Public Awareness Programme is very important. The people living around the project can play a vital role in event of disaster. For this purpose Public Awareness Programme should be conducted regularly to make the general public aware about potential hazards likely to occur in project area. Emphasis may be given to the following aspects.

Pamphlets and booklets constraining details about the hazards associated with hydro-power project be prepared and distributed among the general public.

Permanent notice boards are fixed at all the suitable places in the area displaying information related assisting agencies, their telephone numbers etc.

Help from local youth organization, voluntary organization, educational institution be sought to conduct educational session to make people aware about the safety measures and rescue operations in the event of a disaster.

Pre-Alert Notification:

This type of notification is mainly used for disseminating an important piece of information concerning slowly developing emergencies, which can either be rectified or would take some time before they turn in to a crisis / disaster.

Warning Notification:

A warning notification implies that a crisis / disaster is imminent; an advance action may be initiated for minimizing the damages / rescue operations. The warning notification, indicating the magnitude of crisis / disaster should be communicated to other Power Stations in the region and in case of hydro power projects, to the authorities concerned with the important structures located on the downstream stretches of the river.

Notification Responsibility:

In case of developing crisis situation, the project authorities shall be responsible for issuing proper notification to District / State / Central level agencies, depending upon the severity of the crisis / disaster.

Action Plan:

Each generating station shall develop site specific disaster management plan which inter alia shall include:

- Details & contact procedure for key personnel
- Well defined hierarchy of command & action.
- Identify communication channels and emergency communication system.
- Identify source of disaster and steps to contain the same.
- Isolate remaining plant and keep them in safe condition.
- Organize safe shut down of the plant.
- Organize all support services like fire fighting system etc.
- Emergency maintenance jobs on top priority.
- Arrange required safety equipment.
- Guide authorities on all safety related issues.
- Record the accident details.
- Arrange for evacuation of man and materials from the affected area.
- Arrange for ambulance and emergency first aid.

First Information:

The first source of information may be a local operator's observation or message from the state / central government agencies / authorities. The information should immediately reach Emergency Management Group who in turn through chain of command be made known to all key personnel such as:

- Fire Station
- Security Staff (CISF)
- Communication System.
- Control Room Unit No.5
- Safety Officer.

Key Personnel:

Apart from EMG, other works personnel will have key roles to play in providing advice and in implementing the decisions made by the EMG.

The key personnel shall include the following:

- ❖ Chief Engineer (Gen.)
- ❖ Addl. Chief Engineer (Gen.)
- ❖ Dy. General Manager (HR).
- ❖ Sr. Medical Officer.
- ❖ Deputy Commandant, Security Service (CISF).
- ❖ All Superintendent Engineers
- ❖ Safety Officers.
- ❖ Fire Officer(Station)
- ❖ Executive Engineer (W/S)
- ❖ Executive Engineer (Efficiency)
- ❖ A list of key personnel and their phone numbers shall be informed to all concerned. Above personnel shall decide the actions needed to evacuate personnel, carry out emergency engineering works, arrange supplies of equipment, personnel, etc. liaison with police, inform relative of the victims etc.

Essential Staff:

In plants immediately affected or likely to be affected as decided by the EMG, efforts shall be made to shut down the plant and make the process units safe. This work shall be carried out by the plant supervisors and essential operations.

It will be the responsibility of the EMG to identify the above essential staff and form a Task Force, which reports at defined locations so that they can be readily contacted. It will also be the responsibility of the EMG to remove all non-essential staff to assembly points.

Disaster Management Plans for Thermal Power Projects:

Emergency shut down procedures and restoration of the units must be chalked out very clearly by each generation utility. In case of total power failure immediate action must be taken about the safe shut down of the units and informs all concerned. The restoration procedure must include putting the running turbine (at the time of power failure) into turning gear operation to avoid occurrence of fire and follow the normalization procedures as set out for boiler light up and subsequent unit synchronization with

clearance from the concerned authority. It must also be assured that the various drives such lube oil pumps, seal oil pump come into service in "Auto" on occurrence of the failure of the normal supply.

Disaster Management Plan for failure of Electricity.

General:

Integrated operation of vast and complex, electricity grid like the one existing in the country demands utmost visit and care from crisis and disaster point of view. Attacks at key grid sub stations, power stations, transmission lines or computer based load dispatch centers could black out the entire region for considerable period of time. In the event of a grid failure, coordinated actions are required to be taken at the generating stations, sub-stations and transmission lines under the directions of SLDC(s) for speedy restoration of power supply. Black Start / Restoration Procedures are already available in each Region for use in the event of partial / complete failure of the grid identifying inter-alia the start up power availability and restoration procedures.

Measures for quick restoration of Power Supply:

Following measures are essentially required for quick restoration of power supply after a black out:

- The start-up procedure for the generating units should be known to everyone and working level personnel should start the machines without referring to or waiting for management's consent during the crisis.
- Shift duty personnel should be detained till the restoration process is completed before handing over charge to next shift.
- Survival / Auxiliary Start-up power should be provided to the collapsed system till requirement on priority basis and power should be utilized for other purposes only after meeting these power requirements.

Priority should be accorded in restoration as under:

- Restoration of power supplies to generating stations.
- Start-up power to hydro.
- Formation of self-sustaining islands around the generating stations as per laid down procedure.

Area load Dispatch concept should be adopted during start-up to avoid jamming of communication system as well as for ease in decision making.

A list of DOT telephone number of all the sub-stations with STD codes should be available in the plant as well as SLDC as communication is the essential requirement and time is the essence during the restoration process.

Loading of generator supplying the start-up power should not exceed 80% of its capacity. Efforts should be made to keep the generator operating on lagging side; if not possible, at least to near unity power factor.

SECTION-04

DISASTER MANAGEMENT PLAN FOR MAN MADE DISASTERS

Man-made Disaster

(1) Chemical Disaster (2) Air raid (3) Crisis

MAN MADE DISASTERS:

Malafide intentions such as sabotage, riots, industrial unrest, air attack etc. resulting into industrial accidents, factory fires, explosions and escape of toxic gases or chemical substances, river pollution, other structural collapses, air, sea, rail and road transport accidents, aircraft crashes, collisions of vehicles carrying inflammable liquids, oil spills at sea etc. will require State/National level resources to combat it.

Chemical Disaster

CONTROLLING EMERGENCY AT SITE

INTRODUCTION

The successful handling of the emergency depends on correct decision and immediate action on site. Combating the emergency and minimizing the loss to People, Property and Environment depends on following factors:

- i. Lapsed time between striking of emergency and communication to emergency services.
- ii. Effective and perfect emergency message.
- iii. Response time - Mobilization of resources at appropriate places
- iv. Quality of decision making at site and at CCR
- v. Deployment of resources in effective manner.

MAXIMUM CREDIBLE SCENARIO:

Emergency preparedness is structured on maximum credible accidents which may have very low probability, even for a layman, it may seem impossible to happen. The identification of maximum credible accidents has been discussed in Chapter No.3. However, it is pertinent to discuss the type and escalation of emergency situation which may arise from Toxic Material release.

TOXIC RELEASES:

The following examples show how events involving toxic materials may need different planned responses:

A SLOW INTERMITTENT RELEASE, E.G., THROUGH A LEAKING RELIEF VALVE:

It would be unlikely that any one outside the site would be severely affected immediately, although many of the notifiable substances have irritant properties or an unusual smell. If there were reason to foresee that the release would not be controlled quickly, or would grow with time, it might be desirable to evacuate those people nearest to the site of release and most closely downwind of it, provided that this evacuation would, increase their safety.

A fire or mechanical damage that threatened an installation containing toxic material:

If the fire could not be controlled & if there was likely to be a reasonable period before over pressurization or plant failure can occur evacuation might be appropriate. Once again priority should be given to those nearest the plant (in all directions) and those in an appropriate sector. (30°, downwind)

Rapid event with a limited duration, e.g. the fracture of a component that could be isolated within a reasonable time:

Incidents that grow and are immediately controlled should warrant evacuation. Any toxic cloud formed would be limited in size and would be likely to drift past a particular spot relatively quickly. The best place for people in the area would be indoors, upstairs, with windows and doors closed.

A major event leading to a sudden release of a large quantity of a toxic substance, which would form a large toxic cloud e.g. release to atmosphere of most of the contents of a storage vessel through the failure of a tank shell, manhole cover etc. Although the probability of such an event occurring is extremely low, the consequences would be severe for people living close to the incident and in the path of the cloud. All the emergency services need to be summoned on war footing. The major difference between releases of toxic and flammable material is that toxic clouds tend to be hazardous down to much lower concentration than flammable clouds and therefore may remain hazardous over greater distances, while traveling with the wind. The consequences arising from release of toxic material, drifting at perhaps 300 meters a minute and dispersing slowly are difficult to predict. In every case, however, the hazard is greatest close to the source and near the downwind plume. Unless there is a delay, as in (a) or (b) above, the best course is NOT to attempt evacuation. For those who were not evacuated, but were then exposed to a prolonged release, the chances of survival would diminish with the passing of time. The Emergency Coordinating officer (in-charge of off-site plan, perhaps in consultation with the site main controller of the Factory from which the emergency has arisen or the nearby factory in case of emergency outside the factory premises, would have to make quick decision when and how to attempt rescue.

IMPORTANT INFORMATION REGARDING HAZARDOUS CHEMICALS:

CHLORINE:

Chlorine is a clear, pungent-smelling, green gas that is highly corrosive.

Chlorine is irritating to the nose, throat, skin and eyes. Inhalation of high Concentration of this gas can result in unconsciousness and death. High concentration of Chlorine may cause an oxygen deficient atmosphere.

Chlorine is an oxidizer, which can act to initiate and sustain the combustion of flammable materials.

Chlorine is heavier than air and pockets of this gas can accumulate in low-Lying areas. Extreme caution must be used when responding to spills. Persons who respond to release of Chlorine must protect themselves from inhalation of the Chlorine vapors and mists, especially in areas which are downwind of the release.

The most significant route of overexposure for this gas is by inhalation.

INHALATION:

Inhalation of Chlorine vapors may lead to irritation of the nose and throat. Exposures to high concentrations of Chlorine gas can lead to symptoms such as coughing, laboured breathing, sore throat and in some instances, chemical pneumonitis and pulmonary oedema. High concentrations of Chlorine gas may cause an oxygen-deficient atmosphere. Exposure to high concentrations may cause unconsciousness and under some circumstances, death. Repeated chlorine overexposures by inhalation can result in emphysema and erosion of teeth.

Threshold Limit Value for Cl₂ is 1 ppm and Odour Threshold is 0.06 ppm.

CONTACT WITH SKIN or EYES:

Contact of the liquid or gaseous product with the skin can lead to severe burns or dermatitis (red, cracked, irritated skin), depending upon concentration and duration of exposure. Contact of the liquid or gaseous product with the eyes can cause pain, redness and prolonged exposure could cause blindness. Contact with the undiluted liquid will cause frostbite, ulceration of the skin, blistering and pain. Contact with rapidly expanding gas poses a frostbite hazard.

HEALTH EFFECTS OR RISKS FROM EXPOSURE:

This gas is extremely corrosive, can burn and damage eyes, skin, mucous membranes and any other exposed tissue. If chlorine is inhaled, irritation of the respiratory system may occur, with coughing and breathing difficulty. Overexposure to this gas may be fatal. Persistent irritation may result from repeated exposures to this gas mixture. Repeated chlorine overexposures by inhalation can result in emphysema and erosion of tooth enamel.

TARGET ORGANS: Respiratory system, skin, eyes.**FIRST AID MEASURES:**

RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURES TO CHLORINE WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT.

At a minimum, self-contained breathing apparatus personal protective equipment should be worn.

Remove victim(s) to fresh air, as quickly as possible. Trained personnel should administer supplemental oxygen and / or cardiopulmonary resuscitation, if necessary. Only trained personnel should administer supplemental oxygen.

SKIN EXPOSURE:

If chlorine contaminates the skin, immediately begin decontamination with running water. Minimum flushing is for 15 minutes; remove exposed or contaminated clothing taking care not to contaminate eyes.

EYE EXPOSURE:

If liquid is splashed into eyes, or if irritation of the eye develops after exposure to liquid or gas, open victim's eyes while under gentle running water. Use sufficient force to open eyelids. Minimum flushing is for 15 minutes.

FIRE FIGHTING MEASURE:**UNUSAL FIRE AND EXPLOSION HAZARDS:**

Chlorine is a toxic gas, which presents an extreme health hazard to fire fighters. Chlorine is an oxidizer, which act to initiate and sustain the combustion of flammable materials.

SPECIAL FIRE FIGHTING PROCEDURES:

Incipient fire responders should wear eye protection. Structural fire fighters must wear self-contained breathing apparatus and full protective equipment. Move fire-exposed cylinders if it can be done without risk to fire fighters. Otherwise cool containers with hose stream and protect personnel, withdraw immediately in case of rising sounds from venting safety device or any discoloration of tanks due to the fire. If chlorine is involved in a fire, fire run off water should be contained to prevent possible environmental damage.

ACCIDENTAL RELEASE MEASURE:**SPILL AND LEAK RESPONSE:**

Uncontrolled release should be responded to by trained personnel using pre-planned procedure. Proper protective equipment should be used. In case of a large release, clear the affected areas protect people and respond with trained personnel. Minimum personnel protective equipment should be level A : triple-gloves, fully - encapsulating chemical resistant suit and boots, hardhat and self contained breathing apparatus.

Note : Direct contact of liquid chlorine with ANY protective equipment item can rapidly destroy the equipment, leading to injury and death.

Chlorine leaks can be detected by means of an atomizer or squeeze bottle filled with aqueous ammonia. A white cloud will show the location of the leak. Monitor the surrounding areas for chlorine gas levels and oxygen. The chlorine level must be below 1 ppm and the atmosphere must have at least 19.5 % oxygen before personnel can be allowed in the area without self- contained breathing apparatus. Attempt to close the main source valve prior to entering the area. If this does not stop the release, allow the gas to release in place or remove it to a safe area and allow the gas to be released there. Only attempt to install a chlorine emergency kit, if you are familiar with the kit and trained in its use. Never apply water to a chlorine leak.

CRISIS**GENERAL :**

Besides the natural disasters, there are many man-made or technology oriented physical events, which result in a significant disruption in the normal business of electricity supply. These may include severe accidents caused due to fire, explosion, handling of hazardous materials, act of terrorism, strike by plant employees or disruption in supply of essential inputs like coal / fuel etc. Such events may affect generating plant, transmission system of distribution system with or without loss of human life or physical injuries. The crisis management plan shall be able to respond quickly and effectively to such unexpected events and situations. In majority of cases, such situations are localized in nature and this should be handled by the plant / installation level emergency management group supported by state level group. Only in those cases, where central assistance is required in terms of administrative or policy initiative and / or are having wider ramifications, the central level Power Management Group should be associated. However, in all cases, the information flow to regional & central level must continue.

1. TERRORIST ATTACK :

Terrorist attack is normally local in nature confined to small area. The response mechanism shall be as per the advice of Emergency Management Group set up at each plant / installation. Everybody should act without panic and rumors according to the well- defined instructions already assigned to each one of the key employees and workers. To protect against a terrorist attack, the plan shall include the following:-

- 1) Strong security arrangement at all entry points to the power stations / sub-stations / load dispatch centers.
- 2) Information to District Administration to take appropriate security action.
- 3) Only the authorized persons may be allowed to gain entry into the complex.
- 4) Continuous internal security must be in force at all times.
- 5) Close watch must be kept on the suspicious persons, unattended vehicles around the complex.
- 6) Modern communication & information system shall be provided with suitable back ups.

SYSTEM SECURITY :

There should be 100% foolproof security mechanism for the following services:

- 1) Automated access control system.
- 2) Alarm points
- 3) Identification of employees, contractors, visitors
- 4) CCTV

5) Crisis Management policies and procedures

Bomb Threats & Bomb Explosion :

Basic steps to be carried out in the event of a bomb threat:

- A thorough search should be carried out by the security and police agencies that are well versed in dealing with such situations.
- In case a bomb being found or suspected, sand bags are placed around the object to reduce the impact of damage in the event of an explosion.
- The nearest police or army units who invariably have trained personnel for this purpose should be called for disposal.

Action Plan to deal with Bomb & Bomb Threats:

1. All efforts in case of bomb threat or bomb explosion are to be coordinated by Emergency Management Group.
2. Ear-mark evacuation area.
3. Develop an evacuation signal and route.
4. Outline mechanism for liaison with security, fire and medical agencies.
5. Select and specify the search team.
6. Display telephone numbers of bomb disposal squad, fire and medical agencies, security agency and police etc. prominently.
7. Impart proper training to security personnel.
8. Record the threat call for facilitating investigation.

Steps to be taken in dealing with parcel bomb or suspected parcel / letter bomb:

- a. Do not open letters / parcels of the following nature:
 1. Senders name not written.
 2. Name is miss-spelt.
 3. There are holes in the envelopes for safety wires.
 4. There are protruding wire(s) or tin foils.
- b. Parcels / letters with smell or oil / perfumes, shall be dealt as under:
 1. Do not cut or open suspected letter or parcel.
 2. Separate the suspected letter or parcel and keep it in a safe place separately.
 3. Ask for help from Bomb Disposal Squad. A bomb threat drill should be carried out periodically for being prepared to deal with such threats as and when they occur.

PHYSICAL SECURITY ASPECTS OF INSTALLATIONS:

Security Measures at premises boundary

- The perimeter wall around the project area should be made as straight as possible around the premises. The inlet / outlet and tunnels if any, should be provided with strong iron gratings at frequent intervals to deny entry of criminals and anti-social elements.
- There should be peripheral road both inside and outside of the perimeter wall (maintaining clear zones of 3 meter on both sides) to carry out mobile patrolling.
- There should be watch towers at certain intervals with communication facilities.
- Perimeter wall should be properly illuminated. There should be provision of portable flood lighting and emergency lighting.
- Fence security alarm system shall be provided at all power stations / grid stations. This system will have a centralized control at the main security post. This would assist to spot out the intruder who can be captured by the security personnel or the dog squad.

Security measures for entry into premise:

- There should be minimum number of entry gates. Separate in and out gates should be provided for pedestrians, vehicles and materials.
- The plant premises should be got declared as protected place and an entry to the premises and movement of material should be made only through the proper passes.
- It should be impressed upon villagers / people living close to the power stations / Grid Sub – Station / transmission lines and associated communication facilities in remote area, that their cooperation is crucial for protecting these installations from any harm from anti-social elements and malafide intentions / mischief of people on strike during disturbed / crises situation as well as in normal period All the vital installations inside the plant need to be separated by fencing and entry of the employees should be allowed only through special passes.

2. STRIKES BY PLANT PERSONNEL:

In any organization there are three broad categories of employee's viz. executives, supervisors and workmen. Employees in all these categories can get organization in the form of unions / organizations / federations and take part in strikes. The possibility of executives going on strike may be very remote and it is felt that the speedy redressal of grievances and motivational factors should form a part of the strategy to keep the executives away from resorting to such extreme steps as going on strike. Notwithstanding the above, a plan needs to be prepared for handling crisis arising out of strikes. Each station shall prepare a "Manning pattern of the operation of Power Station / grid sub station as per annexure-I.

Precautionary Stage

This stage will occur when the prior information is available about the disturbance that might occur in future. Normally such a situation occurs, when a strike notice is given by one or more unions. Under such a situation the effect of strike is expected to be fairly wide spread. Various decisions / actions to be taken in this phase are as follows

- i) Concerned departments and various committees within the power station / power system should be alerted immediately.
- ii) Disturbance situation should be assessed with regard to the type of personnel / unions involved, it's likely spread and status of the corrective action / negotiations initiated.
- iii) Appropriate Government and Labour Department should be informed in writing, specifying the background leading to the agitation and the assistance required from Government / Labour Department.
- iv) Sufficient water is arranged in tanks, drums, etc., in different areas to meet emergency situation.
- v) Sufficient reserve stock of coal, fuel oil and other consumable items needed for keeping the plant in operation should be kept ready.
- vi) Adequate provisions should be made (for food, cots, mattresses, etc.) for executives and other running staff to stay inside the power house / grid sub stations premises for prolonged period during the strike.
- vii) Legal status of the strike should be examined and communicated to all concerned.
- viii) The various committees should be made ready to carry out their specific jobs as listed above.
- ix) The dangers and the threats during strike need to be assessed and appropriate planning done to counteract such events.
- x) Arrangements are made for additional man-power for running the power station.

Disturbed Stage:

Whenever the disturbance situation occurs, the following actions / decisions need to be taken by the management in the order or priorities given hereunder:-

- i. Activate all security measures both within the plant as well as outside the plant.
- ii. Inform local authorities, respective regional load dispatch centre and the personnel within the plant.
- iii. Review attendance within the plant and their placement. Switch over to two shift operation of 12 hours each and issue instructions to the concerned personal regarding the same and their placement in two shifts.
- iv. Activate control room, which will form the nodal point for all activities within the power plant / grid sub-station as well as outside the plant.
- v. Activate the various committees.
- vi. Review the legal status of the strike and communicate to all concerned. Press release may also be considered at appropriate stage.
- vii. Review the shortfall of personnel in various areas and explore the possibility of obtaining them through regional and Central Control Room.
- viii. Activate service functions like armed / un-armed security transport for executives & the sincere and committed workers, canteen, accommodation, etc.
- ix. Evaluate the scope for further negotiations with the unions and initiate action on the same.
- x. Receive reports from Intelligence Groups / loyal workers and take necessary action.
- xi. Monitor constantly various activities both within the plant and outside the plant and take suitable action, which may be required / deemed fit.
- xii. Communicate with the regional control rooms about the situation. Frequent meeting with the Head of the Departments and other Executives of the plant and necessary to apprise them of the management strategy. It is essential that the morale of those employees who have not joined the strike is maintained at a very high level. This is a pre-required for smooth operation of power station / grid, sub-station during the strike situation.

- xiii. The Union's propaganda is to be countered by clarifying management points in hand-outs / circulars to be distributed to all. Subsequently, notice may be issued to caution / advise the workers of the probable consequences of participation in the strike or go slow. All Heads of the Department of the plant would personally advise their employees to disassociate from illegal strikes go-slow.

TRAINING NEEDS

The technical as well as non-technical staff in power stations and sub-stations needs to be trained for manning the essential areas during the strike.

Action Plan to manage the crisis due to strike

The crisis due to strike may occur in a planned or un-planned manner. While in the former case a proper notice is normally given to the management by the aggrieved group and management has adequate time to plan its course of action well in advance, in the later case the management is totally taken by surprise due to wild cat strike, a civil disturbance or a natural calamity.

There may be three stages viz. normal, warning and disturbed stage, action plan needs to be drawn specifically for all the three stages.

3. AIR RAID:

Air raid warning would be obtained from the District Emergency Authority and Defense Authorities during which total blackout of the entire TPS & colony should be considered. Some of the contingency actions to be considered during those occasions are as follows: -

- The Aviation lights installed at stacks inside the TPS shall be switched off.
- All the lighting in the Roads and street shall be put off.
- All the plant lighting shall be put off.
- Brown curtains shall be provided for all windows inside the building.
- Adequate bunkers shall be placed inside the TPS to enable people take shelter during air raids.
- Furnace burners shall be enclosed to avoid light transmission. The operators and process personnel shall use torches during such period. The torches shall be covered on its glass to an extent to allow minimum light transmission.
- Other emergency actions shall be followed in addition as per the general procedure.

SECTION-05

NORMAL STAGE ACTION PLAN FOR EMERGENCY CONDITION

Normal Stage Action Plan

The various preparatory works are to be done under normal circumstances so as to be ready to face any emergency conditions. The following activities may be performed during normal stage.

List of Vital Installation:

The vital installations, both from security and operational considerations, are to be identified. The installations identified from the security point of view should also indicate the intensity of checks to be made i.e. whether these should be guarded continuously or periodic inspection will be adequate. Sample format of vital installations for thermal power stations is enclosed as Annexure. Similar format needs to be developed for hydro power stations and grid sub-stations.

Personnel required:

Minimum number of personnel required to run the power station during the period of disturbance needs to be identified. A list of the retired persons from the power station during the past 2-3 years may also be maintained so that their services could be utilized under such eventualities. This list also needs to be updated periodically.

A list of resourceful contractors who would be able to supply skilled / non-skilled man-power in the event of emergency should be maintained for each project / facility / site.

Review of the Grid Operation:

During disturbed situation, when the regular people are either not present or are less in number and there is a possibility of generation falling down drastically or key transmission elements not being available, it would be necessary greater vigil and care in grid operation so as to avoid cascade tripping and total collapse of the system.

Security Measures:

Normally, Central Industrial Security Force (CISF) of the power station is responsible for security and fire prevention measure in the projects in the installations. Their role in the disturbed situation is quite significant. Their role, therefore, needs to be clearly defined and a common understanding is to be established between the station management and the commandants of the CISF security in – charge.

Fire Protection:

Through fire can occur in any part of the plant, some areas are more prone to fire than others. The fire prone areas must be identified well in advance so that the initiated to take precautionary measures can be put in place. A ready assessment of fire equipment available within the installation as well as within the adjoining areas should be available. In case fire protection equipment is outside the installation the method of accessing them should also be known to the concerned people. In certain cases, mutual assistance agreement needs to be entered with the nearby organizations to share the fire fighting equipments. This agreement should be drawn during the normal times. The method of handling various types of fire with different fire extinguishing equipment may be listed in order to avoid confusion or any other type of hazards. The information on the fire protection to cover the various aspects mentioned above may be collected in the enclosed Annexure – IV.

Safe storage of vital records:

To avoid the destruction of vital records of power station / grid sub-station / load dispatch center, it is essential that the same are duplicated and kept in safe place to protect them from accidental fire as well as sabotage.

Technical and Administrative Records of Station / Grid Sub-Station:

During the disturbance the regular staff may invariably not be available and the power plant has to be run by the executives and personnel from other areas or plants. It is therefore, essential that important technical and administrative documents records are made available to them to operate the plant in the best possible manner.

Formation of Committee:

It would be desirable to form certain committee who could be given specific responsibilities for certain activities required to be carried out during crisis period. The details of this committee may be as follows:-

Essential Service Committee:

The Committee will be responsible for:-

- i) Maintaining continuous supplies of food, medicines etc.
- ii) Liaison with District Authorities for necessary assistance.
- iii) Making emergency arrangements.

- iv) Finalizing notices, hand bills, circulars to be issued to striking workers and other appropriate action.
- v) Keeping the Station In charge fully informed about latest situation on maintenance of emergency arrangements.
- vi) Provision of facilities like rest / sleep at nights, daily needs etc. in the plant premises.

Power Generation Committee:

The Committee will be for operation and maintenance of units already commissioned. A separate control room will be established which will be manned by responsible officer round the clock. A list of sincere and committed workers along with their quarter numbers and locality in the township should always be available with the control room so that duty roster can be prepared accordingly and protection assured to them and their family members.

The committee will decide exact deployment of technical and non-technical staff available. The Officer-in-charge of Control Room should remain in touch with Security-in-charge so that loyal workers are escorted during shift change timings. The Committee will also be responsible to maintain supply of materials required to keep the power plant running. Spares, fuel oil and coal should be kept ready according to requirement.

Financial Powers

During the disturbance period, the various heads of the departments need more financial power to meet the various contingencies. The enhancement of financial powers / impress money shall be available for the disturbance period.

Preparation for setting up of a Control Room (Field Level) :

The control room is to be set up for the effective coordination of the various events and happenings during the time of disturbance. This control room is entrusted to collect all the information and compile it to be ready for the timely communication to the concerned people. It would be a nodal point to communicate with the Regional Control Room and other outside agency. This control room will be operation round the clock.

Communication:

- 1) Alternative Communication arrangements independent of power line communication and normal telephone Department system should be provided as those are likely to be disconnected during commotion or due to sabotage / fire etc. These arrangements should be in the form of wireless links with other stations SEBs, regional and Central Control Room in order to avoid islanding conditions.
- 2) Power Stations should have walkie-talkie sets of appropriate capacity to cover the farthest point of the installation for effective communication.
- 3) Each station should have a few vehicles with public address system, which can be used to make necessary announcements. Similarly, main gate / gates may also have public address facilities for dissemination of announcement.

Lighting:

Emergency lights, DC operated invertors and diesel generators etc. must be arranged for providing relief when the power supply gets affect both in the normal or strike situation.

Fire:

Causes of Fire:

A large percentage of fire incidents are attributed to electrical short circuits / gas / oil leakage / spillage besides chemicals explosions. Some of the inadequacies, which contribute to the outbreak of fire, are listed below:-

- 1) Poor quality to electrical wiring and lack of proper maintenance of the power line / electrical appliances.
- 2) Unsystematic dumping of wooden packing material and other combustible materials all over the places, and the unhindered growth of tall grass and bushes within the premises of some of the sensitive installations.
- 3) Non-adherence to safety guidelines and code of conduct while dealing with hydrocarbons and explosives.
- 4) Delay in the transmission of information regarding fire incidents to the local Fire Station and the resultant delayed response from the fire station to the fire call.
- 5) Ineffective fire fighting due to disruption in the supply of electricity as a result of fire.
- 6) Inadequacy in the strength of the fire-fighting staff posted in each shift for combating even a medium fire.
- 7) Inability of the staff to handle even the hand-operated fire-fighting equipment available on the premises.
- 8) Poor maintenance of some of the fire hydrants besides the lack of adequate pressure of water in those that are function due to insufficient storage of water.
- 9) Lack of awareness of the staff either due to non-holding of mock drills or non-involvement of staff in fire drills.
- 10) Lack of adequate attention to the air conditioning systems, particularly during odd hours.

Identification of fire prone / hazardous areas:

Identification of fire prone / hazardous areas in the Powerhouse being a pre requisite, In a Thermal Power Plant major fires can occur in following areas:

1. Coal handling plant
2. Hydrogen generation plant
3. Hydrogen storage / feeding areas.
4. Fuel oil handling system.
5. Storage go-downs
6. Cable galleries / Cable Vaults
7. Bunker Floors

Safety Measures for avoiding the damage due to fire explosions:

The following are some of the essential safety measures for implementation in all power stations:

- 1) Use of top quality insulation material and heat resistant cables to reduce the propensity to fire;
- 2) Use of electronic rodent repellants in the cable galleries;
- 3) Non-combustible substitute for the glass wool insulation for air-conditioners and wooden partitions;
- 4) Provision for smoke and heat sensors and other modern electronic aids in the sensitive and fire prone areas;
- 5) Ban on entry of match boxes, lighters and such other inflammable items into installations handling oil / gas ;
- 6) Provision for a dedicated communication system for fire-fighting / fire station;
- 7) Installation of an integrated CCTV system to monitor and untoward happening in the cable gallery and other fire prone areas ;
- 8) Periodical inspections of electrical wiring and equipment by an independent and qualified body of electrical engineers.
- 9) Regular checking of fire headers and fire alarms.
- 10) Provision of portable fire extinguishers at fire prone place.
- 11) Periodic review of the fire fighting arrangements by an independent and qualified fire fighting authority to plug loopholes, if any;
- 12) Identification and display of escape routes.
- 13) Provision of proper forced ventilation in the fire area.

FIRES IN Cable Galleries / Transformers / Generators

The main hazard in cable galleries is fires. To contain fires, heat sensors and smoke detectors are provided in the cable galleries to detect the fires at the inception stage itself. Automatic sprinkler systems are provided throughout the cable galleries to extinguish the fires. Also fire resistance barriers are provided at the cable entries / intersections, intermittent places on cable trays, Cable raisers and cable entry points. Apart from this, automatic halon flooding system should be available.

Major cause of fire in the generator being failure of its protection system, periodic testing of generator and its protection system should be done. Following actions be taken immediately in the event of fire in generator:

1. Trip all running generator breakers and all line breakers.
2. Trip the field breaker
3. Stop the machine
4. Pull the fire button provided at control desk or in the unit control board
5. Open the butterfly valve near the shaft seal panel turbine floor
6. Switch-off all ventilation blower and switch on all exhaust blowers
7. Inform the fire safety wing

In the transformer, major cause of fire is failure of its protection system, periodic testing of transformer and protection relays should, therefore, be done. In case of fire in transformer, following actions be taken immediately

1. Trip all the running generator breaker and all line breakers
2. Trip the field breaker
3. Stop the machine
4. Regular checking of fire extinguishing system of transformers such as Emulsifier system, etc.

EXPLOSION:

In a Thermal Power Plant explosion in the plant is possible in Hydrogen Generation Plant, Oil storage tanks, or where Hydrogen cylinders / DA cylinders are stored. To prevent such possibility Hydrogen shall be purged with inert gas like Nitrogen or Carbon di-oxide and always purity above 97% is maintained.

Coal dust can explode when they are suspended in air. A coal dust explosion may occur if the coal dust is present in the concentration between UEL & LEL limits i.e., 30-2000 grams / M3 of air and also a source of ignition like sparks caused by friction or static electricity. To prevent the accumulation of dust, dust suppression and dust extraction systems shall be available at strategic locations.

Wherever Boiler gets pressurized due to non-evacuation of steam, there are chances of Boiler explosion. However, various interlocks and protections are available for Boiler and taken care off during design stage to avoid Boiler explosion.

Hydrogen gas explosion is a possible hazard in Generation. However, the generator is designed to withstand explosion. Seal oil system is also provided for the generator to prevent the leakage of Hydrogen gas. And also the Hydrogen gas purity is continuously monitored and maintained always above 98%. All the Hydrogen cylinders are checked for purity.

In case of any terrorist activity and blasting of manifold system of Chlorine toners with the use of explosives, heavy quantum of Chlorine may leak. In that case, only action is evacuation of victims and personnel. Explosion may occur due to fire also. To prevent such events, no flammable material shall be allowed to be kept in the vicinity of Chlorine. Even uncontrolled growth of grass shall not be allowed there. Due to corrosion or mishandling, or occasions, leakage of Chlorine may occur from the toner valves / joints and shell. To control such leakages, sealing kits shall be provided close to the chlorine container stores. A chlorine neutralization capsule shall also be available at chlorination plants. This can be used if there is any uncontrollable chlorine leakage. Breathing equipment shall be provided to use in such operation.

FIXED FIRE DETECTION AND PROTECTION SYSTEM

Sr. no.	Nomenclature of Fire Protection / Fire Detection System	Date on Premises installed items protected
1.	(a) Water Sprinkler system and Emulsifier	On all GT Transformers.
	(b) Water Spray System	On all conveyor system
2.	Foam	On all Fuel Oil Tanks.
3	Organ gas flooding system & Water sprinkler system & smoke detection system.	All major plants / auxiliaries / all control rooms / cable galleries of Unit#6.

FIXED FOAM SYSTEM:

Furnace Oil / LDO TANKS shall be provided with fixed foam system. The foam station shall be situated near Heavy fuel oil tanks and LSHS tanks where foam concentrate has been kept in tanks. The mixer of water and foam concentrate goes to the HFO, HSD, LSHS tanks, thrown on to the top surface of the oil and converts into foam to extinguish the fire.

SPRINKLER SYSTEM:

All coal conveyors shall be provided with the sprinkler system against fire hazard. Sprinkler systems are fixed at Ammonia bullet tank & Ammonia cylinder storage room.

EMULSIFIER SYSTEM:

The Emulsifier system shall be provided on all the transformers of Stage- I, II & III & Unit #6 areas (GT, UATs, Station Transformers.) In the emulsifier system quartzite bulb fuses at 790° C and release air from the line, due to pressure drop of air deluge valve opens and water sprinkles through separate nozzles provided on the transformers.

EMULSIFIER SYSTEM:

In addition to above fire fighting equipments, portable and mobile fire extinguishers shall be installed at all locations of the plant including Main Plants, Control rooms, Switch Gear rooms, Laboratories, Off sites, Administration Building.

The following are the do's and don'ts for handling fire hazards:

Sr. no.	Do's	Don'ts
1.	Keep all inflammable materials away from sources of fire.	Don't allow inflammable oil / other materials to come in contact with electric cable / sources of fire.
2.	Ensure proper ventilation in areas storing flammable / hazardous fluids. Display ' No Smoking ' signboards near such fire prone areas.	Don't allow vehicle without fire / smoke arêtes in the close vicinity of flammable / hazardous fluids. Don's allow smoking in fir-prone areas.
3.	Carry out periodic inspections of all wires and electric joints to prevent short-circuiting.	Don's allow joints / cross connection in the power line.
4.	Ensure that the electric switches and fuses have the correct rating of circuits / circuit breakers etc.	Don't use sub-standard electric fixtures. Don't allow temporary or naked joints on electric wiring.
5.	Switch off appliances after use.	Don't leave electric appliances in working condition. When not in use.
6.	Closely supervise welding / cutting jobs.	Don't allow welding /cutting jobs in close vicinity of flammable fluids / materials.
7.	Switch off electric supply to the fire affected area in the event of an electrical fire.	Don't use electric appliances during fire.
8.	Do ensure emptying of waste materials at regular intervals.	Don't allow waste papers to be accumulated.
9.	Do keep smoke / fire check doors closed.	Don't store old furniture / miscellaneous articles near fire doors / fire exits.
10.	Keep water source for fire extinguisher etc. at fire prone areas.	Don't leave spray / aerosol cans on or near heater or in direct sunlight.
11.	Do raise a fire alarm in case of fire, shouting "Fire, Fire ", to alert others.	Don't shirk your responsibility in fighting fire, however, minor, it may be.
12.	Do provide a clear passage so that the fire engine / fire brigade is able to reach the place of fire.	Don't crowd around the fire brigade / fire fighting staff as it may affect their operation.
13.	Use fire escape routs during fire. Fire escape stairs should be free from obstructions	Don't operate lifts during fire

EMERGENCY SAFETY EQUIPMENT:

The following emergency safety equipments shall be made available in all areas including Chlorination Plants, Water Treatment Plant, UCBs, Fuel Oil pump houses, shift charge engineer's office section & fire stations.

- Self contained breathing apparatus
- Gas masks
- Chlorine leak arresting kits
- Emergency suits
- Gum boots
- Face shields
- Hand gloves
- Aprons etc.

SECTION-06

FACILITIES REQUIRED TO TACKLE ANY CRISIS / DISASTER

The facilities considered necessary for preventing and minimizing the impact of disasters are given below.

1. Recovery equipment and spares inventory:
In case of any crisis / disaster, it is necessary to have an inventory of recovery equipment and spares available with various power utilities and their location so that these could be pressed into service within the shortest possible time.
2. Communication facilities:
For dealing with any crisis situation, communication play a very vital role, Use of satellite communication system can be effectively made to coordinate the activities of various agencies involved in the relief and restoration work and expedite restoration of normalcy in the shortest possible time.
3. Transport and other arrangements:
Arrangements for adequate number of vehicles for movement of people and materials must be ensured. Medical facilities around the clock shall be made available to the staff engaged in the restoration activities. Arrangements for drinking water supply must also be ensured.
4. Financial Resources:
Arrangement for cash flow of adequate financial resources must be made so that the restoration activities do not get hampered because of shortage of funds. The authorized signatory may be designated for each strategic location that can take on the spot decision.
5. Black Start facilities:
Arrangements for start up power source for each major installation must be identified. Regional Load Despatch Centers have to make necessary plans.
6. De-watering Pumps:
During floods the immediate concern is to minimize the impact of flood water on generators and other equipment. Availability of de-watering pumps is therefore considered necessary for stations located in flood prone areas.
7. Mobile DG sets:
Sufficient number of mobile DG sets should be available at all distribution circles and should be moved immediately to provide emergency relief & to meet the need of dewatering pumps.
8. List of Contractors:
The local Project Authorities of disaster prone areas should keep a list of competent contractors / agencies who can be assigned the various components of restoration activities in the event of a disaster.
9. Communication :
Communication & information management is the key to any crisis response & recovery plan. Use of modern day information technology has to play a greater role, Software system incorporating risk assessment, creating procedures, establishing command & control structure, monitoring crisis response activities and integration with various agencies / groups would need to be incorporated as a part of emergency management.

SECTION-07

OTHER ESSENTIAL REQUISITES TO HANDLE ANY CRISIS / DISASTER

OTHER ESSENTIAL REQUISITES TO HANDLE ANY CRISIS / DISASTER

- ❖ Fire alarm and existing extinguishing system to be checked regularly for its healthiness and regular drill should be carried out for its operation by involving the officers and staff of that Unit so that they also know how to operate the system.
- ❖ Safety audit must be carried out at each generating station and sub station yearly basis.
- ❖ There should be perfect interaction on continuous basis between various disaster management groups and state intelligent agencies against terrorist attacks. This is particularly very much necessary for Nuclear and Hydro stations.
- ❖ The islanding schemes (electricity grid) of each state must be updated on continuous basis in consultations with the regional electricity board.
- ❖ Each Regional Electricity Board and Regional Load Dispatch Center must identify all the generating stations / grid sub-stations and load dispatch centers according to their critical importance with respect to safe operation of the electricity grid. The highest critical station must be provided the highest security arrangement and it may go on reducing to the least risk element, without jeopardizing the safety of electricity grid.
- ❖ Power Station shall constantly review the equipment system design standards and practices based on the new developments and the state of the art technologies and design practices available at that time. The equipment, which frequently creates problems need to be replaced.
- ❖ Each power station / Power Utility shall create a fund for meeting the requirement of disaster management plan. The disaster management funds would be at the full discretion of emergency management group once emergency has been declared.
- ❖ Carry out comprehensive statewide drills periodically (at least once in every six months) to test capabilities. Emergency scenarios shall be developed to test the emergency plans and operational response at all levels through mock exercise. At the end of each exercise an evaluation of the response call shall be carried out to take care of any deficiency noticed.

ANNEXURE

ANNEXTURE - I

MANNING PATTERN OF THE OPERATION OF POWER STATION

Areas	Name of executives / Regular position Manned by Executives	Substitute for supervisory / Workman positions
Each Control Room	S.C.E.	Plant D.E. & Others Engineers
Each Boiler & Auxiliaries	S.C.E.	Operators
T.G. & Auxiliaries	S.C.E.	Operators
Off sites		
1) C.W. Pump house		Operators
2) Ash Pump house		Operators
3) H ₂ Plant		Operators
4) Fuel oil handling		Operators
5) Coal handling Plant	S.C.E.	Junior Engineer (Shift) & Operators
6) Water Treatment Plant		Operators
7) Ammonia Plant		Chemist
8) DM Plant		Chemist
Electrical Operation		
1) H.T. / L.T. Switchgear		Operators
2) Switchyard including Control Room	S.C.E.	D.E.
3) 6.6KV & 400V	S.C.E.	Operators

ANNEXTURE - II

LIST OF VITAL LOCATIONS / INSTALLATIONS

(A) For security reasons

1. C.W. Pump house
2. Water Treatment Plant
3. Coal Handling Plant
4. Cable Galleries
5. Turbine hall – Ground Floor
6. Firing Floor
7. Coal feeder area
8. Cooling Tower pump House
9. Railway tracks
10. Switchyard
11. Hydrogen generation plant
12. Fuel tank area
13. Control stores vulnerable points
14. Administrative building's Vulnerable points (wireless room / Telephone exchange)

(B) For Operational reasons

1. Main Control & Computer Room
2. Ash slurry pump house
3. Switchyard Control Room.

DETAILS OF PERSONNEL PROTECTIVE EQUIPMENT

Sr. No.	Type of Protective Equipment	Location
1.	Industrial Safety Helmet	All employees
2.	Dust Respirator	Provided to all dust area
3.	Hand Gloves	All Department
4.	Gum Boots	All Department
5.	Full body harness / Safety belt	All Department
6.	B.A. set	Fire section & Old CWPH
7.	On air line respiratory system	Chlorine plant old
8.	Face mask	Fire section
9.	Rain court	All Department
10.	Aprons	Chemical
11.	Safety Goggles	All Department
12.	Safety shoes	All employees

ANNEXTURE - IV

LIST OF FIRE PRONE AREAS IN ORDER OF PRIORITY

Priority	Area	Capacity
FO Tank	FO Tank Near Unit#5	
LDO Tank	FO Tank Near Unit#5	
Hydrogen gas	Hydrogen storage Godown / Hydrogen cabins of unit # 3 to 6	
Ammonia Gas	Ammonia storage tank	
Chlorine Gas	Clarifier pump house	
Oil storage tank	Storage tank near unit # 5	
Turbine generator	Unit No. # 3 to 6 Turbine	
Transformer	Unit No. # 3 to 6 GT and 400 kV ICT	
Coal conveyor belt	CHP Area old and new	
Main control room	# 3 to 6 Control Room	
Cable galleries	# 3 to 6 Control room of Unit	
Various types of Cables	Unit No. # 3 to 6	
Electrical panels	415 floor (All)	
Boiler feed pumps	Basement area	
M.O.T of Turbine	Unit No. # 3 to 6	
Main store materials	Main store	
Diesel pump	Near store	
Coal dust	Boiler area	

LIST OF FIRE PROTECTION EQUIPMENT AVAILABLE WITHIN THE POWER PLANT

Power Station :

Ukai TPS & HPS

Updated on 12.05.2025

TPS

HPS

Sr.No.	Equipment/Vehicle/Plant/System	Nos/Set	Nos/Set
1	DCP Type Fire extinguishers	333	16
2	CO ₂ Type Fire extinguishers	379	23
3	M. foam Type Fire extinguishers	52	9
4	Fire Hydrants points	353	6
5	Fire tender No. GJ19T-2046 & No. GJ26G-191	2	
6	Fire Jeep	1	
7	Ambulance	3	
8	Life buoy	8	2
9	Life Jacket	2	2
10	B.A. Sets	9	
11	Tree cutter (Elect Operated)	1	
12	Fire Axe	6	
13	Wire less Set	1	
14	PA System	7	
15	Manila Rope	4	
16	Dewatering poratble Pump (Petrol operated)	4	
17	Bolt Cutter	2	

METHODS OF HANDLING VARIOUS TYPES OF FIRE.

Types of Fire	Type of Fire Extinguisher to be used.	Types of Fire Extinguisher not to be used.
'A" class	Water for cooling method	-----
"B" class	Foam/ DCP / Sand etc.	Water
"C" Class	DCP / and water for cooling	Gas type Ext.
"E" class	DCP / CO ₂ / Halon etc.	Water / Foam / Soda water type fire extinguishers etc.

TABLE OF INITIAL ISOLATION & PROTECTIVE ACTION DISTANCES

SMALL SPILLS (From a large package or from many small packages).				LARGE SPILL (From a small package of small leak from a large package).			
Sr. no.	Chemical Name	First Isolate in all Directions	Then protect Persons Downwind during	First Isolate in all Directions (Mts.)	Then Protect Persons Downwind during	Night	Day
			Night	Day			
		(Meters)	km	Km		Km	Km
1	Ammonia Solution, with more than 50% Ammonia	30	0.2	0.2	60	0.2	0.3
2	Chlorine	60	0.3	0.8	185	0.8	3.1

CHIEF EXECUTIVES OF MAJOR HAZARD INDUSTRIES

Sr. no.	Name & Address of the Factory	Mobile
1.	Sh.S.D.Patel Chief Engineer (Gen) Thermal Power Station, Ukai.	99252 13142
2.	Chief Executive (Works) Central Pulp & Paper Mills Ltd. Fort Songadh, Dist. Surat.	9328921150

ANNEXTURE - IX
KEY PERSONNEL PHONE NO.
ANNEXURE - X

NAME OF EMERGENCY OFFICE / Designation		Name of Officer	CONTACT NO P&T /MOBILE
MAIN INCIDENT CONTROLLER / C.E(G)		Sh.S.D.Patel	99252 13142
INCIDENT CONTROLLER / ACE(G)		Sh.B.R..Patel	99252 10903
FACTORY MANAGER & ACE(G)		Sh.R.C.Patel	89800 31717
AMBULANCE AT TPS	FIRE SUPERVISOR		8980017636
AMBULANCE AT GSECL HOSPITAL	SISTER, GSECL HOSPITAL		6357183286
GSECL HOSPITAL	OHC CENTRE		06357183279
	SISTER, GSECL HOSPITAL		6357183286 /02624-235074
	FMO	Dr.D.J.Vaidya	9925208987
	AMO	Dr.Paul Rajwadi	9925208969
	AMO	Dr.Paras Padhiyar	7069004697
FIRE BRIGADE	FIRE SUPERVISOR		8980017636
	FIRE OFFICER	Sh.Y.N.Kher	9099959240
EMERGENCY CONTROL ROOM- TPS	SHIFT CHARGE ENGINEER (UNIT#5)		9687663990
EMERGENCY CONTROL ROOM-HYDRO	SHIFT CHARGE ENGINEER		02624-233510 9712921574
EMERGENCY C /R -MINI HYDRO	SHIFT CHARGE OPERATOR		02624-233231 9712921763
EMERGENCY CONTROL COLONY (TECH.SECTION)	EE (TECH)	Sh.K.C.Chaudhary	99252 13026
Electrical Safety Officer	Electrical Safety Officer	Sh.D.R.Chaudhary	99252 13077
SAFETY DEPARTMENT	SAFETY OFFICER /DY.S.O	Sh.R.M.Suthar/ Sh.S.M.Kosambia	9925213028/ 7574810354
Dy. Commandant CISF	CISF		99252 13280
CISF	TPS GATE/		8238384722/
TPS MAIN GATE	SHIFT DUTY-CISF		8238384722
HPS MAIN GATE	SHIFT DUTY-CISF		
SE	SE[OPR]	Sh.R.R.Chaudhary	99252 10725
	SE[M & C]	Sh.R.V.Vasava	99252 13112
	SE [P&C]	Sh.R.N.Patel	99252 10640
	SE[Inst]	Sh.N.N.Patel	99252 10649
	SE[Elect]	Sh.C.B.Patel	99252 10765
	SE[CIVIL]	Sh.M.D.Mayavat	99252 10958
	SE(PROJECT)	Sh.K.M.Chaudhary	99252 13792
	SE[Fuel]	Sh.J.M.Mehta	99252 10669
	SE(M-II)	Sh.H.J.Chaudhary	99252 13087
	SE[HYD]	Sh.B.G.Chaudhary	99252 13079
ADMIN	DGM	Sh.P.G.Parmar	9925210831
CHEMICAL LAB	CHIEF CHEMIST	Sh.D.S.Gamit	8980037883

❖ IMPORTANT TELEPHONE NUMBERS OF DIFFERENT DEPARTMENTS / AGENCIES - OFF SITE & DISTRICT LEVEL EMERGENCY

SR.NO	DESIGNATION	NAME	CONTACT NO
01	COLLECTOR, TAPI DISTRICT	DR.VIPIN GARG (IAS)	(02626)224460 9978405364
02	DDO-VYARA	SH.SANDEEP GAYAKWAD (GAS)	02626-222141 9978405263
03	DSP-VYARA	SH.RAHUL PATEL (IPS)	02626-220070 9978405488
04	REST. COLLECTOR, TAPI DISTRICT STATION ROAD, VYARA.	SH.R.R,BARAD	(02626) 224450 (02626) 221281 9978405415
05	JOINT DIRECTOR (DISH) SURAT	SH.R.A.PATEL	0261-2472422 98986 30454
06	DY. DIRECTOR (DISH) SURAT	SH.B.A.CHAUHAN	0261-2472422 96012 69125
07	ASST DIRECTOR (DISH) SURAT	SH.J.N.VASAVA	0261-2653502 99250 18361
08	MAMLATDAR, SONGADH.	SH.RAKESH RANA	02624-222023 9979484151
09	TDO-SONGADH	SH.D.D.GAVIT	02624-222025 5767018481
10	CPI-SONGADH	SH.PADVI VIRSING	02624-222033 9426082120
11	PI-SONGADH	SH.Y.S.SHIRRSATH	02624-222033 9426082120
12	PI-UKAI	MS.P.A.PAREKH	02624-233236 8758265050
13	EMERGENCY-CONTROL ROOM SONGADH-24X7	CR-OPERATOR	02624-000023 8320223798
14	EMERGENCY-CONTROL ROOM VYARA-24X7	CR-OPERATOR	02626-223332 9825920032
15	FIRE OFFICER -SONGADH	FIRE CONTROL ROOM SONGADH	02624-221073
16	FIRE OFFICER -VYARA	SH.D.V.GADVI	02626-222022 9825604003
17	REGIONAL OFFICER-GPCB	SH.H.V.GANVIT	0261-2442696 9825155421
18	JK PAPER LTD., UNIT: CENTRAL PULP MILLS, FORT SONGADH, DIST. SURAT.	EVP-SH.M.K.VERMA	8978299932
		CGM-SH.PK MITTAL	9328921015
		GM-SUNIL PAGAR	9328921020
		CM-EHS-DURGESH MISHRA	9328921078
		AM-EHS-RAVI PRASAD	7878832111

ANNEXTURE - XI

LIST OF HOSPITALS & AUTHORITY

Hospital Name			Address	Contact Number
GSECL Hospital and Doctors				
Colony Hospital	GSECL Colony	24 x 7		6357183286
OHC TPS	UTPS Plant	General Shift		6357183279
Dr. D J Vaidya	Sr. M. O			9925208987
Dr. Paul Rajwadi	M. O.			9925208969
Dr.Paras Padhiyar	M. O.			7069004697
J. K. Paper (CPM)				
Hospital			CPM Colony	9328921026
Dr. Samir Mehta			CPM Colony	9925944745
Government Hospitals				
PHC Bhurivel Ukai	Dr. Bhavna Patel		Ukai	9727792893
Refferal Hospital	Songadh		Songadh	02626 220053
Civil Hospital	Vyara		Vyara	02624 223060
Private Hospitals				
Maa Family Hospital		Multispeciality	Songadh	9510323134
SARTHAK Hospital	Dr,BHATTACHARYA	MD PHYSICIAN	SONGADH	9099523666
SMIT Hospital	Dr.RAJAN VALVI	MD PHYSICIAN	SONGADH	8141418166
DHIRAJ Hospital	Dr. SWAPNIL CAPTAIN	MS.SURGEON	SONGADH	6353241311, 02624 221536
DHIRAJ Hospital	Dr. RUCHI CAPTAIN	GYNECOLOGIST	SONGADH	6353241311, 02624 221536
SANJEEVNI Hospital	Dr. DIPAK PATIL	PEADIATRICIAN	SONGADH	8980156222
SAI KRUPA	Dr. LOVE KUMAR	GYNECOLOGIST	SONGADH	96870 84101
MEHUL DIAGNOSIS	Dr. MEHUL PATEL	RADIOLOGIST	SONGADH	8155921477
SIGMA Hospital	DR IFTEKHAR	MD PHYSICIAN	SONGADH	8925858585
MULTISPECIALITY Hospital	MAA& family hos	KESHRINANDAN	SONGADH	95103 23134

NETRAM EYE Hospital	DR RUPAL CHAUDHARI	OPHTHALMOLOGIST	SONGADH	9825037110
	GEETA DIAGNOSTIC	CT SCAN	SONGADH	8347630853
SHAILEANDRA Hospital	Dr.SHAILENDRA GAMIT	MD PHYSICIAN	VYARA	7433995029, 02626 296691
NEEL HospitalPITAL	Dr.ABHAY SHAH	MD PHYSICIAN	VYARA	02626 222370, 9825328064
RHYTHM HospitalPITAL		Multispeciality	VYARA	7567448374, 02626 222833
SANJEEVNI Hospital	Dr.CHIRAG SHAH	SURGEON	VYARA	9825361754, 02626 220757
EKLAVYA Hospital	Dr.VISHAL CHAUDHARI	ORTHOPEDIC	VYARA	9426074364, 02626 223002
VISHWA Hospital	Dr.MUKESH TUWAR	GYNECOLOGIST	VYARA	02626 220638
MODI Hospital	Dr.KINSHUK MODI	PEADIATRICIAN	VYARA	9409522661, 9409522662
ARIHANT / Poshika	Dr.KANEYA JAIN	RADIOLOGIST	VYARA	9712477188, 9537673911, 9726344401
JALPA ENT CARE	DR JALPA PATEL	ENT	VYARA	9426876654
KALIDAS HOSPITAL		MULTISPECIALITY Hospital	VYARA	9909073496
JANAK SMARAK HOS		MULTISPECIALITY Hospital	VYARA	6354330281, 02626 220121
TRINITY Hospital	DR SNEHAL GAMIT	PEDIATRICIAN	VYARA	9724922203

ANNEXTURE - XII
ON HEARING EMERGENCY

The siren system is already available for warning to be given at emergency time.

- ❖ **NON - ESSENTIAL PERSONNEL SHALL FOLLOW SAFE ROUTE FOR EVACUATION**
- ❖ **KEY - ESSENTIAL PERSONNEL SHALL REPORT TO SITE MAIN CONTROLLER**

The different type of emergency are assigned different sound periods as follows:

On Hearing Emergency:

- ❖ **For Declaring Emergency**
Wavering Sound: First 30 seconds run & 10second stop then after 20 second run and 10 second stop continue for
(For 3 Minute)
- ❖ **All clear sound : continuous sound for 2 minutes**
- ❖ **Siren Testing: Continuous for 30 seconds.**

ASSEMBLY POINTS:

- 1. NEAR CIVIL TOOL ROOM**
- 2. Near Canteen**
- 3. ASH PLANT OFFICE UNIT-3,4& 5**
- 4. Near CHP SAMPLING ROOM**
- 5. Near D.M.PLANT STAGE-I**
- 6. UNIT NO.5 SERVICE BUILDING**

LOCATION OF SIREN:

- 1. Main Gate CISF**
- 2. CWPH -unit#3 to5**
- 3. Unit#5**
- 4. Unit#6**
- 5. CHP-6 Control Room**