



MEGHALAYA POWER GENERATION
CORPORATION LIMITED



**GUIDELINES FOR
RELEASE OF WATER
THROUGH THE
GATES OF THE
MYNTDU-LESHKA
HEP-I CONCRETE DAM**

2017



GUIDELINES FOR RELEASE OF WATER THROUGH THE GATES OF THE MLHEP-I 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 and others. Water stored in the reservoir during rainy seasons, is also utilized during dry/lean seasons. Sometimes due to heavy rain during rainy seasons, the discharge in the River can be so high that the water level in the Reservoir, if not controlled, can rise beyond F.R.L. In such cases the excess water from the Reservoir has to be released in a gradual and regulated manner through the Radial Gates provided in the Dams, to ensure that people at the downstream are not affected by the sudden surge of river water, at the same time to safeguard the Dams from being overtopped; thereby to safeguard the abutments from being washed out, and causing loss of lives and properties due to flooding.

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 through the process of releasing of water from the Reservoir in such a manner that:
- (i) The Dams and other related Hydraulic Structures are not put in any danger.
 - (ii) The Reservoir is allowed to retain optimum quantity of water for economic generation of electricity.
 - (iii) It mitigates the damages due to 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 also provide:
- (i) Technical details of the Dams, the Reservoir and the Radial Gates.
 - (ii) Guidelines for inspection, monitoring and reporting of the healthiness of the Dams, Reservoir and Radial Gates.

(iii) Guidelines to the In-charge with regards 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.

3.0- MLHEP-I Reservoir and requirement for Controlled Release of Water through the Gates:-

The MLHEP-I reservoir has one (1) Concrete Dam. The MLHEP-I Reservoir is a small reservoir and can store about 14.1 Million Cubic Meter of water. Downstream of the Concrete Dam, the River runs through Ravines and Plains of East & West Jaintia Hills District, and after travelling for a distance of about 24 Km reaches the Bangladesh International Border. On its way to Bangladesh Border, along its banks towards the plain, there are colonies, settlements, agricultural land and other activities that provide livelihood to the people.

Moreover, MLHEP-I is a Run of the River (ROR) Scheme with very limited storage capacity and very high discharge of about 10440 cumecs during high rainfall. During high flood, the flood water fills up the reservoir at a high rate and could overtop the Dam within minutes, for which 24x7 monitoring is required. It is for this reason that release of water from the MLHEP-I Dam has to be properly planned, estimated and regulated, and action needs to be taken instantly so as to avoid any untoward incident.

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. P. S. Thangkhiew, Chairman-cum-Managing Director	Me.E.C.L, Lumjingshai, Shillong 793001.		0364-2224801		p.sthankhiew@gmail.com
2.	Director Corporate Affairs	Me.E.C.L, Lumjingshai, Shillong 793001.		0364-2591992		—
3.	Shri. A. Bhagotia, Director (Finance)	Me.E.C.L, Lumjingshai, Shillong 793001.	31 st Governor House, Shillong-793001	0364-22590135	94369 95458	—

4.	Shri. E. W. Nongrum, Director (Generation)	Me.P.G.C.L, Lumjingshai, Shillong 793001.		0364- 2591406	94361 03358	pce_meecl @yahoo.co. in
5.	Shri. K. Tiewsoh, Chief Engineer(C), M&SH, MePGCL, Shillong.	Me.P.G.C.L, Lumjingshai, Shillong 793001.	Lumjingshai , Short Round Road, Shillong – 793001	0364- 2590262	94361 08250	chiefengine er.msh- meg@gov.i n
6.	Shri D. M. Sangma, Chief Security Officer	Me.E.C.L, Lumjingshai, Shillong 793001.	MLP 1st Battalion, Quarter S.P., Mawiong	–	94367 04091	spsangmad m@gmail.c om
7.	Smti. M. Lyngdoh, Executive Engineer (C), Dam Safety Cell	O/o Chief Engineer(C), M&SH, Me.P.G.C.L, Shillong 793001	Mawlai, Mawdatbaki , Nongpathaw , Shillong- 793008	–	98560 24921	eedamsafety msh@gmail .com

5.0- SALIENT FEATURES:-

5.1- DAMS:-

Type of Dam:	CONCRETE GRAVITY
Height of Dam:	63 M
Length of Dam:	322.00 M along Dam Axis
F.R.L / M.W.L. :	EL 618.00 /618.00 M.
M.D.D.L. :	EL 606.15 M
Crest Level:	EL 587.50 M
Top of Gates:	EL 599.50 M
Top Level of Dam:	EL 620.00 M
Spillway capacity:	12000 Cumecs
Design Max Discharge:	10,440 cumecs
Chute Spillway:	200.00 cumecs

5.2- RESERVOIR:-

Catchment Area:	350 Sq.Km
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Storage Capacity:

(i) Live Storage: 7.32 MCUM

(ii) Dead Storage: 6.86 MCUM

(iii) Overall Storage: 14.18 MCUM

5.3- **RADIAL GATES:-**

No. of Gates: 7 Nos.

Types: Sluice Radial Gates

Size: 8.00 M X 12.55 M (each gate)

Mode of operation: Hydraulic operated
(Provision available for Hand operation in emergency cases)

Brake :- Solenoid operated brake

Company made: Montann Hydraulik, Germany

Gate Operation:-

Minimum: 1 gate and 1.00 M Opening

Maximum: 7 gates and 12.55 M Opening each

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

6.1- **Components of Radial Gates:**

I) GATES:

a) Gate leaf: Curve face plate, Stainless Steel Skin Plates

b) Seals: Z & P – type seals

c) Seal Seat: Stainless steel

II) HOISTING ARRANGEMENT:

a) Hydraulic Hoist: 2x125 MT capacity each

b) Capacity of motor: 30 HP each

c) 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 testing of gates can also be carried out, without wastage of water.

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 & Maintenance Manual of the Radial Gates or as directed by the Engineer-in-charge. The inspection period should be as per maintenance schedule.

- 6.6- The Dam Safety Cell shall inspect all Gates and their components at least once before and after 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, etc., are to be forwarded to the Engineer-in-charge for his/her necessary action as may be required.
- 6.8 – All works taken up for repair, renovation, modification, modernisation, or any alteration on the Radial Gates and its components is to be recorded in a proper register/logbook and should be kept ready for inspection and for records.
- 6.9- All materials/equipments 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 and 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 changing hydraulic of fluids, filters, solenoid switches, seals, pipes, valves, pump and motor, and other components related to Radial Gates, Hydraulic Hoists and Power Packs are to be taken up on top priority.
- 7.3- All reports of inspection and testing of Radial Gates and its components indicating any need of repairing, refurbishing, renovation, modification, etc., are to be taken up by the Engineer in charge without delay.
- 7.4- Radial Gates of MLHEP being under high head/Pressure, should not be operated at small opening heights below 1 (one) m for any gate.
- 7.5- It is always advisable not to keep a particular gate in open mode for a very long time. Rotational opening of the gates should be carried out in case of such necessities.
- 7.6- DG Sets should be cleaned and trial run of the DG should be done twice in a week. Inspection of all electrical connections of DG and its panel should be on regular basis. The engine oil and diesel in the DG sets should be inspected and refilled whenever necessary.
- 8.0- **Recommendations as per Central Water And Power Research Station (CWPRS), Ministry of Water Resources, Pune-411024**

The following points recommended by the CWPRS Report No.4474, Dated. August, 2007 may be adopted wherever applicable:-

- (i) The expected discharges upto 1500cumecs can be passed through two sluice nos, operating either Radial Gates no. 2&3 or 4&5. Operation of sluice nos. 2&3 would be beneficial in minimizing deposition of coarse sediment in front of intake, whereas operation of Sluice nos. 4&5 would keep the ski-jump jet away from banks avoiding erosion along the toe of the left bank.

(ii) The Radial Gates Nos.2, 3 ,4 & 5 can be operated to pass the expected discharges ranging from 1500 cumecs to 3000 cumecs.

(iii) Discharges higher than 3000 cumecs could be passed by operating all the Radial Gates.

9.0- Guidelines for Recording of Information:-

9.1- 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.

9.1.1- 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 & Signatur e of receiver	To whom forward ed	Rema rks
1	2	3	4	5	6	7	8	9
1.								
2.								
3.								
4.								
5.								

9.1.2- Outgoing Message:-

Proforma - 3

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

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

10.0- Contact Persons for MLHEP-I Reservoir:-

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

10.1- Incharge of the Dams:-

Proforma - 4

Sl. No.	Names & Designation	Address		Telephone No.	Mobile No.	E-mail ID
		Office	Residence	Office	Office	
1	2	3	4	5	6	7
1.	Shri B.M.War Superintending Engineer (C)	HSM & SH Circle, MePGCL, Lumskhaid, Mawprem			94021 50325	hydraulicsandsmallhydro@gmail.com hcmshp16@gmail.com
2.	Shri Hat Bareh, Executive Engineer (C).	MLCD-II, MLHEP, MePGCL, Nohkum	Nongtalang Village, P.O. Dawki, West Jaintia Hills Dist, 793109.		80149 72594	hatbareh@gmail.com
3.	Shri K. Shabong, AEE, MLCSD-IV	O/o EE(C), MLCD-II, MePGCL, Nohkum	Laitlyngkot, East Khasi Hills District		85755 53856	
4.	Shri B. Nongbet, Junior Engineer(C), In-charge of Radial Gate Operators	O/o EE(C), MLCD-II, MePGCL, Nohkum	5 th Mile, Upper Shillong.		80149 67564	
5.	Shri A. Jala, Junior Engineer(C), In-charge of Radial Gate Operators	O/o EE(C), MLCD-II, MePGCL, Nohkum	c/o Flamina Jala, Mawlai Syllaikariah Block I, P.O. Mawlai, Shg.- 793017		98564 42269	

10.2- 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 K. S. Kropcha, IAS, Chief Secretary	Room no 321 Meghalaya Secretariat Building Shillong 793001		0364- 2224801		cso- meg@n ic.in
2.	Shri E.P. Kharbhih, IAS, Commissioner & Secretary, Power Dept.	Room no 329 Meghalaya Secretariat Building Shillong 793001		0364-2224221 PABX-2257	94361 13590	eddykh arbhih @gmail .com

3.	Deputy Commissioner, West Jaintia Hills District.	Office of the Deputy Commissioner, West Jaintia Hills, Jowai	–	03655-230033	85750 27800	
4.	Deputy Commissioner, East Jaintia Hills District.	Office of the Deputy Commissioner, East Jaintia Hills, Khliehriat			94361 04345	
5.	Superintendent of Police, East Jaintia Hills District.	Office of the Superintendent of Police, HQ-Khliehriat		03655-230019	94025 39787	
6.	Additional Commissioner Office, Jowai				98560 22111	
7.	Superintendent of Police, West Jaintia Hills District.	Office of the Superintendent of Police, HQ-Jowai		03652-221907	94361 06473	
8.	Additional Magistrate, West Jaintia Hills District.				94361 07596/ 98560 08545	
9.	Border Development Officer, East Jaintia Hills District.				98560 04513	
10.	Officer in Charge, Ladrymbai				94361 62213	
11.	Border Development Officer, Amlarem				98566 30716	
12.	Sub Divisional Officer, Amlarem				85750 49358	
13.	Officer in Charge, Muktapur				94367 29471	
14.	DIPR, Shillong				0364-2224617	
15.	AIR, Shillong				0361-2224153	
16.	Doordarshan, Shillong				0361-2232232	

10.3- 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.	Names & Address	Address		Telephone No.	Mobile No.	E-mail ID
		Office	Residence	Office		
1	2	3	4	5	6	7
1.	Pasadwar Village Headman				9615514782	
2.	Kharkhana Village Headman				9856376114	
3.	Kamsing Village Headman				9856648732	
4.	Borkhat Village Headman				9615313941/ 8575846616	
5.	Kwator Village Headman				9863928795/ 9856589542	

11.0- 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.

11.1- Under Normal condition:-

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

11.1.1- During Monsoon Period:-

- (a) When the pre-monsoon rain with heavy showers starts in the month of March-April or before that, warning of likely release of the excess water should be issued.
- (b) The warning will be notified by the In-charge through sms and in writing (if possible) to the District authorities and stake holders.
- (c) The general warning of the likely release of excess water from MLHEP-I Dam should be sent to all Officers concerned within Me.E.C.L, Me.P.G.C.L, Me.P.D.C.L, Me.P.T.C.L and also to (1) Deputy Commissioner, Jowai and Khliehriat (2) Superintendent of Police, Jowai and Khliehriat (3) BDO, Amlarem and Khliehriat (4) DIPR (5) Print & Electronic Media, and (6) All Concerned and stake holders residing or undertaking activities along the MLHEP-I River downstream of the MLHEP-I Dam to provide advance information and to restraint from any activities along the bank of the Myntdu river.

- (d) All materials, equipments 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 pre-monsoon rains starts.
- (f) Release of Excess Water:-

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

- (i) The decision to release water shall be taken at least half an hour before the actual operation of the Radial Gates and actual release of water. The initial decision to release water through the Gates is to be taken by the Engineer-in-charge with information to higher authorities.
- (ii) The Siren installed on the deck of the gates is to be blown for a duration not less than 30 (thirty) minutes before releasing of water.
- (iii) Simultaneously, information of release of water should be sent through Telephone, SMS, E-mail etc. to all concerned and stake holders as recorded in **Proforma 1, 4, 5 & 6** and record the same as indicated in Proforma **2 & 3**.
- (iv) Minimum 15 minutes after blowing the Siren, initially one or two gates depending on the situation can slowly be opened and may be raised upto the height of 1 (one) m opening.
- (v) In case, there is requirement to enhance the release of water due to high inflow, more gates may be opened. The Gate opening may be increased depending on the amount of inflow.
- (vi) In case of the decrease of inflow into the Reservoir and other consideration the size of opening of the Gates should be reduced accordingly.
- (vii) The decision to increase or decrease the size of opening of the gates or closing the gates may be taken by the Engineers in charge of the Dam with intimation to the higher authority.
- (viii) In all circumstances, water should not be allowed to overtop the Dam.
- (ix) The water level of the Reservoir should not be allowed to go beyond the maximum water level of the Reservoir.

11.1.2- During Non - Monsoon Period:-

Non-Monsoon Period means the period when the water level of the Reservoir is below 610.00m and the inflow of water into the Reservoir is below 50 cumecs which do not threaten to over top the Dam.

11.1.2.1- 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 MLHEP-I Dam, under normal condition, during Non-Monsoon Period.

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

- a) The quantity of water to be released, 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 alongwith the quantity, discharge and time period is to be notified by the Office of the Director (Generation), 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, Jowai and Khliehriat (2) Superintendent of Police, Jowai and Khliehriat (3) BDO, Amlarem and Khliehriat (4) DIPR (5) Print & Electric Media, and (6) All Concerned and stake holder residing or having activities along the MLHEP-I River downstream of the MLHEP-I Dam.
- d) All materials, equipments 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, E-mail etc. to all concerned and stake holders as recorded in **Proforma 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 upto the maximum of 1 m.
- g) After the initial release of one hour, another gate may be opened. The size of opening of the Gate may be increased by 1 m. for 1 (one) Gate every one 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.

11.2.0- 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 others.

- (c) Failure of other hydraulic structures like Tunnel, Dykes and other.
- (d) Any other reasons that require urgent release of water.

11.2.1- The Engineer in charge, 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), M&SH, who will order for immediate release of water and inform the same to the higher authority of the Corporation, provide communications lines are available especially during bad weather condition, to transmit and receive much needed instructions at site. Otherwise, the Engineer-in-charge should take requisite action immediately and thereafter inform the higher Authority when communication networks are available later. When the decision to release water is taken 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, E-mail etc. to all concerned and stake holders as recorded in Proforma 1, 4, 5 & 6 and record the same as indicated in Proforma 2 & 3 .In the event that communication lines are disrupted or unavailable, the general warning of the likely release of water issued as per Clause/Sl. No. 10.1.1(c) stands.
- (iii) Half an hour after blowing the siren, initially *one or two gates depending on the situation* can be opened and may be raised upto the maximum of 1 m.
- (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 Director (Generation) provided communication lines are available especially during bad weather conditions to transmit and receive much need instructions at site. Otherwise, the engineer-in- Charge should take requisite action immediately and thereafter inform the higher authority when communication networks are available later.
- (v) During emergency/crisis situation the In-charge and other higher officials are to be present at the place/site of event (Ground Zero).



DIRECTOR (GENERATION)