



# MEGHALAYA POWER GENERATION CORPORATION LIMITED



## GUIDELINES FOR RELEASE OF WATER THROUGH THE GATES OF THE UMIAM CONCRETE DAM

2021



## **GUIDELINES FOR RELEASE OF WATER THROUGH THE GATES OF THE UMIAM CONCRETE DAM**

### **1.0- Introduction**

- 1.1- Dams have been constructed across the Rivers to create artificial Lakes/Reservoirs for storing of water which is being utilized for generation of electricity, irrigation, drinking water etc. Sometimes due to heavy rain during rainy season, the discharge in the River can be so high that the water level in the Reservoir, if not controlled, can rise beyond the FRL. In such cases, the excess water from the Reservoir has to be released in a gradual and regulated manner through the Radial Gates of the Dams, to ensure that people on the downstream are not affected by the sudden rise of water level. This will also safeguard the Dams from being overtopped, which may endanger the abutments from being washed out, thereby causing loss of lives and properties.

Water from the Reservoir may also be required to be released through the Radial Gates at any time of the year as may be required by the owner or due to emergency/crisis that may arise due to many reasons.

In view of this, all Radial Gates of Dams are required to be in operational mode 24x7.

### **2.0- Requirement of Guidelines for Radial Gates**

- 2.1- The Guidelines for Operation of Radial Gates is needed by all entity/owner of Dams and Reservoirs as it is the guiding instrument at any time whenever Gates are required to be operated to release water from the Reservoir due to Flood, Sabotage, Natural disaster or any other crisis. The Guidelines for Operation of Gates also guides the Operator of the Radial Gate the process of releasing of water from the Reservoir in such a manner that;
- (i) The Dams and other related Hydraulics Structure are not put in any danger.
  - (ii) The Reservoir is allowed to impound optimum quantity of water for economic generation of electricity.
  - (iii) It mitigates the damage of flood downstream of the Dams.
- 2.2- The Guidelines help the owner to maintain the Radial Gates in operational mode 24x7.
- 2.3- The Guidelines for Operation of Radial Gates provide;
- (i) Technical details of the Dams, Reservoir and Radial Gates.
  - (ii) Mode of inspection, monitoring and reporting of the healthiness of the Dams, Reservoir and Radial Gates.
  - (iii) Instruction to the Engineer-in-charge in regard to maintenance of the Gates, including Operation of the Gates to facilitate release of water from the Reservoir whenever required.
  - (iv) It also contains names, addresses and contacts of all stake holders of the Dams.

### 3.0- Umiam Reservoir and requirement for Control Release of Water through the Gates:-

The Umiam reservoir has one (1) Concrete Dam and two(2) Earthen Dams (Dykes). The Umiam Reservoir is the largest manmade Lake in the State of Meghalaya and can store about 185 Million Cubic Meter of water. Downstream of the Concrete Dam, the River runs through Ravines and Plains of Ri-Bhoi District, and after travelling for a distance of about 110 Km reaches the Assam Border. On its way to Assam Border, all along its banks are colonies, settlements, Agricultural land and other activities that provide livelihood to the people.

It is for this reason that any release of water from the Umiam Dam has to be properly planned, estimated, and regulated so as to avoid any un-toward incidents.

### 4.0- Name, Address & Contacts of the Owners of the Dams

- 4.1- Name& Address : Meghalaya Power Generation Corporation Limited,  
Lumjingshai, Shillong-793001,  
East Khasi Hills District, Meghalaya.

#### 4.2- Contacts of responsible Persons:-

#### Proforma-1

Sl. No	Names & Designation	Address		Telephone No.	Mobile No.	E-mail ID
		Office	Residence	Office	Residence	
1	2	3	4	5	6	7
1.	Shri. ArunkumarKembhavi, IAS Chairman-cum- Managing Director	Me.E.C.L, Lumjingshai, Shillong 793001.	–	0364- 2590367 0364- 2590638 (F)		arunkumar. kembhavi @gmail.co m
2.	Shri D. D. Shira, MCS DirectorCorporate Affairs	Me.E.C.L, Lumjingshai, Shillong 793001.	–	0364- 2591992		
3.	Shri. E. B. Kharmujai i/c Director (Generation)	Me.P.G.C.L, Lumjingshai, Shillong 793001.	–	0364- 2591406	9436165325	pce_meecl @yahoo.co .in
4.	Shri. M. Rymbai Chief Engineer(C), HP&HC, MePGCL, Shillong.	Me.P.G.C.L, Lumjingshai, Shillong 793001.	–	0364- 2590113	9436101142	cehphc.epg cl@gmail.c om
5.	Shri. N. K. Syiem Chief Security Officer	Me.E.C.L, Lumjingshai, Shillong 793001.	–		9436790999	
6.	Smti. B. Wann, Executive Engineer (C), Dam Safety Cell	O/o Chief Engineer(C), M&SH, Me.P.G.C.L, Shillong 793001	Lower Lumparing Laban, Shillong- 793004	0364- 2590226	9863141531	eedamsafet ymsh@gm ail.com

### 5.0- SALIENT FEATURES:-

#### 5.1 LOCATION:

Dam:Latitude	25° 39' 33.59"N
Dam:Longitude	91° 54' 0.79" E
Power House: Latitude	25° 41' 34.31"N
Power House: Longitude	91° 52' 42.59" E

## 5.2 HYDROLOGY:

Catchment Area (Sq. Km)	221.50
Max. Annual Rainfall (mm)	4724.40
Min. Annual Rainfall (mm)	1625.60
Mean Annual Rainfall (mm)	2667.00

## 5.3 RESERVOIR:

Maximum Water Level(MWL)	3220Ft/981.45M
Full Reservoir Level (FRL)	3217.50Ft/980.69M
Minimum Draw Down Level (MDDL)	3150 FT/ 960.12M
Live Storage (Mcum)	134.689
Gross Storage (Mcum)	159.206

## 5.4 DAM:

Type	Concrete
Height (m)	73.20
Length (m)	195.07
Crest Level	3180.00 FT/969.26 M
Top of Radial Gates:	3220 FT/981.46 M
Top of Dam:	3228 FT/983.59 M
Spillway capacity:	65,000 Cusec/1840.60 Cumec
Design Flood Review:	2149.00 Cumec

## 5.5 RADIAL GATES:

Gate No.	2 nos
Size (m)	12.20 x 12.20 (40ftx40ft)
Mode of operation:	Electrically operated (Provision available for Hand operation in emergency cases)
Brake:-	Solenoid operated brake
Company made:	Jessop Co. Ltd, Calcutta
Gate Operation:-	

Minimum: 1 gate and 1 ft. Opening:

Maximum: 2 gates and 40 ft. Opening each:

## 5.6 POWER HOUSE:

Installed Capacity (MW)	36
No. of Generating Units	4
Capacity of each Unit (MW)	9
Annual Energy (MU)	-
Design Energy (MU)	116.00
Tail Water Level (TWL) (m)	Max : 810.77 Min : 809.40
Rated Head (m)	145.00
Avg. Gross Head Maximum (m)	169.00
Avg. Gross Head Minimum (m)	150.00
Type (Surface/Underground)	Surface
Type of Turbine	Francis
Design Discharge (Cumec)	30.80

## 6.0- **Inspection, Testing of Radial Gates including Gate Reporting**

### 6.1- Components of Radial Gates

#### **I).GATES:**

- a) Gate leaf:               Curve face plate
- b) Seals:                   J - seals
- c) Seal seat:               Stainless steel

#### **II) HOISTING ARRANGEMENT:**

- a) Drum Hoist:               Worm gear arrangements with drum
- b) Ropes:                   38mm
- c) Capacity of motor:       7.50 hp each
- d) Type of brake:           Solenoid operated brake

6.2- All the Radial Gates including its components and accessories are to be inspected and tested at least once in a month.

6.3- All the Radial Gates are to be operated at least once in a month. If stop log gate is available then lifting of gates can also be carried out.

6.4- All electrical components of the Radial Gates are to be checked and tested at least once in a week.

6.5- All the inspection and testing cited above are to be done according to the operation manual of the Radial Gates or as directed by the Engineer in charge. The inspection period should be periodical.

6.6- The Dams Safety Cell shall inspect all Gates and their components at least once before the monsoon period, and during operation of the Gates as per the Guidelines of the Central Water Commission (CWC), Government of India.

6.7- All the reports of inspection, testing are to be forwarded to the Engineer in charge for his/her necessary action as may be required.

6.8- All materials, equipment required for Gate Operation are to be kept in good and working condition. They are to be checked and inspected at least once in a month from time to time.

### 7.0- **Maintenance and Upkeep:-**

7.1- All Radial Gates are to be in operational mode 24x7.

7.2- All repairing and maintenance work including greasing, oiling etc. related to the Radial Gates are to be taken up on top priority.

7.3- All reports of inspection and testing of Radial Gates and its components indicating any needs of repairing, refurbishing, renovation, modification etc. are to be taken up by the Engineer in charge without delay.

**8.0- Guidelines of Recording of Informations :-**

8.1- All messages incoming and outgoing relating to release of excess water through the Gates are to be recorded in the register as per the following Proforma.

**8.1.1- In coming Message:-****Proforma - 2**

Sl. No.	Date	Time	Senders name including Contact No.	Content of the Message	Whether the Message was send to higher authority	Name & Sign of receiver	To whom forwarded	Remarks
1	2	3	4	5	6	7	8	9
1.								
2.								
3.								
4.								
5.								

**8.1.2- Outgoing Message:-****Proforma - 3**

Sl. No.	Date	Time	To whom sent including Contact No.	Content of the Message	Name & Signature of sender	Remarks
1	2	3	4	5	6	7
1.						
2.						
3.						

The messages both incoming and outgoing are to be compiled and forwarded to the higher authority on daily basis.

**9.0- Contact Persons for Umiam Reservoir:-**

The following persons are to be contacted through telephone, SMS, e-mail before the release of water from the reservoir.

**9.1- In charge of the Dams:-****Proforma - 4**

Sl. No.	Names & Designation	Address		Telephone No.	Mobile No.	E-mail ID
		Office	Residence	Office		
1	2	3	4	5	6	7
1.	Shri. K. Thangkhiew, Superintending Engineer (C), HSM, Me.P.G.C.L, Shillong.	SE, (C), HSM Circle, MePGCL, Lumkshaid, Shillong - 793002	—	0364-2547878	9856370407	murray_nong@yahoo.com/hcmshp16@gmail.com

2.	Shri. C W. Pariat, Executive Engineer (C), HSMD, Me.P.G.C.L, Sumer.	EE, HSMD, MePGCL, Sumer	Mission Compound, Shillong-793001	–	9863852246, 8731096843	chare_pariat@y ahoo.com
3.	Shri. W.N. Kharpran, Assistant Executive Engineer (C), HSMD, Me.P.G.C.L, Sumer.	AEE, HSMSD, MePGCL, Sumer	Pohkseh, West -1, Shillong-793001	–	8794237399	wellwisher.khar pran@yahoo.co m
4.	Shri. B. E. Kharkongor Junior Engineer	O/O AEE, HSMSD, MePGCL, Sumer	7 <sup>th</sup> Mile Upper Shillong-793005	–	9856612069/9 366261939	bhabokeric@gm ail.com
6.	Security In-charge of Umiam Sector	Umiam	–	2570230	9774565652	–

## 9.2- Contacts of important State Government, Officials including Police & Other Stake Holders.

### Proforma - 5

Sl. No.	Names & Designation	Address		Telephone No.	Mobile No.	E-mail ID
		Office	Residence	Office		
1	2	3	4	5	6	7
1.	Shri. M.S Rao, IAS, Chief Secretary and State Vigilance Commissioner	Room no 316 Meghalaya Secretariat Building Shillong 793001		0364-2224801 0361-225978 (Fax)		csomeg@nic.in
2.	Smti. R. M. Kurbah IAS, Deputy Commissioner & Chairperson (DDMA)	O/o the Deputy Commissioner, Ri-Bhoi District, Nongpoh		03638-232221 Fax 03638-232503	98633-18344	nongpoh@nic.in & dc-rbmeg@nic.in
3.	Shri. D.P. Kharsati, MCS, Addl. Deputy Commissioner & CEO (DDMA)	O/o the Deputy Commissioner, Ri-Bhoi District, Nongpoh		Fax 03638-232503	87873-76669	donpkharsati@gmail.com
4.	Shri. Nazarius Lamare, MPS Superintendent of Police	O/O the Superintendent of Police :: Ri-Bhoi District HQ : Nongpoh, Meghalaya Pin Code-793102		03638-232304 Fax 03638-232230	97748-31025	sp.rbmeg@nic.in
5.	Smti V. A Hynniewta, MCS, EAC	O/o the Deputy Commissioner, Ri-Bhoi District, Nongpoh		Fax 03638-232503	97748-76609	viveraalicia@yahoo.com
6.	Smti. K. Wanniang, DDMO	Ri-Bhoi District, Nongpoh		03638-232028 Fax 03638-232503	93668-43731	eocribhoi@gmail.com
7.	Shri. D. Syiemiong, BDO Jirang C&RD Block	Jirang C&RD Block			98620-14284 81320-00287	megjirang@nic.in
8.	Dr. R. Nongrum, BDO Umling C&RD Block	Umling C&RD Block			88372-33681	megumlingblock@gmail.com

9.	Shri. R. Brahma, MCS, BDO Umsning C&RD Block	Umsning C&RD Block			82590-74759 94021-91280	megumsning@nic.in & rajabrahma74@gmail.com
10.	Shri. Cliff Warjri, BDO Bhoirymbong C&RD Block	Bhoirymbong, C&RD Block			8787676324	bhoirymbong.crd.block@gmail.co
11.	Directorate Information and Public relations,	Lower Lachumiere, Shillong-793003		0364- 2224617		diprmeg@gmail.com
12.	Dr. P. Kakoti's Building G.S. Road, Ganesh guri Guwahati 781006	Doordarshan Kendra Shillong		0361- 2232232 Fax 0361- 2232232		adgenez@nic.in
13.	Shri. Derrick. P.Pariat Head of the Programme	Doordarshan Kendra Shillong		0364-2580319	9436105194	ddkshillong@gmail.com
14.	All India Radio, Shillong - 793001			0361- 2224153 Fax 0361- 2224153		airshill@gmail.com <a href="mailto:airshill@air.rg.in">airshill@air.rg.in</a>
15.	The DC/Adjutant For Commandant 1 <sup>st</sup> Bn NDRF, Ministry of Home Affairs,	Patgaon, PO:Azara, Guwahati, Assam- 781017		0361-2840284	9435545949 (official mobile number) Control room no.- 7637011337 9435417246	assam01-ndrf@nic.in

**9.3- Contacts of Prominent Persons residing along the River Downstream of the Dam who may be affected due to release of excess water through the Gates of the Dam.**

**Proforma – 6**

Sl.No.	Name of Villages	Designation	Contact No.
1.	Pynthor	Headman	841303050
2.	Mynsain	Headman	9366575664
3.	UmdenUmsaitprah	Headman	9378183985
4.	UmdenArka	Headman	9862114476
5.	Umden Mission	Headman	8259852956
6.	Umtieh	Headman	8259037793
7.	Umtangling	Headman	9378181400
8.	Nonglum	Headman	8787423997
9.	UmdenUmbathiang	Headman	8787388720
10.	TyrsoPdeng	Headman	9612364526
11.	TyrsoLumdiengiri	Headman	9612298078



12.	TyrsoNongkhyllep	Headman	7085132114
13.	Umtngam	Headman	9383302874
14.	Biersiej	Headman	9612293874
15.	Sohphoh	Headman	9612940949
16.	Mawrathud	Headman	7085872785
17.	Umshingtad	Headman	7628957368
18.	LumMawtha (Umtngam)	Headman	9383302874/7628957368
19.	Umlatara	Headman	9612358793
20.	Ingsaw	Headman	7085554530
21.	Umshiaiw	Headman	9612385807
22.	Mawkynrong(Umsning Block)	Headman	9612659498
23.	Umlaiteng(Umsning Block)	Headman	9612712613

#### 10.0- Preparation, Warning& Release of Water:-

Preparation, Warning and release of water from the Reservoir may be done under two conditions i.e., Normal condition and emergency/crisis condition.

10.1- **Under Normal condition:-** Under this condition the water may have to be released during Monsoon Period due to high flood or during Non - Monsoon Period as may be required.

##### 10.1.1-During Monsoon Period:-

- (a) When the Water Level of Umiam Reservoir is between the Level 3205ft. (976.88m) to 3210ft. (978.41m), notification of likely release of the excess water should be issued.
- (b) The notification to be issued by the Office of the Chief Engineer (C), HP&HC, Me.P.G.C.L, Shillong.
- (c) The copy of the notification of the warning should be sent to all Officers concerned within Me.E.C.L, Me.P.D.C.L, Me.P.G.C.L, Me.P.T.C.L and also to (1) Deputy Commissioner, Nongpoh (2) Superintendent of Police, Nongpoh (3) BDO, Umsning (4) DIPR (5) Print & Electronic Media, and (6) All Concerned and stake holders residing or undertaking activities along the Umiam River downstream of the Umiam Dam.
- (d) All materials, equipment required for Gate Operation are to be checked and made ready for operation.
- (e) 24 hours operational duty is to be enforced as soon as the Water Level reached 3205ft. (976.88m).
- (f) **Preparation for release of excess Water when water level reaches 3215ft (976.88m).**
- (i) Information of likely release of water either during the day or night should be sent through Telephone, SMS, Whatsapp, etc. to all concerned and stake holders as recorded in **Proforma 1, 4, 5 & 6** and record the same as indicated in **Performa 2 & 3**. All messages are to be sent

to all concerned before 6.00 p.m. so as to enable the Headman to announce the same to the public.

- (ii) The inflow of the water into the reservoir is to be calculated every hour and the same is to be informed to the higher authority through SMS, Whatsapp, Phone etc.
- (iii) If the inflow is very high i.e., 10,000 cusecs and above. The inflow calculation should be done in half hourly basis.

**(g) Release of Excess Water:-**

When the concerned authority authorized release of water through the Gates the following actions are to be taken:

- (i) The decision to release water shall be taken at least one hour before the actual operation of the Radial Gates and actual release of water. The first initial decision to release water through the Gates is to be taken by the Chief Engineer (C), HP&HC, Me.P.G.C.L, Shillong after consultation with the Director (Generation), Me.P.G.C.L, Shillong and subsequent release of water by the Engineer in-charge in consultation with the Senior Officers.
- (ii) The Siren installed on the deck of the gates is to be blown for a duration not less than 30 (thirty) minutes.
- (iii) One hour after blowing the Siren, initially one gate can slowly be opened and may be raised up to the maximum height of 1 (one) ft.
- (iv) In case, there is requirement to enhance the release of water due to high inflow, another gate may be opened. The Gates may be increased by 1 ft. one gate every half an hour or hourly as the case may be and as decided by the concerned authority.
- (v) In case of the decrease of inflow into the Reservoir and other consideration the size of opening of the Gates should be reduced accordingly.
- (vi) The decision to increase or decrease the size of opening of the gates or closing the gates may be taken by the Officers in charge of the Dams in the consultation with the higher authority.
- (vii) In all circumstances, water should not be allowed to overtop the Radial Gate or the Dams.
- (viii) The water level of the Reservoir should not be allowed to go beyond the maximum water level of the Reservoir.

**10.1.2- During Non - Monsoon Period:-Non-Monsoon Period means the period when the water level of the Reservoir is below (3210ft.)and the inflow of water into the Reservoir is below 500 cusecs which do not threaten to over top the Dams.**

**10.1.2.1-** Under Normal condition the water is usually not required to be release through the gates during Non-Monsoon Period. However, there may be times that release of water may have to be done during this period to enable the owner to take up necessary repairs of any Hydraulic Structures or for any other reason. Only the Chairman-cum-Managing Director, Me.P.G.C.L, Shillong is authorized to allow release of water through the Gates at Umiam Dams, under normal condition, during Non-Monsoon Period.

When the authority concerned decided to release water through the Gates under this condition, the following action is to be taken:-

- (a) The quantity of water to be release, including the rate of discharge through the gates and the time period of release are to be properly calculated and planned to avoid unwanted submergence along the river course in the downstream of the Dam.
- (b) The warning for release of water along with the quantity, discharge and time period is to be notified by the Office of the Chief Engineer (C), HP&HC, Me.P.G.C.L, Shillong, 3 (three) days before the schedule of release.
- (c) The copy of the notification of the warning should be send to all Officers concerned within Me.E.C.L, Me.P.D.C.L, Me.P.G.C.L, Me.P.T.C.L and also to (1) Deputy Commissioner, Nongpoh (2) Superintendent of Police, Nongpoh (3) BDO, Umsning (4) DIPR (5) Print & Electric Media, and (6) All Concerned and stake holder residing or having activities along the Umiam River downstream of the Umiam Dams.
- (d) All materials, equipment required for Gate Operation are to be checked and made ready for operation.
- (e) One hour before release of water through the Gates, a warning is to be sounded by blowing the siren installed on the Deck of the Gates. Simultaneously information of release of water should be sent through Telephone, SMS, Whatsapp, etc. to all concerned and stake holders as recorded in **Performa 1, 4, 5 & 6** and record the same as indicated in **Proforma 2 & 3**
- (f) One hour after blowing the siren, initially one gate can slowly be opened and may be raised up to the maximum of 1ft.
- (g) After the initial release of one hour, another gate may be opened. The size of opening of the Gate may be increase by 1ft. for 1 (one) Gate everyone hour up to the required size of opening as per schedule.
- (h) All Gates should be closed as soon as the targeted quantity of water is released or the required water level of water in the Reservoir is achieved.

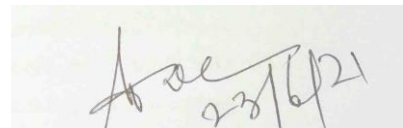
**10.2.0- Under Crisis/Emergency condition:- Water may be released at any time of the year in case of the emergency/crisis situation that may arise due to;**

- (a) Sudden and unprecedented heavy and very heavy rainfall in the catchment causing very high and unexpected flooding of the Reservoir.
- (b) Breaking of the Dam due to structural failure, earthquake, sabotage and other.
- (c) Failure of other hydraulics structure like Tunnel, Dykes and other.
- (d) Any other reasons that require urgent release of water.

**10.2.1- The Engineer incharge, after satisfying his/her self that the crisis/emergency condition warranted urgent release of water through the Gates of the Dams will immediately inform the controlling Officers and Chief Engineer (C), HP & HC, who will order for immediate release of water and inform the same to the higher authority of the**

**Corporation. When the decision to release water is communicated (verbally or officially) the following steps are to be taken;**

- (i) The Siren installed on the deck of the gates is to be blown for duration not less than half an hour.
- (ii) Simultaneously information of release of water should be sent through Telephone, SMS, Whatsapp, etc. to all concerned and stake holders as recorded in **Performa 1, 4, 5& 6** and record the same as indicated in **Performa 2 & 3**
- (iii) One hour after blowing the siren, initially one gate can be opened and may be raised upto the maximum of 1ft.
- (iv) Depending on the situation of emergency/crisis the size of opening of the Gates, the number of gates and the Discharge of water to be released will be decided by the Chief Engineer (C), HP&HC, Me.P.G.C.L, in consultation with Director (Generation) Me.P.G.C.L, Shillong and to accordingly intimate the CMD, Me.P.G.C.L.
- (v) During emergency/crisis situation the in charge and other higher official are to be present at the place/site of event (Ground Zero).



**DIRECTOR (GENERATION)**