



MEGHALAYA POWER GENERATION CORPORATION LIMITED

Corporate Identification No: U40101ML2009SGC008392

OFFICE OF THE CHIEF ENGINEER (C), MAINTENANCE & SMALL HYDRO
LUMJINGSHAI SHORT ROUND ROADSHILLONG-793001, Meghalaya, India.

email I.D – chiefengineer.msh@gmail.com

Phone No: - 0364 - 2590262

MePGCL DISASTER & CRISIS MANAGEMENT PLAN

Year:2024

CHAPTER-I
DISASTER MANAGEMENT PLAN

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CHAPTER-I DISASTER MANAGEMENT PLAN

INTRODUCTION:

The purpose of preparation of the MePGCL Disaster & Crisis Management Plan is to evolve more proactive, holistic and integrated approach of strengthening disaster preparedness mitigation and emergency response in event of disaster taking place. This documents is in accordance with the provision of Disaster Management Act, 2005 and the Guidelines issued by NDMA from time to time and the established practices.

DISASTER MANAGEMENT ACT, 2005

Responsibility of Departments of State Government:

- Take necessary measures for prevention of disasters, mitigation, preparedness and capacity building.
- Integrate into its development plans and projects, the measures for prevention of disasters and mitigation.
- Allocate funds for prevention of disaster, mitigation, capacity building and preparedness.
- Make available it resources to response to disasters including measures for Providing emergency communication.
- Transporting personnel and relief goods to and from affected area.
- Providing evacuation, rescue, temporary shelter or other immediate relief.
- Setting up temporary bridges, jetties and landing places and other such actions necessary for disaster relief.

Every Department of State shall prepare a disaster management plan which shall lay down:

- The types of disaster to which different parts of the State shall be vulnerable.
- Integration of strategies for prevention of disaster or mitigation of its effects or both with development plans and programmes by the department.
- The roles and responsibilities of the Department of the State in the event of disaster and emergency support functions the department is required to perform.
- Capacity building and preparedness measures proposed for discharge of responsibilities.
- Annual review and update of plan.
- Make provisions for financing activities specified in the plan.

Furnish an implementation report to the State Executive Committee.

MANDATE:

MePGCL as per the provisions of the DM Act, 2005 Section-40 (1), shall prepare the Disaster Management Plan.

The Disaster Management Plan shall includes:

1. Types of disasters to which is vulnerable.
2. Integration of strategies for prevention of disasters or the mitigation of its effects or both with the development plans & programs.

3. Roles & Responsibilities of the Departments.
4. Capacity Building and preparedness measures proposed to enable Departments to discharge their responsibility under Section 37.

VISION:

1. **Safety of Dams:** All the Dams in the Umiam-Umtru Trans-Basin Development scheme are over twenty (20) years old with Umiam Stage-I completing fifty (50) years old. Disaster Management Plan (DMP) is therefore required to be in place for taking necessary corrective measures in the event of flooding caused by large releases from the Dam or Dam failure or in other such events that present hazardous conditions. This is intended to help emergency officials, saves lives, minimize damages to property, structures and inhabitations and also to minimize environmental impacts. Certain causes such as heavy floods or Dam failure may create emergency conditions at the Dam site as well as in the areas Downstream of the Dam that will require Warning, Evacuation of the population at risk or other response actions. Hence Disaster Management Plan has to be in place to be able to prevent the intensity of Disaster.
2. **Safety of Hydraulic Structures:** Hydraulics structures i.e Dams, Tunnel, Intake Gate, Penstock Pipe, Power House & etc. are vital component in Hydro Project, proper maintenance of these structures are done with extreme care in order to keep the Generation of Electricity uninterrupted.
3. **Safety of office Buildings:** As Meghalaya State is in the Earthquake Zone -5, which is highly vulnerable. Hence safety of offices Building is very important.
4. **Safety of Life:** Safety of life of workers at work place/ construction site is the responsibility of the Department. The department is responsible for creating and maintaining awareness on safety aspect at work place/ construction site. This can be achieved by regular training programmes, display of signed Board at strategic locations. The department has to formulate safety procedures and rules depending upon the nature of work carried out at respective location.

Definition of Disaster:-

Disaster itself may be Natural or Man-made. While natural disaster run through a definite known cycle of events and follow certain norms like, Earthquake, Landslide, Volcanic eruption, Floods, Hurricane, Tornadoes, Tsunamis, Cyclones and Pandemic. Man-made neither have a known cycle of events nor they follow certain norms like Fires, Stampedes, Transport accidents, Industrial accidents, Oil Spills, Terrorist attacks, Nuclear Explosions/ Natural Radiation, Wars and deliberate attacks. The existence of DAMs upstream of the flood plain may either mitigate the extent of the calamity or accentuate it. As such, the disaster due to the existence of a Dam may have the quality of a natural disaster or qualities of both natural and Man-made disaster. The Disaster would be considered natural if the quantum of outflow is equal to the inflow flood. If however, due to the very existence of a Dam the outflow exceeds the inflow, the disaster can be logically classified as Man-Made. In the event of Dam break also, it will then be purely man-made.

Natural Disasters:

- (a) **Earthquake:** The whole State is highly vulnerable. The Greatest Risk is in the Project Site which includes the Project components like Dam, Reservoir, Power Channel, Tunnel, Surge Shaft, Penstock, Power House, Switchyard and colony areas.
- (b) **Landslide:** All Project areas and components including approach roads.

MePGCL Disaster & Crisis Management Plan

- (c) **Cyclone:** The whole State is vulnerable with wind speeds from 47m/sec to 55 m/sec (200km/hr). West Khasi Hills is most vulnerable & the worst disaster occurred in 2006. The Switchyard and the colonies are the vulnerable areas for the corporation.
- (d) **Flood:** Floods are one of the natural events, which often spell disaster. The existence of a DAMs upstream of the flood plain may either mitigate the extent of the calamity or accentuate it. As such, the disaster due to the existence of a Dam may have the quality of a natural disaster or qualities of both natural and Man-made disaster. The Disaster would be considered natural if the quantum of outflow is equal to the inflow flood. If however, due to the very existence of a Dam the outflow exceeds the inflow, the disaster can be logically classified as Man-Made. In the event of Dam break also, it will then be purely man-made.

The western part of State is vulnerable; in urban areas due to drainage congestion. The whole Garo Hills area was badly affected by the Flash Flood that happened in September 2014 and 2019.

For the Corporation the most vulnerable areas are Dam, Power House and Downstream of the Dam.

Existing Hydro Power Station:

Sl No.	Name of the Power Station	Installed Capacity (MW)	Year of Commissioning
1.	Umiam St-I	36	1965
2.	Umiam St-II	20	1970
3.	Umiam St-III	60	1979
4.	Umiam St-IV	60	1992
5.	Old Umtru	11.2	1957
6.	Sonapani	1.5	2009
7.	Myntdu Leshka	126	2012 (Unit I & II)
			2013 (Unit III)
8.	New Umtru	40	2017
9.	Lakroh	1.5	2019

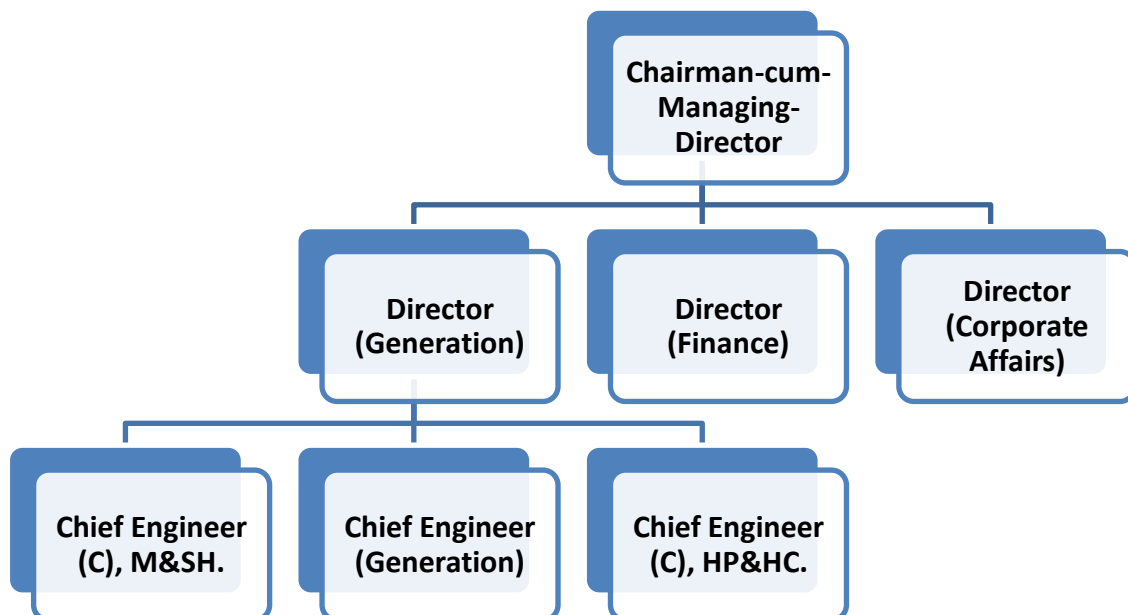
MePGCL Disaster & Crisis Management Plan

DOMAIN OF ACTIVITIES:

The Departmental Disaster Management Committee shall be constituted which shall consist of the following officers:

- Chairman: Chairman-cum-Managing Director MePGCL.
- Member-Director (Generation), MePGCL, Shillong.
- Member: Director (Corporate Affairs) MePGCL, Shillong.
- Member: Director (Finance), MePGCL, Shillong.
- Member: Chief Engineer(C), (HP&HC) MePGCL, Shillong
- Member: Chief Engineer(C), M&SH, MePGCL, Shillong
- Member: Chief Engineer (GEN) MePGCL, Shillong

Organisation Chart of the Disaster Management committee:



FUNCTIONS OF THE DISASTER MANAGEMENT COMMITTEE:

- To set up Control Rooms which will be linked to the District and State Emergency Operation Centres.
- To direct the Disaster Implementation Committee and Task Force Officers to swing into immediate action as and when is required.
- To approve pre-contract agreements with private suppliers for hiring of equipment and machineries along with operators, in case they are not available with the department.
- To monitor the status of Rescue and Rehabilitation works regularly and report to the Emergency Operation Centres of the State and the District Administration , if required.
- To depute employees for attending training programmes in the State Disaster Management Cell of Meghalaya Administrative Training Institute, Shillong, HRD MeECL, Umiam and other Central Training Institutes from time to time.
- The Disaster Management Committee will propose budget provision for Disaster Management works, every year, to the Boards of Director MePGCL for approval.

MePGCL Disaster & Crisis Management Plan

- To direct the Disaster Management Officers and Task Force Officers to swing into immediate action as and when emergency situation arises and needed the intervention of the respective Chief Engineers.
- To monitor the status of rehabilitation process regularly and report to the Emergency Operation Centres of the State and the District including the District Administration.
- To recommend changes or modification of the affected structures/areas for improvement and better protection against such incidents.
- To recommend employees for attending training programmes in the State Disaster Management Cell of Meghalaya Administrative Training Institute, Shillong, HRD MeECL, Umiam and other Central Training Institutes from time to time.

PRIMARY NODAL RESPONSIBILITIES FOR DISASTER MANAGEMENT OR SUPPORTING ROLES:

Each and every Project under MePGCL shall be under the control of a Disaster Management Officers (DMOs) which shall be of the rank of a Superintending Engineer or above as follows:

DISASTER MANAGEMENT OFFICERS (DMOs):

DMO I: Superintending Engineer (C), Shillong Civil Circle, MePGCL, Shillong.

Area of Operation- Lumjingshai, Mawlai, Jowai, Nonstoin, Sohra, Shillong,

To Report to: Additional Chief Engineer (C), Maintenance, MePGCL, Shillong.

DMO II: Superintending Engineer (C), HSM, MePGCL, Shillong.

Area of Operation- MLHEP, Umiam Stage-I, II, III, IV, Old Umtru, New Umtru.

To Report to: Additional Chief Engineer (C), Hydro Planning, MePGCL, Umiam.

DMO III: Superintending Engineer(C), Ganol, MePGCL, Rongkhon.

Area of Operation- Ganol Projects.

To Report to: Additional Chief Engineer (C), Small Hydro, MePGCL, Shillong.

DMO IV: Executive Engineer (C), Small Hydro, MePGCL, Shillong.

Area of Operation- Sonapani, Lakroh for Hydraulic Structures.

To Report to: Additional Chief Engineer (C), Small Hydro, MePGCL, Shillong

DMO V: Superintending Engineer, (GEN)-I, MePGCL, Umiam.

Area of Operation – Umiam Stage-I, II, III, IV, Old Umtru Power House & Sonapani.

To Report to: Additional Chief Engineer (El), (Generation), MePGCL, Shillong.

DMO-VI: Superintending Engineer, (GEN)-II, MePGCL, Shillong.

Area of Operation – MLHEP, Lakroh.

To Report to: Additional Chief Engineer (El), (Generation), MePGCL, Shillong.

DMO VII : Superintending Engineer(C), Civil Works Circle, MePGCL, Umiam.

MePGCL Disaster & Crisis Management Plan

Area of Operation – Umiam, Sumer, Kyrdemkulai, Byrnihat including Inspection Bungalows

To Report to: Additional Chief Engineer (C), Maintenance, MePGCL, Shillong.

DMO VIII : Superintending Engineer(C), Environment & Design, MePGCL, Umiam.

Area of Operation – Survey & Investigation of Projects above 25 MW.

To Report to: Additional Chief Engineer (C), Hydro Planning, MePGCL, Umiam.

DMO IX : Superintending Engineer(C), Investigation, MePGCL, Umiam.

Area of Operation – Survey & Investigation of Projects above 25 MW.

To Report to: Additional Chief Engineer (C), Hydro Planning, MePGCL, Umiam.

TASK FORCE OFFICERS (TFOs):

TFO I : Executive Engineer (C), SCD-I, MePGCL, Shillong

Area of Operation- Lumjingshai, Shillong.

To Report to: Respective DMO.

TFO II: Executive Engineer(C)-SCD-II, MePGCL, Shillong.

Area of Operation- Lumjingshai, Mawlai, Jowai, Nonstoin, Sohra, Shillong, Umiam and Sumer IBs..

To Report to: Respective DMO.

TFO III: Executive Engineer(C)-SH Division, MePGCL, Shillong.

Area of Operation- Sonapani, Lakroh, Riangdo & 15 Nos. of Small & Mini SH Project.

To Report to: Respective DMO.

TFO IV: Executive Engineer(C), Stage-IV, CMD, MePGCL, Kyrdemkulai

Area of Operation-Ri-Bhoi District

To Report to: Respective DMO.

TFO V: Executive Engineer(C), R&B, MePGCL, Umiam.

Area of Operation-Ri-Bhoi District

To Report to: Respective DMO.

TFO VI: Executive Engineer(C), Design Division-I, MePGCL, Umiam.

Area of Operation-Ri-Bhoi District

To Report to: Respective DMO.

TFO VII : Executive Engineer(C), Design Division-II, MePGCL, Umiam.

Area of Operation-Ri-Bhoi District

To Report to: Respective DMO.

TFO VIII: Executive Engineer(C), Environment, MePGCL, Umiam.

Area of Operation-Ri-Bhoi District

To Report to: Respective DMO.

TFO IX: Executive Engineer(Gen)-I, MePGCL, Sumer.

Area of Operation –Umiam Stage-I, II, Power House.

To Report to: Respective DMO.

TFO X : Executive Engineer(Gen)-II, MePGCL, Kyrdemkulai.

Area of Operation –Umiam Stage-III, IV, Power House.

To Report to: Respective DMO.

TFO XI : Executive Engineer(Gen)-III, MePGCL, Old Umtru.

Area of Operation –Old Umtru/New Umtru, Power House.

To Report to: Respective DMO.

TFO XII: Executive Engineer(Gen), MLHEP, MePGCL, Thamar.

Area of Operation –MLHEP, Lakroh.

To Report to: Respective DMO.

TFO XIII : Executive Engineer(EL), Ganol SHP MePGCL, Rongkhon.

Area of Operation – Ganol SHP.

To Report to: Respective DMO.

TFO XIV : Executive Engineer(C), MLCD, MePGCL, Nohkum.

Area of Operation – MLHEP Roads & Buildings, MLHEP Dam & Power House.

To Report to: Respective DMO.

TFO XV: Executive Engineer(C), HSMD, MePGCL, Sumer

Area of Operation -Stage-I, II, III, IV ,Old Umtru.

To Report to: Respective DMO.

TFO XVI: Executive Engineer(C), Ganol-I, MePGCL, Rongkhon.

Area of Operation- Dam, Road and Buildings.

To Report to: Respective DMO.

TFO XVII: Executive Engineer(C), Ganol-II, MePGCL, Rongkhon.

Area of Operation- Surge Shaft, Tunnel , Power House.

To Report to: Respective DMO.

TFO XVIII: Executive Engineer(C), Inv Division-I, MePGCL, Umiam.

Area of Operation- Investigation of Hydro Projects above 25 MW.

To Report to: Respective DMO.

TFOXIX: Executive Engineer, Inv Division-II, MePGCL, Umiam.

Area of Operation- Investigation of Hydro Projects above 25 MW.

To Report to: Respective DMO.

TFO XXI: Executive Engineer(C)-SH Division, MePGCL, Shillong.

Area of Operation- Small Hydro Project.

To Report to: Respective DMO.

TFOXXII: Executive Engineer(C), New Umtru, MePGCL, Byrnihat

Area of Operation - Hydraulic Structures & R&B of New Umtru,.

To Report to: Respective DMO.

HISTORY ABOUT MeECL:



The screenshot shows the website for Meghalaya Energy Corporation Limited (MeECL). The header features the company name and logo, with the tagline "Transforming Meghalaya". Below the header is a navigation menu with links for Profile, Projects, Tariff, Tenders, Accounts, Water Level, RTI, Recruitment, Notification, Other Branches, MIS Bulletin, Photo Gallery, and Customer's Corner. The main content area is titled "History" and contains the following text:

MeSEB was constituted under Section (5) of the electricity (Supply) Act 1948 by the Government of Meghalaya vide notification no. PE 304/74 dated 21/12/1974. The board came into existence from 21.01.1975.

The board was initially responsible for the co-ordinate development of generation, transmission and distribution of electricity in Meghalaya in a most efficient, reliable and economical manner.

In order to bring about accountability, transparency, competitiveness, reduction of losses and improved performance for better customer satisfaction, the government had unbundle Meghalaya State Electricity Board (MSEB) into four corporations under Meghalaya Power Sector Reforms Transfer Scheme 2010.

The newly formed corporations are the Meghalaya Energy Corporation Limited (Me.E.C.L), 'the holding company', Meghalaya Power Distribution Corporation Limited (Me.P.D.C.L), 'the distribution utility arm', Meghalaya Power Generation Corporation Limited (Me.P.G.C.L), 'the generation utility arm', and Meghalaya Power Transmission Corporation Limited (Me.P.T.C.L), 'the transmission utility arm'.

MeECL is Headed by the Chairman Cum Managing Director:

Shri Sanjay Goyal, IAS

Lumjingshai, Shillong – 793001.

Phone: 2590367,2590638 (O) 2550572©

MePGCL consists of:-

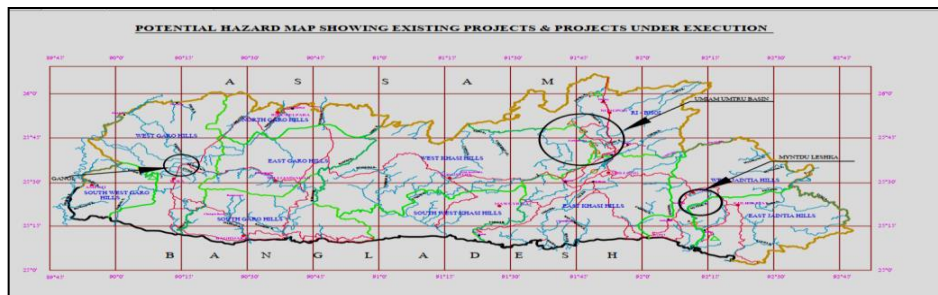
Full time Director (Generation) and 3 Chief Engineers as follows:

1. Civil Wing----- 1. Chief Engineer (C), HP&HC.
2. Chief Engineer (C), M&SH.
3. Electrical Wing--- Chief Engineer (EL), Generation.

ROLES AND RESPONSIBILITIES IN RELATION TO DISASTER MANAGEMENT:

- To raise the level of **Awareness & Preparedness** of the staff to various kinds of disasters and for securing their safety.
- To **build the capacity** of the staff and the Dept. to perform during normal times, during & after a disaster, more effectively & efficiently.
- To identify measures and take necessary action for prevention of disasters and/or mitigate its effects and to integrate D.M. Plan with Development Plan.
- To prepare the Department to respond more effectively & promptly in a disaster situation

The Hazard Map



MYNTDU LESHKA HEP (126 MW) FLOODS EVENTS:

The Myntdu Leshka HE Project is a ROR scheme located at Jaintia Hills District of Meghalaya with an installed capacity of 3 x 42MW and envisages a dam height of 63 m constructed across the Myntdu River just below confluence of two of its tributaries, the Lamu and Umshariang and a catchment area of 350 Sq. Km. The Design flood for this project stands at 10440 cumecs and to address that requirement of design flood, 7 nos. sluice spillways bays 8.00 m (W) x 12m (H) have been catered in the concrete dam. An Intake was provided just upstream of Dam structure for conveying the water to Power house through Head Race Tunnel of 3.4 m dia, Surge Shaft and 1 (one) Penstock, which further trifurcates to 3 nos. penstock . Butterfly valve chamber (BFV) was constructed just downstream of Surge shaft to regulate the water in times of emergencies, since the regulating mechanism is only from BFV and MIV in Power House. The Design net head of the project is 316m.

4. **21st February 2017** – The unprecedented rain has started @ 9:00Am at site and continues for the whole day except from 1:00 Pm to 6:00Pm. At 9; 00 PM, the water level rises significantly.

(b) 22nd February 2017: Rain continues except for a period between 6:00 AM to 08:00 AM and 2:00Pm to 08:00 PM. The Water level has risen to the Full Reservoir Level EL.618.00m and the Gate No. 6 was opened for releasing flood water by 1.00 m. Observation was done at 1:00 PM and it was found that Water level at Dam observed no receding, hence the gate No.6 was raised by another 1.00m. Water level recedes at 03:00 PM to EL.617.40m and gate was positioned and brought down by 1.00m. At 08:30 PM, rain started again and the water level at that time was at EL.616.90m. Due to severe lightning and high intensity rainfall, power supply to dam site got interrupted and cut off. Power supply to the dam was restored at around 10:00PM. However, at this very time the water level at dam was rising rapidly and overtopped the dam by around 1.5m. The Engineers at site, seeing the high velocity current flow of flood water, decides to cut off the power supply as precautionary measures.

© **23rd February 2017**: Spot inspection was done on this day at around 08:48 AM and water level stands at EL.619.00m and following are the preliminary findings of the **Damages (including Civil, H&M and E&M)**:

- (i) Damage of hoisting mechanism both electrical and mechanical installed in the control room and machineries of the sluice gate operations
- (ii) Erosion on the hill slope of the right abutment of the dam due to scouring action of the flood and not due to any potential slope failure
- (iii) Scouring on the upstream and downstream of both sides of the dam near the abutment on the left bank.
- (iv) Damage of roads and electrical lighting equipments.
- (v) Over flooding of the galleries and damage of the instruments in the gallery.
- (vi) Other miscellaneous damage to drains, culverts, walls, railings, etc.

It is assessed that the sudden flood of about 2000 cusecs arrived at about 09:50 PM on the 22nd February 2017. Further, it is noted that rain occurred only in about half of the catchment area as the rainfall station at Jowai and its adjoining area is very nominal or no rain, (Jowai recorded at 7.11mm), while the stations at Thamar and Jarain recorded rainfall of 300.22 mm and 263.39mm respectively on the 22nd February 2017.

GANOL SHP (22.5 MW) FLOODS EVENTS:

The Ganol Small Hydro Project was conceived and planned way back in 2006-07 to enhance the power generation in the State especially in Garo Hills region. It is the first Hydro Project in Garo Hills which is expected to relieve the region from frequent interruption of power supply.

The Project consists of a 35 m high Dam, a 2 Km long Tunnel and a surface Power House of capacity 3x7.5 MW. With a net head of 140 m, the annual energy is 67.09 MU at PLF of 0.34 with a generation cost of Rs. 5.42 per unit.

Ganol Small Hydro Project (22.5 MW) which is the ongoing projects under MePGCL which is likely to be completed by 2022 was badly damaged due to Cyclone storm with incessant Rain that occurred on 20.09.2014 till 23.09.2014.

The extent of damages to Ganol Small Hydro Project due to cyclone storm with incessant Rain in different locations of Dam site (Chibragre), Power House site (Edenbari), and Surge Shaft area (Rogandi) areas are summarized below:

1. Nature of Calamity : Cyclone Storm with incessant Rain
2. Date & Time of occurrence : 20.09.2014 (5PM) till 23.09.2014.
3. Number & Name of the District affected : West Garo Hills (Tura)
4. Population affected (approax): NIL
5. Crops affected: NIL
6. Animals affected: NIL.
7. Number of Houses damaged: NIL.
8. Damaged of Public properties: Washed away of cause-way and Hume pipe culvert, Damaged of Retaining wall in various locations and Landslide in various locations.

The first information report on damaged of project site was uploaded in the website of Natural Disaster Management Division, New Delhi.

The overall cost implication due to the above calamities is Rs. 80.75 Lakhs (approax)

SONAPANI MHP (1.5 MW) LANDSLIDE EVENTS:

Sonapani Hydel Projects (1.5 MW): The heritage Hydel projects was first commissioned in 1922 and after supplying electricity to Shillong for more than Six (6) decades, the project was shutdown in April 1982 as the machine outrun their utility.

The project was revived in 2001 and the construction works Rs. 9.88 Crores began in 2004. Commercial Power generation started in 2009. The project was hit by the Landslide on the 3rd August, 2019. Beside the power projects Two (2) Houses with 15 tenants were also affected due to the Landslide.

The extent of damages caused by a landslide to the Umshyrpi Power Channel of the Sonapani Mini Hydel Project was around 100 m of the Power channel from Ch: 800m to Ch: 900m was badly damaged including Retaining wall, footpath and Railing.

The overall cost implication was around Rs. 250.00 Lakhs.

SCOPE OF PLAN:

–Disaster Management Cycle: provide clarity for full scope of DM responsibilities

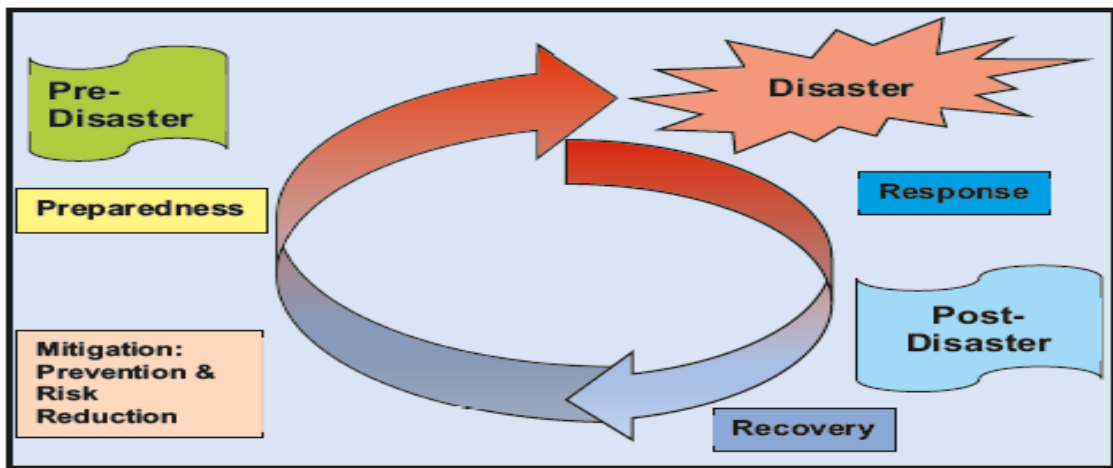
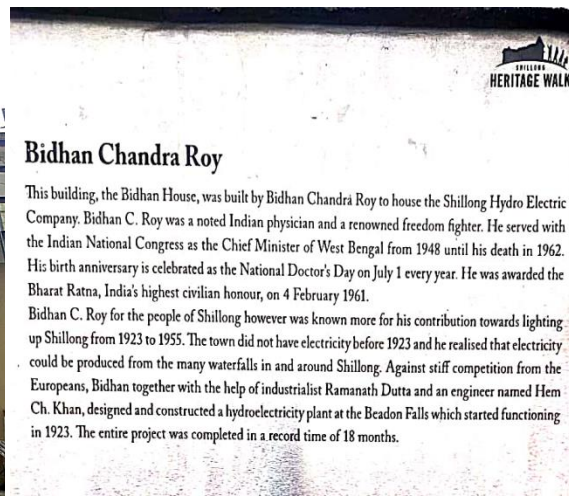


Figure 1-1: Disaster Management Cycle

1. IDENTIFICATION OF WEAK & CRITICAL BUILDING UNDER MEPGCL (NATIONAL SEISMIC RISK MITIGATION PROGRAMME)

Sl no.	Name of Building
1.	SESU Office (BC House), MePDCL, Shillong
2.	Control Room 132 KV Grid Sub-station of MePTCL at Khliehriat
3.	Control Room at Lumshnong

CRITICAL BUILDING UNDER MEPGCL:



Bidhan Chandra Roy

This building, the Bidhan House, was built by Bidhan Chandra Roy to house the Shillong Hydro Electric Company. Bidhan C. Roy was a noted Indian physician and a renowned freedom fighter. He served with the Indian National Congress as the Chief Minister of West Bengal from 1948 until his death in 1962. His birth anniversary is celebrated as the National Doctor's Day on July 1 every year. He was awarded the Bharat Ratna, India's highest civilian honour, on 4 February 1961. Bidhan C. Roy for the people of Shillong however was known more for his contribution towards lighting up Shillong from 1923 to 1955. The town did not have electricity before 1923 and he realised that electricity could be produced from the many waterfalls in and around Shillong. Against stiff competition from the Europeans, Bidhan together with the help of industrialist Ramanath Dutta and an engineer named Hem Ch. Khan, designed and constructed a hydroelectricity plant at the Beadon Falls which started functioning in 1923. The entire project was completed in a record time of 18 months.

5. ON-SITE EARTHQUAKE EARLY WARNING AND DISSEMINATION SYSTEM (EEWDS) IN THE STATE OF MEGHALAYA.

Sl No.	Location Details at Power House.	Total On-site EEWDS required
1.	Umiam St-I H.E. Project, Umiam, Ri-Bhoi District	6 Nos
2.	Umiam St-II H.E. Project, Um-Sumer, Ri Bhoi District	
3.	Umiam – Umtru St-III H.E. Project, Kyrdemkulai, Ri Bhoi District	
4.	Umiam – Umtru St-IV H.E. Project, Nongkhyllem, Ri Bhoi District	
5.	New Umtru H.E. Project, Dehal, Byrnihat, Ri Bhoi District	
6.	Myntdu Leshka H.E. Project, West Jaintia Hills District	

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Sl No.	Location Details at Dams	Total On-site EEWDS required
1.	Umiam St-I H.E. Project, Umiam, Ri-Bhoi District	5 Nos
2.	Umiam – Umtru St-III H.E. Project, Kyrdemkulai, Ri Bhoi District	
3.	Umiam – Umtru St-IV H.E. Project, Nongkhyllam, Ri Bhoi District	
4.	New Umtru H.E. Project, Dehal, Byrnihat, Ri Bhoi District	
5.	Myntdu Leshka H.E. Project, West Jaintia Hills District	

Sl No.	Location Details	Total On-site EEWDS required
7.	Ganol SHP (i) Dam, Chibrage, Tura, West Garo Hills. (ii) Power House, Edenbari, Tura, West Garo Hills.	5 Nos
8.	Sonapani MHP (i) Power House, Mawprem, Shillong, East Khasi Hills	
9.	Lakroh MHP (i) Power House, Amlarem, West Jaintia Hills	
10.	Administrative Building, MeECL Office, Lumjingshai, Shillong.	

6. IDENTIFICATION OF LANDSLIDE PRONE AREAS:

Sl No.	Location Details
1.	Umiam St-I H.E. Project, Umiam, Ri-Bhoi District
2.	Umiam – Umtru St-III H.E. Project, Kyrdemkulai, Ri Bhoi District
3.	Umiam – Umtru St-IV H.E. Project, Nongkhyllem, Ri Bhoi District
4.	New Umtru H.E. Project, Dehal, Byrnihat, Ri Bhoi District
5.	Myntdu Leshka H.E. Project, West Jaintia Hills District
6.	Ganol SHP, Tura, West Garo Hills District
7.	Sonapani MHP, Lumkhsaid, East Khasi Hills District
8.	Lakroh MHP, West Jaintia Hills

7. IDENTIFICATION OF FLOOD PRONE AREAS:

Sl No.	Location Details
1.	Umiam St-I H.E. Project, Umiam, Ri-Bhoi District
2.	Umiam – Umtru St-III H.E. Project, Kyrdemkulai, Ri Bhoi District
3.	Umiam – Umtru St-IV H.E. Project, Nongkhyllem, Ri Bhoi District
4.	New Umtru H.E. Project, Dehal, Byrnihat, Ri Bhoi District

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5.	Myntdu Leshka H.E. Project, West Jaintia Hills District
6.	Ganol SHP, Tura, West Garo Hills District

8. INVENTORY OF RESOURCES TO TACKLE NATURAL/MAN-MADE DISASTER (LIST OF EVACUATION INFRASTRUCTURE)

Sl No.	Names of the facilities	Maximum Occupancy (inhabitants)
1.	Headquarter Office Building, Lumjingshai, Shillong	above 200 Nos each
2.	Old Meter Factory Office Building, Lumjingshai, Shillong	
3.	MeECL Secondary, School, Sumer, Ri Bhoi District	
4.	MeECL Secondary, School, Kyrdemkulai, Ri Bhoi District	
5.	MeECL Secondary, School, Umiam, Ri Bhoi District	

HAZARD SPECIFIC PREVENTION AND MITIGATION MEASURES INCORPORATE SHORT, MEDIUM AND LONG TERM MEASURES

Short term (2022)	Medium Term (2027)	Long term (2030)
<ol style="list-style-type: none"> 1. Training Programme, Awareness Programme, Workshop, Seminar & etc. 2. Identification of Vulnerable areas like Building, Landslide areas, Flood prone areas etc. 	Retrofitting of all vulnerable building, Flood protection works , Restoration works and installation of Earthquake Early Warning Dissemination System	Real Time Flood Forecasting & Earthquake

PHOTOGRAPHS OF LANDSLIDE AND FLOODS:

MYNTDU LESHKA HEP (126 MW)



GANOL SHP (22.5 MW)



SONAPANI MHP SHP (1.5 MW)



LIST OF CONTACTS:

Sl. No.	Name of the Officers with Address	Designation	Contact Numbers
1.	Shri. Sanjay Goyal, IAS	Chairman-cum-Managing Director MePGCL.	0364-2224801 (O)
2.	Shri. B. Wahlang.	Director (Generation), MePGCL, Shillong.	0364-2591406 (O)
3.	Shri. A. K. Jain	Chief Engineer©, M&SH MePGCL, Shillong	0364-2590262 (O)
4.	Shri. K. Thangkhiew	Chief Engineer©, (HP&HC) MePGCL, Shillong	0364-2591074 (O)
5.	Shri. H. F. Shangpliang	Chief Engineer (GEN) MePGCL, Shillong	0364-2591415 (O)

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LIST OF DISASTER MANAGEMENT OFFICERS (DMOS)

Sl. No.	Particulars	Area of Operation	Name of the Nodal Officers with Address	Designation	Contact number
1.	DMO I	Lumjingshai, Mawlai, Jowai, Nongstoin, Sohra, Shillong.	Shri. K. Kundu	Superintending Engineer ©, Shillong Civil Circle, MePGCL, Shillong.	8794705648
2.	DMO II	MLHEP, Umiam Stage-I, II, III & IV, Old Umtru, Hydraulic Structures & R&B of New Umtru,.	Smti. B. Wann	Superintending Engineer ©, HSM, MePGCL, Shillong	9863141531
3.	DMO III	Ganol Projects.	Shri C. Mukhim	Superintending Engineer ©, Ganol SHP MePGCL, Tura.	7005732356
4.	DMO IV	Sonapani, Lakroh for Hydraulic Structures.	Shri.P. Marwein	Executive Engineer ©, Small Hydro, MePGCL, Shillong.	8787491923
5.	DMO V	St-I, II, III, IV, Old Umtru & Sonapani Power Station	Shri R. War	Superintending Engineer (GEN- I), MePGCL, Umiam.	8730800516
6.	DMO VI	MLHEP, Lakroh	Shri L. Lyndem	Superintending Engineer (GEN- II), MePGCL, Shillong.	9402301646

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7.	DMO VII	Umiam, Sumer Kyrdemkulai, Byrnihat including Inspection Bungalows	Shri. J. Jungai	Superintending Engineer ©, Civil Works Circle, MePGCL, Umiam.	8837419464
8.	DMO VIII	Survey & Investigation of Pojects above 25 MW.	Shri. S. Lynser	Superintending Engineer ©, Envt & Design, MePGCL, Umiam	8787469882
9.	DMO IX	Survey & Investigation of Pojects above 25 MW.	Shri. C.W. Pariat	Superintending Engineer ©, Inv., MePGCL, Umiam	8731096843

LIST OF TASK FORCE OFFICERS (TFOs)

Sl. No.	Particulars	Area of Operation	Name of the Nodal Officers with Address	Designation	Contact number
1.	TFO I	Lumjingshai, Shillong	Shri J. Rymmai	Executive Engineer ©, Shillong Civil Division-I, MePGCL, Shillong.	9856041823
2.	TFO II	Lumjinshai, Mawlai, Jowai, Nongstoin, Sohra, Shillong, Umiam and Sumer Ibs	Smti. T. Chyrmang	Executive Engineer ©, Shillong Civil Division-II, MePGCL, Shillong.	9612165283
3.	TFO III	Sonapani, Lakroh, Riango & 15 Nos of Small &	Shri P. Marwein	Executive Engineer ©, Small Hydro Division, MePGCL,	8787491923

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		Mini SH Project.		Shillong.	
4.	TFO IV	Civil Maintenance Division, Stage-IV, Kyrdemkulai	Shri P. R. Kshiar	Executive Engineer ©, Stage-IVCMD, MePGCL, Kyrdemkulai.	8731026554
5.	TFO V	Roads and Buildings, Umiam, Byrnihat	Smti F. Lyngdoh	Executive Engineer ©, R&B, MePGCL, umiam.	9774024450
6.	TFO VI	Ri-Bhoi District.	Shri. B. Nongkynrih	E E©, Design Div-I, MePGCL, Umiam.	9612902232
7.	TFO VII	Ri-Bhoi District.	Shri I. Nongrum	E E©, Design Div-II, MePGCL, Umiam.	9856122362
8.	TFO VIII	Ri-Bhoi District.	Shri. L. Khongwir	Executive Engineer ©, Environment	9436117828
9.	TFO IX	Stage-I, II, Power House.	Shri R. Kharkongor.	E E(Gen)-I, MePGCL, Sumer.	9436163402
10.	TFO X	Stage-III, IV, Power House.	Shri B.D. Das	Executive Engineer(Gen)-II, MePGCL, Kyrdemkulai.	9402195525
11.	TFO XI	Old Umtru, New Umtru power House.	Shri W. Pohsngap	Executive Engineer(Gen)-III, MePGCL, Old Umtru.	8731020439

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12.	TFO XII	MLHEP, Lakroh.	Shri. J. Pariat	Executive Engineer(G en), MLHEP, MePGCL, Thamar.	9856005898
13.	TFO XIII	Ganol SHP.	Shri. G.M. Marak	Resident Engineer(G en), Ganol SHP MePGCL, Rongkhon.	8787309872
14.	TFO XIV	MLHEP Roads & Building, MLHEP Dam & Power House.	Shri. M. Toi	Executive Engineer ©, MLCD, MePGCL, Nohkum.	7005101325
15.	TFO XV	Stage-I, II III IV Old Umtru/New Umtru, Hydraulic Structures	Shri C. Myriaw	Executive Engineer ©, HSMD, MePGCL, Sumer.	7085950790
16.	TFO XVI	Dam, Road and Buildings	Shri L. Pyrbot	Executive Engineer©- I, Ganol, MePGCL, Ronghon.	7085718294
17.	TFO XVII	Surge Shaft, Tunnel, Power House	Shri R. Ch. Marak	Executive Engineer©- II, Ganol, MePGCL, Ronghon.	7005224091
18.	TFO XVIII	Investigatio n of Hydro Projects above 25 MW	Shri. A.G. Momin	Executive Engineer©, INV Div-I, MePGCL, Umiam	9862368411
19.	TFO XIX	Investigatio n of Hydro Projects above 25 MW	Shri. Q. Marbaniang	Executive Engineer, Inv Division-II, MePGCL, Umiam.	9863126837

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20.	TFO XXI	Small Hydro Projects.	Shri. P. Marwein.	Executive Engineer (C), SHD, MePGCL, Shillong.	8787491923
21.	TFO XXII	Hydraulic Structures & R&B of New Umtru Projects	Shri. R. S. Pakyntein	Executive Engineer (C), New Umtru, MePGCL, Byrnihat	9615136794

RECOMMENDATION:

As per DMP Act 2005, the following measures are to be implemented by MePGCL:-

- i) Disaster Management Committee has to be constituted
- ii) Disaster Management Officers (DMO) and Task Force Officers (TFOs) has to be nominated.
- iii) Budget Provision for Disaster Management works has to be proposed to the Board of Directors MePGCL for approval
- iv) Restoration Works of Vulnerable Buildings has to be taken up under MePGCL viz (i) SESU office (BC House), MePDCL, Shillong (ii) Control Room 132kv Grid Sub-Station of MePTCL at Khliehriat and (iii) Control Room at Lumshnong
- v) Procurement and Installation of Earthquake Early Warning and Dissemination System (EEWDS) in the Power House and Dams of MePGCL has to be taken up.

Short Term, Medium Term and Long Term measures as per DMP is to be planned accordingly.

CHAPTER-II CRISIS MANAGEMENT PLAN

INTRODUCTION:

Besides the natural disasters, there are many man-made of 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 cyber attack, strike by plant employees or disruption in supply of essential inputs like coal/fuel etc. such events may affect generating plant, transmission system or 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 situation. 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 State regional & central level must continue.

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 rumours according to the well-defined instructions already assigned to each one of key employees and workers. To protect against a terrorist attack, the plan shall include the following:-

- 1) Strong Security arrangements at all entry points to the Power Stations/Sub-Stations/Load Dispatch Centres/Dam Complex.
- 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 complex.
- 6) Modern communication & information system shall be provided with suitable back ups.

SYSTEM SECURITY:

There should be 100% fool proof security mechanism for the following services;

- 1) Automated access control system.
- 2) Alarm points.
- 3) Identification of employees, 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 who are well versed in dealing with such situations.
- In case a bomb is found or suspected, sand bags be 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

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

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

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

PHYSICAL SECURITY ASPECTS OF INSTALLATIONS

Security Measures at premises boundary:

- i. 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.
- ii. There should be peripheral road inside and outside of the perimeter wall (maintaining clear zones of 3 meter on both sides) to carry out mobile patrolling.

- iii. There should be watch towers at certain intervals with communication facilities.
- iv. Perimeter wall should be properly illuminated. There should be provision of portable flood lighting and emergency lighting.
- v. Fence security alarm system shall be provided at all power stations/grid stations. The 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 Premises:

- i. There should be minimum number of entry gates. Separate in and out gates should be provided for pedestrians, vehicles and materials.
- ii. The plant premises should be got declared as protected place and entry to the premises and movement of material should be made only through the proper passes.
- iii. It should be impressed upon villagers / people living close to the power stations / Grid sub-stations / 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 mala fide intentions/ mischief of people on strike during disturbed / crises situation as well as in normal period.
- iv. 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.

STRIKE BY PLANT PERSONNEL

In any organization there are three broad categories of employees viz. executives supervisors and workmen. Employees in all these categories can get organized 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 substation/Dam Complex".

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/ acts 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, its 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 Deptt.
- iv. Sufficient water be 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/Gird Sub-Stations/Dam Control Room 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 counteract such events.
- x. Arrangements be made for additional-power for running the Power Station/Dam Control Room.

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 outside the Plant/Dam Complex.
- ii. Inform local authorities, respective regional load dispatch centre and the personnel

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- 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 personnel regarding the same and their placement in two shifts.
 - iv. Activate control room which will form the power plant / grid sub-station/Dam Control Room 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 meetings with the Head of the Departments and outer 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 prerequisite 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 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, Sub-Stations and Dam Complex needs to be trained for manning the essential areas during the strike.

Power Station/Dam Complex:

a) Technical Staff

In view of the complex technology involved in the bigger size units (i.e.200MW and 500 MW), it is expected that the actual operation of these stations is carried out

comparatively with higher component of executives in the staffing pattern. Smaller size units are normally operated by supervisors. Keeping the executives in the control room and other critical areas is strategically advantageous for maintaining proper generation in the eventualities of strikes and other disturbances.

It may be possible to run the Power station with the help of executives and some semi-skilled/ unskilled persons during the disturbance period. A double shift operation instead of three shifts has to be undertaken. The area wise details of various positions where supervisors and workmen are to be substituted by executives may be prepared for thermal and hydro Power stations.

In the case of maintenance activities, however only preventive maintenance and essential / critical break down maintenance may be carried out by executives in emergency situation.

Major breakdowns in case of prolonged strike cannot be attended to by the skeleton staff, and external assistance could be availed from other organization such as SEBs, CPSUs like NTPC/NHPC/THDC/NLC/PGCIL etc. through the regional support groups identified at regional level.

Requirement of unskilled labour for helping the executives in various manual activities may have to be sought from outside agencies and could be posted at various locations as per the requirement.

b) Non-Technical Staff

Besides operation and maintenance, the other support services like personnel, finance, material management etc. also need to be manned during crises period.

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.

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 operation 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.

1) 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 such eventualities. The list also needs to be updated periodically.

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

2) 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) or General Security Staff of the power station is responsible for security and fire prevention measure in the projects in the installation. 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.

3) Fire Protection

Though 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 organization to share the fire fighting equipment. This agreement should be drawn during the normal times. The method of handling various types of fire with different type 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 appropriate manner.

4) Safe Storage of Vital Record

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

5) Technical and Administrative Records of Station/Grid sub-station

During the disturbances 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.

6) Strike by Executives

Even though there is remote possibility of Executives going on strike, the short and long term measures are to be formulated, to take care of this eventuality. The services of senior supervisory staff are to be taken in place of executives for operation & maintenance of power stations.

7) Cyber Attack

IMPACT OF CYBER ATTACK IN GENERATION SECTOR:

- Generating plants are located as Energy pockets at strategic locations. Any cyber attack can put the whole plant down and lead to outage of the generation capacity.
- However, cyber attack at one node may not disrupt multiple plants and grid operation planning takes care of one plant disruption contingency.
- Vulnerability on Control systems used for set of Plant can lead to a possible safety incident in case exploited simultaneously e.g. zero day bug on DAS.

IMMEDIATE MEASURES FOR PREVENTION OF CYBER ATTACK

All the power utilities should contact the respective CERTs and prepare Crisis Management Plan (CMP).

a. Identification of Critical Cyber assets/areas: There is need for formal identification/ notification of critical cyber assets for:

- i) Major Power Station Control rooms
- ii) All LDC i.e. NLDC, all RLDCs and SLDCs.
- iii) All EHV-AC Substations (≥ 400 kV)
- iv) HVDC stations (≥ 500 MW).
- v) Generating Plants
- vi) Distribution Grid feeders to critical infrastructure

b. Risk assessment and Vulnerability study in each area of responsibility.

- i) Generation plants
- ii) All Load Dispatch Centres
- iii) All Transmission Substations
- iv) Distribution substations

c. Creation & Enactment of Cyber Security Policy covering all the stakeholders of Cyber space in Indian Power system.

d. Product Deployment

- i) Deploy secured network architecture for control centres.
- ii) Deploy various network security products like firewalls, IDS/IPS, VPN, IPsec and Central logging server in line with CERT-In (Indian Computer Emergency Response Team) guidelines.
- iii) Deploy physical access control devices to Power Utility premises like CCTV cameras, Biometric scanning etc.
- iv) All Application or proprietary software to be deployed in the Power System applications shall be tested for cyber vulnerabilities.
- v) To follow all the guidelines suggested by ISGTF / CERT-IN

e. Process management:

- i) Continuous evaluation of vulnerabilities.
- ii) Device Configuration management.
- iii) Cyber security audit process management
- iv) Process of Obscurity

- v) Process of Segregation
- vi) Necessary screening before choosing process of outsourcing

f. Personnel & Training Management:

- i) Authorized users of secured control rooms (Zone Blue) in the Power Sector should be and thoroughly screened and adequately trained and certified.
- ii) Certification of the users shall entitle a person with different set of user access permissions to critical cyber assets.
- iii) Other Users with indirect access to the critical cyber assets should be trained for Cyber security awareness.
- iv) Each user action to be logged and monitored to check the employee behaviour at various levels for possible internal vulnerabilities, which are hard to tackle and do more harm.

g. Mock Drill

- i) In view of IT framework and the security of information, utilities have to develop a crisis management plan and undertake to periodic mock drill exercise – ISGTF can issue guidelines in this regard.
- ii) Utility needs to continuously interact with CERT to imbibe all the new tools for mitigating any risks from various cyber attacks.
- iii) Utility needs to appoint a cyber security officer in their IT cell for cyber security.
- iv) Specific agency to monitor & review of the entire exercise and ensure its healthy monitoring.

EMERGENCY SERVICES

Emergency Services - (Telephone Numbers) Meghalaya, Shillong (STD Code: 0364)	
Medical Services	
Ambulance	
Ambulance Central	108
Ambulance - Others	0364 2224100 / 9862041178
Hospitals	
Woodland Hospital, Dhankheti	0364 2224885 / 2225240 / 2500472 / 2502711

MePGCL Disaster & Crisis Management Plan

Bethany Hospital, Opp.Nagaland House, Nongrim Hills Neigrihms	0364 2520300 / 2522979 0364 2538014
Nazareth Hospital, Laitumkrah Civil Hospital, Laban	0364 2210188 / 2224052 0364 2224100
Blood Banks Blood Bank,Neigrihms	 0364 2538014 / 2538025 / 2538013
Blood Bank, Nazareth Hospital, Laitumkrah	0364 2224052
Police Services	
Police Central	100
Police Control Room,Shillong DGP, Shillong	0364 22222214 / 22222215 0364 2220115 / 2224879
Police Station, Rynjah	0364 2230402
Fire Services	
Fire Service Central	101
Fire Brigade Main	0364 2227700/2222000
Fire Brigade Nongthymmai	0364 2223300
Electricity Services	
Electricity	0364 2223050 / 2223778

