भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee

सं. उक्षेविस/ वाणिज्यिक/ 209/ आर पी सी (72 वीं)/2024/ दिनांक: 27 मार्च, 2024

सेवा में / To,

उ.क्षे.वि.स. के सभी सदस्य एवं विशेष आमंत्रित (संलग्न सूचीनुसार)
Members of NRPC & Special Invitees (As per List)

विषय: उत्तर क्षेत्रीय विद्युत समिति की 72 वीं बैठक और तकनीकी समन्वय समिति (टीसीसी) की 49 वीं बैठक की अतिरिक्त कार्यसूची के संदर्भ में।

Subject: Additional agenda for 72th Northern Regional Power Committee (NRPC) & 49th Technical Co-ordination Committee (TCC)-reg.

महोदय / महोदया,

उत्तरी क्षेत्रीय विद्युत समिति (एनआरपीसी) की 72 वीं बैठक दिनाँक **30.03.2024 (सुबह 09:30 बजे)** लखनऊ, उत्तर प्रदेश में होगी। उ.क्षे .वि.स. की बैठक से पहले तकनीकी समन्वयन समिति (टीसीसी) की 49 वीं बैठक दिनाँक **29.03.2024 (सुबह 09:30 बजे)** को उसी स्थान पर आयोजित की जाएगी । बैठक की कार्यसूची पत्र दिनांक 20.03.2024 द्वारा जारी किया गयी थी। कृपया बैठक की संलग्न अतिरिक्त कार्यसूची प्राप्त करें।

The **72th** meeting of Northern Regional Power Committee (**NRPC**) will be held on **30.03.2024 (09:30 AM)** at Lucknow, Uttar Pradesh. NRPC meeting shall be preceded by **49th** meeting of Technical Co-ordination Committee (**TCC**) on **29.03.2024 (09:30 AM)** at the same venue. Agenda was issued vide letter dated 20.03.2024. Additional agenda for the same may be found attached.

भवदीय
Yours faithfully

Signed by (Vijay Kumar Singh)
Date: 27-03-2024 18:45:28
Reason: Approved

(वी.के. सिंह)
(V.K. Singh)
सदस्य सचिव
Member Secretary

प्रतिलिपि: एमडी, एचवीपीएनएल एवं अध्यक्ष, एनआरपीसी) md@hvpn.org.in)

सत्यमेव जयते

उत्तर क्षेत्रीय विद्युत समिति
NORTHERN REGIONAL POWER COMMITTEE

Additional agenda of the

49th meeting of

Technical Co-ordination Committee &
72th meeting of

Northern Regional Power Committee

Date: 29th & 30th March 2024

Time: 09:30 AM

Venue: Hyatt Regency Lucknow

Regency Rd, Vibhuti Khand, Gomti Nagar, Lucknow,

Uttar Pradesh 226010

Contents

Additional agenda for TCC meeting

AA.1 Exclusion of the quantum of 7MW of Northern Railways from the GNA Quantum of Haryana for the purpose of billing inter-state transmission charges by CTUIL (agenda by HPPC)

AA.1.1 CERC has notified the (Connectivity and General Network Access to the interstate Transmission System) Regulation, 2022 on 07th June 2022. Further, as per notification dated 03rd August 2023, the date of implementation of GNA regulations 2022 was notified as 01st October 2023.

AA.1.2 As per clause 18.1 (e) of the GNA Regulations 2022, SLDCs were required to intimate the segregation of deemed GNA which is reproduced below:

"GNA deemed to have been granted to STU under clause(d) of this Regulation, shall be segregated for each intra-State entity, including distribution licensee, by the respective SLDC, and intimated to STU, Nodal Agency and NLDC within 1 month of publication of details by the Nodal Agency under clause (d) of this Regulation.

Provided that in case an SLDC fails to provide such segregation, the pro rata GNA shall be allocated to each intra-State entity in the ratio of their Long-Term Access and Medium-Term Open Access, as included in the first bill raised in the previous month under the sharing Regulations"

AA.1.3 Accordingly, GRID-INDIA(CTUIL) vide letter dated 19.09.2023 requested all SLDCs to furnish the segregation of GNA granted to respective STUs for each intra-state entity to NLDC.

AA.1.4 In response HVPNL vide email dated 30.09.2022 furnished the segregation of GNA granted as under:

Name of entity	Total GNA	GNA within the region	GNA outside the region
Haryana Total GNA	5418	3065	2353
HPPC on behalf of Haryana DISCOMs	5343	3065	2278

Northern Railways	75	0	75

(All figures in MN)

AA.1.5 However, in the GNA bill raised by CTUIL for the billing period October, November December 2023 and January 2024 the share of Northern Railways is considered as 68 MW instead of 75 MW leading to additional financial implication corresponding to 07 MW on Haryana Discoms.

AA.1.6 In view of the above, NRPC may issue direction to CTUIL for correction of GNA in respect of Haryana Discoms and railways & refund the excess amount billed and paid by Haryana Discoms at the earliest.

Decision required from Forum

Members may deliberate.

AA.2 Commissioning work of Tehri PSP and its impact on operation of Tehri HPP and Koteshwar HEP (agenda by THDCIL)

AA.2.1 The Civil, EM & HM works of Tehri PSP is in full swing and as per the present pace of work, the likely commissioning date of 1st Unit is July-2024. However, before commissioning of Tehri PSP, the following river joining works are required to be completed:

- Two nos. baffle walls are required to be constructed to avoid the entry of debris etc in the water conductor system of PSP from TRT side during Pumping Mode of operation. The location of the proposed baffle wall is as below:
  - U/s of HPP TRT from EL.600.00m to El.607.00m.
  - U/s of PSP TRT from EL.597.00m to El.603.00m.
- During operation of HPP & KHEP, the water level is generally above El.603.00m. Hence, the above two nos Baffle wall cannot be constructed without partial & complete shutdown of HPP & KHEP.
- The adjacent rock condition of river valley near U/s of PSP TRT area is filled with loose materials & required to be protected before operation of PSP. Further, the proposed approach road for the treatment (left & right bank) is required upto EL.597.00m. Hence, to take up the work of slope protection with construction of

approach road for baffle wall & as well as for slope protection works, the proposed partial & complete shutdown of HPP & KHEP is required.

- The existing Flood protection wall at PSP TRT outfall area (from El.616.00m to El.597.00m) is required to be removed before operation of PSP and subsequently raft at EL. 598.00m and U/s & D/s guide walls upto El.616.00m are required to be constructed.

AA.2.2 In order to complete the above work, the following nature of shutdown of Tehri HPP & Koteshwer HEP is required:

a. Partial Shutdown (THPP & KHEP): 1st April-24 to 14th May-24.

b. Complete Shutdown (THPP & KHEP): 15th May-24 to 30th Jun-24.

AA.2.3 The schedule of the activities from 1st April-24 to 30th Jun-2024 is placed at **Annexure-1.** Further, detailed proposed works of Tehri PSP to be carried out is attached as **Annexure-2.**

Decision required from Forum

Members may deliberate.

AA.3 **Supply & Installation of AMR Compatible ISTS Interface Energy Meters along with AMR (Automatic Meter Reading) System under the scheme "5 min Interface Energy Meter along with AMR system"-For all five regions as PAN India level (agenda by CTUIL)**

AA.3.1 A Joint Committee (JC) comprising the members from each RPC, CEA, CTU/PGCIL & POSOCO has been prepared Technical Specifications (TS) of the "5/15 Minute Interface Energy Meters (IEMs) with Automatic Meter Reading (AMR) and Meter Data Processing (MDP)" for interstate transmission system at PAN India basis. NPC Division, CEA vide letter dated 6th July 2022 had circulated the final copy of the TS. This Technical specification includes:

- All the procured IEMs shall be configured as 5 min time block. These meters shall record and send 5 min block data to regional AMR system for necessary

computation to convert 5 min Time Block data to 15 min Time block data (in line with regulations).

- Provision of 1 min instantaneous MW power flow data from IEMs to SLDC, for viewing purpose.

AA.3.2 In view of above for making the system future ready for 5 min Time Block, while also complying the present regulations for 15 min time block for Scheduling, Accounting, Metering & Settlement; JC TS is being adopted for the above-mentioned project proposal as following:

S.No.	Items	Details
1.	Name of Scheme	Supply and installation of AMR compatible 5 min Interface Energy Meter along with AMR Systems- For all five regions NER, ER, NR, WR & SR.as PAN India.
2.	Scope of the scheme	a.i.1. Supply of AMR compatible 5 min Interface Energy Meters for all ISTS metering points of All five regions, a.i.2. Installation of new AMR compatible IEMs by replacing existing meters in case of existing points and for newly added metering points. (Replacement work & New Installation work) a.i.3. Supply and installation of AMR systems in dual LAN configuration at central location along with DCU, Ethernet Switch and other accessories at substation end and AMR software along with servers, consoles, historian software, database, printer, firewall, furniture, etc. at RLDC end to receive 5 min load profile data in auto mode. a.i.4. Provision of streaming online instantaneous MW data at a user configurable rate (minimum 1 min) via AMR system for viewing purpose. a.i.5. AMC includes Operations & Maintenance work (including data processing & report generation from AMR) for complete AMR system for 7 years. a.i.6. On line Data storage of Raw Data &

S.No.	Items	Details
		processed data for three years. The complete scope of IEM & AMR scheme shall be broadly in line with the Technical Specification (Section 1 & 2 of Part 1) circulated by NPC Division, CEA vide letter dtd. 6th July 2022. *Note: MDP system which is also part of the above TS mentioned shall be implemented by SRLDC/POSOCO and would match the timeline schedule with IEM & AMR project.*
3.	Objective / Justification	For Indian Power system, commercial settlements of energy generation and consumption are being computed through Availability Based Tariff (ABT) and Deviation Settlement Mechanism (DSM) which are in vogue for energy accounting. Availability Based Tariff was implemented in India in 2002/2003 considering the settlement period as 15-min. Government of India (GoI) has set a Renewable Energy (RE) target of 500 GW by 2030. In the last few years approximately since a decade, the need for implementing 5-minute meters along with AMR system for regional energy accounting and settlement at the Inter State level has been discussed and deliberated in various apex level forums & Committees. A PAN India pilot project on 5-minute metering was implemented as per the directive from Hon'ble CERC in 2018. A report on the pilot project covering implementation aspects, challenges and suggested way forward has been submitted by POSOCO for perusal of the Hon'ble Commission This issue was discussed in OCC/TCC/RPC meetings at regional level and it was discussed to replace the existing SEMs (15-min Block) with AMR compatible Interface Energy Meters (5-min Block) and implementation of Automated Meter Reading (AMR) and Meter Data Processing (MDP) system for efficient and faster accounting. Moreover, there is a need expressed by States to get streaming online instantaneous MW data at a user configurable rate (minimum 1 min) at SLDCs via AMR system for viewing purpose to manage their drawl. A Joint Committee (JC) comprising the members from each RPC, CEA, CTU/PGCIL & POSOCO has been prepared Technical Specifications (TS) of the "5/15 Minute Interface Energy Meters (IEMs) with Automatic Meter Reading (AMR) and Meter Data Processing

S.No.	Items	Details
		(MDP)" for interstate transmission system at PAN India basis. NPC Division, CEA vide letter dated 6th July 2022 had circulated the final copy of the TS. This Technical specification includes: • All the procured IEMs shall be configured as 5 min time block. These meters shall record and send 5 min block data to regional AMR system for necessary computation to convert 5 min Time Block data to 15 min Time block data (in line with regulations). • Provision of 1 min instantaneous MW power flow data from IEMs to SLDC, for viewing purpose. CTUIL sent a letter dtd. 27.06.2023 to CERC (attached as **Annexure-3**) stating that nodal agency for AMR system implementation may be identified. CTUIL also informed NPC division, CEA vide letter dtd. 24.07.2023 (attached as **Annexure-4**) that JC TS calls for 5 min Time block recording by ISTS IEMs whereas as per CEA metering regulation it is 15 min time block. In this regard, Grid-India NLDC specified to NPC, CEA that 5-minute time block could be considered for procurement of new ISTS IEM, AMR & MDP (attached as **Annexure-5**). Subsequently NPC CEA, coordinated a joint meeting (mail attached as **Annexure-6**) amongst the stakeholders comprising of CERC, Grid India (NLDC, RLDCs) & CTUIL, chaired by CEA Regulatory division dated 18th August'23 to check the feasibility for amendment of the CEA metering regulation in line with the ongoing developments and requirements of 5 min time block recording in IEMs. In view of the above mentioned system requirement of 5 min Time Block, while also complying the present regulations for 15 min time block for Scheduling, Accounting, Metering & Settlement; JC TS is being adopted for the above mentioned project proposal.
4.	Deliberations in RPCs	The scheme was discussed in all the RPCs and the status is as below: Scheme is approved in SRPC if 50% fund is available from PSDF(July'23). Scheme is in principle approved in NERPC (June'23) and WRPC (Feb'2023) as well. Funding status to be updated to the forums. For NRPC- In 48th Commercial (Jan'24) Sub-Committee, M/s NRPC directed to take up the agenda

S.No.	Items	Details
		in next NRPC meeting for approval. For ERPC- A special meeting was proposed in 47th TCC- Nov'22 meeting to deliberate the project in detail in line with the life of the existing AMR system, which is going to be ended on 31st March 2026. Project Cost was informed to all RPCs during Year 2022/23,
5.	Estimated DPR Cost	Rs. 444.87 Cr. excluding AMC & Rs 152.62 Cr. for 7 yr AMC *Costing to be updated considering latest no. of meters and locations at the time of tendering.
6.	Implementation timeframe	Approx. 24 months from gazette Notification.
7.	Implementation Mode	To be deliberated

AA.3.3 Grant from PSDF for the FY 24-25 is not available as per MoP order. Accordingly, the funding is also to be deliberated. Earlier 90% of the project cost was allocated for grant.

AA.3.4 Implementation mode for the project is also to be deliberated by the forum.

Decision required from Forum

Members may deliberate.

AA.4 **Transmission scheme for evacuation of power from Ratle HEP (850MW) (agenda by CTUIL)**

AA.4.1 System Study for evolution of the proposal on was discussed and agreed in 26th CMETS-NR meeting held on 20.12.23 and 28th CMETS-NR meeting held on 27.03.24.

AA.4.2 The estimated cost is Rs. 1450 Cr. (Approx) (Rs 1.7 Cr./MW).

AA.4.3 Further, the detailed transmission scheme for evacuation of power from Ratle HEP (850MW) is attached as **Annexure-7.**

Decision required from Forum

Forum may deliberate above proposal of CTU and may approve accordingly

AA.5 Transmission system for evacuation of power from Fatehgarh/Barmer Complex as part of Rajasthan REZ Ph-IV (Part-4 :3.5GW) (agenda by CTUIL)

AA.5.1 Transmission system for evacuation of power from Fatehgarh/Barmer Complex as part of Rajasthan REZ Ph-IV (Part-4 :3.5GW) was agreed in 27th CMETS-NR meeting held on 10.01.24. The transmission scheme was discussed and technically approved in the 71st NRPC meeting held on 29.01.24 and recommended to NCT.

AA.5.2 Further, Line lengths of some of the transmission lines are modified w.r.t new location of Barmer-I PS and review of line lengths in Gati Shakti portal. Accordingly reactive compensation of some of the lines is also modified. Details in this regard are as under:

S.No.	Agreed Scope as per 27th CMETS-NR	Modified Scope
1	Barmer-I PS – Merta-II 765 kV D/c line along with 240 MVAr switchable line reactor at Barmer-I PS end and 330MVAr switchable line reactor at Merta-II PS end for each circuit of Barmer-I PS – Merta-II 765 kV D/c line (~320 km)	Barmer-I PS – Merta-II 765 kV D/c line along with 330 MVAr switchable line reactor for each circuit at each end of Barmer-I PS – Merta-II 765 kV D/c line (~345 km) 110MVAr spare reactor unit at Barmer-I PS (single phase)
2	Dausa - Ghiror 765 kV D/c line along with 240 MVAr switchable line reactor for each circuit at each end of Dausa - Ghiror 765 kV D/c line (~285 km)	Dausa - Ghiror 765 kV D/c line along with 330MVAr switchable line reactor at Ghiror end and 240 MVAr switchable line reactor at Dausa end for each circuit of Dausa - Ghiror 765 kV D/c line (~305 km) 110MVAr spare reactor unit at Ghiror S/s (single phase)

AA.5.3 Further, LILO of one ckt of 765kV Agra (PG) – Fatehpur (PG) 765kV D/c line at Ghiror along with 240 MVAr switchable line reactor at Ghiror S/s end of 765 kV Ghiror -Fatehpur line may be considered as LILO of one ckt of 765kV Agra (PG) – Fatehpur (PG) 2xS/c line at Ghiror along with 240 MVAr switchable line reactor at Ghiror S/s end of 765 kV Ghiror -Fatehpur line.

AA.5.4 The above modifications were agreed in 28th CMETS-NR meeting held on 27.03.24.

Decision required from Forum

Member may kindly note

List of addressee (via mail)

NRPC Members for FY 2023-24

S. No.	NRPC Member	Category	Nominated/ Notified/Delegated Member	E-mail
1	Member (GO&D), CEA	Member (Grid Operation & Distribution), Central Electricity Authority (CEA)	Member (GO&D), CEA	member.god@cea.nic.in
2	Member (PS), CEA	Nodal Agency appointed by the Government of India for coordinating cross-border power transactions	Member (PS), CEA	memberpscea@nic.in
3	CTUIL	Central Transmission Utility	Chief Operating Officer	pcgarg@powergrid.in
4	PGCIL	Central Government owned Transmission Company	Director (Operations)	tyagir@powergrid.in
5	NLDC	National Load Despatch Centre	Executive Director	scsaxena@grid-india.in
6	NRLDC	Northern Regional Load Despatch Centre	Executive Director	nroy@grid-india.in
7	NTPC	Central Generating Company	Director (Finance)	jaikumar@ntpc.co.in
8	BBMB		Chairman	cman@bbmb.nic.in
9	THDC		CGM (EM-Design)	akghildiyal@thdc.co.in
10	SJVN		CMD	sectt.cmd@sjvn.nic.in
11	NHPC		Director (Technical)	rajkumar0610.rkc@gmail.com
12	NPCIL		Director (Finance)	df@npcil.co.in
13	Delhi SLDC	State Load Despatch Centre	General Manager	gmsldc@delhisldc.org
14	Haryana SLDC		Chief Engineer (SO&C)	cesocomml@hvpn.org.in
15	Rajasthan SLDC		Chief Engineer (LD)	ce.ld@rvpn.co.in
16	Uttar Pradesh SLDC		Director	directorsldc@upsldc.org
17	Uttarakhand SLDC		Chief Engineer	anupam_singh@ptcul.org
18	Punjab SLDC		Chief Engineer	ce-sldc@punjabsldc.org
19	Himachal Pradesh SLDC		Managing Director	mdhpsldc@gmail.com
20	DTL	State Transmission Utility	CMD	cmd@dtl.gov.in
21	HVPNL		Managing Director	md@hvpn.org.in
22	RRVPNL		CMD	cmd.rvpn@rvpn.co.in
23	UPPTCL		Managing Director	md@upptcl.org
24	PTCUL		Managing Director	md@ptcul.org
25	PSTCL		CMD	cmd@pstcl.org
26	HPPTCL		Managing Director	md.tcl@hpmail.in
27	IPGCL	State Generating Company	Managing Director	md.ipgpp@nic.in
28	HPGCL		Managing Director	md@hpgcl.org.in
29	RRVUNL		CMD	cmd@rrvun.com
30	UPRVUNL		Director (Technical)	director.technical@uprvunl.org
31	UJVNL		Managing Director	mdujvnl@ujvnl.com
32	HPPCL		Managing Director	md@hppcl.in
33	PSPCL	State Generating Company & State owned Distribution Company	CMD	cmd-pspcl@pspcl.in
34	DHBVN	State owned Distribution Company (alphabetical rotaional basis/nominated by state govt.)	Director (Projects)	directorprojects@dhbvn.org.in
35	Jaipur Vidyut Vitran Nigam Ltd.		Managing Director	md@jvvnl.org
36	Madhyanchal Vidyut Vitaran Nigam Ltd.		Managing Director	mdmvvnl@gmail.com
37	UPCL		Managing Director	md@upcl.org
38	HPSEB		Managing Director	md@hpseb.in
39	Prayagraj Power Generation Co. Ltd.	IPP having more than 1000 MW installed capacity	Head (Commercial & Regulatory)	sanjay.bhargava@tatapower.com
40	Aravali Power Company Pvt. Ltd		CEO	SRBODANKI@NTPC.CO.IN
41	Apraava Energy Private Limited		CEO	rajneesh.setia@apraava.com
42	Talwandi Sabo Power Ltd.		COO	Vibhav.Agarwal@vedanta.co.in
43	Nabha Power Limited		CEO	sk.narang@larsentoubro.com
44	Lanco Anpara Power Ltd		President	sudheer.kothapalli@meilanparapower.com
45	Rosa Power Supply Company Ltd		Station Director	Hirday.tomar@relianceada.com
46	Lalitpur Power Generation Company Ltd		Managing Director	vksbankoti@bajajenergy.com
47	MEJA Urja Nigam Ltd.		CEO	hopmeja@ntpc.co.in
48	Adani Power Rajasthan Limited		COO, Thermal, O&M	jayadeb.nanda@adani.com
49	JSW Energy Ltd. (KWHEP)		Head Regulatory & Power Sales	jyotiprakash.panda@jsw.in
50	RENEW POWER	IPP having less than 1000 MW installed capacity (alphabetical rotaional basis)	CEO	sumant@renew.com
51	UT of J&K	From each of the Union Territories in the region, a representative nominated by the administration of the Union Territory concerned out of the entities engaged in generation/ transmission/ distribution of electricity in the Union Territory.	Chief Engineer, JKSPDCL/JKPDD	sojpdd@gmail.com/ cejkpcl2@gmail.com
52	UT of Ladakh		Chief Engineer, LPDD	cepdladakh@gmail.com
53	UT of Chandigarh		Executive Engineer, EWEDC	elop2-chd@nic.in
54	BYPL	Private Distribution Company in region (alphabetical rotaional basis)	CEO	Amarjeet.Sheoran@relianceada.com
55	Bikaner Khetri Transmission Limited	Private transmission licensee (nominated by cetral govt.)	Vice-President	nihar.raj@adani.com
56	Adani Enterprises	Electricity Trader (nominated by central govt.)	Head Power Sales & Trading	anshul.garg@adani.com
57	Ajmer Vidyut Vitran Nigam Ltd.	Special Invitee	Managing Director	md.avvnl@rajasthan.gov.in

Special Invitees:

RE Holding companies in NR with installed capacity of more than 1000 MW (provsional members as decided in 59th NRPC meeting)

List of addressee (via mail)

TCC Members for FY 2023-24

S. No.	TCC Member	Category	Nominated/ Notified/Delegated Member	E-mail
1	Director (Projects), HVPNL	Chairperson, TCC		directorprojects@hvpn.org.in
2	Member (GO&D), CEA	Member (Grid Operation & Distribution), Central Electricity Authority (CEA)	Chief engineer(GM Division)	cegm-cea@gov.in
3	Member (PS), CEA	Nodal Agency appointed by the Government of India for coordinating cross-border power transactions	Chief Engineer, PSPA-I Division	i.sharan@nic.in
4	CTUIL	Central Transmission Utility	Dy Chief Operating Officer	ashok@powergrid.in
5	PGCIL	Central Government owned Transmission Company	ED, NR-I	akmishra2@powergrid.in
6	NLDC	National Load Despatch Centre		nomination awaited
7	NRLDC	Northern Regional Load Despatch Centre	Executive Director	nroy@grid-india.in
8	NTPC	Central Generating Company	Regional ED, NR	rednr@ntpc.co.in
9	BBMB		Member (Power)	mp@bbmb.nic.in
10	THDC		GM (EMD)	neerajverma@thdc.co.in
11	SJVN		Director (Projects)	de.sectt@sjvn.nic.in
12	NHPC		ED (O&M)	hod-om-co@nhpc.nic.in
13	NPCIL		Outstanding Scientist & ED (commercial)	nrchoudhary@npcil.co.in
14	Delhi SLDC	State Load Despatch Centre		nomination awaited
15	Haryana SLDC		Chief Engineer/SO & Comml.	cesocomml@hvpn.org.in
16	Rajasthan SLDC			nomination awaited
17	Uttar Pradesh SLDC		Chief Engineer	cepso@upsldc.org
18	Uttarakhand SLDC			nomination awaited
19	Punjab SLDC		Chief Engineer	ce-sldc@pstcl.org
20	Himachal Pradesh SLDC			nomination awaited
21	DTL	State Transmission Utility	Director (Operation)	dir.opr@dtl.gov.in
22	HVPNL		Chief Engineer/SO & Comml.	cesocomml@hvpn.org.in
23	RRVPNL		Chief Engineer (PP&D)	ce.ppm@rvpn.co.in
24	UPPTCL		Director (Planning & Commercial)	director_comm@upptcl.org
25	PTCUL		Chief Engineer	ce_oandmk@ptcul.org
26	PSTCL		Director / Technical	dir-tech@pstcl.org
27	HPPTCL		GM (C&D)	gmcd.tcl@hpmail.in
28	IPGCL	State Generating Company	Director(Tech.)	corporate.ppcl@gmail.com
29	HPGCL		Director/Technical	dirtech@hpgcl.org.in
30	RRVUNL		Dy. Chief Engineer	dyce.elect.katpp@rrvun.com
31	UPRVUNL		Director (Technical)	director.technical@uprvunl.org
32	UJVNL		General Manager	kkjaiswal99@gmail.com
33	HPPCL		rector (Electrical) General Manager(Electric	dir_elect@hppcl.in gm_elect@hppcl.in
34	PSPCL	State Generating Company & State owned Distribution Company		nomination awaited
35	DHBVN	State owned Distribution Company (alphabetical rotaional basis/nominated by state govt.)	Director (Operation)	directoroperations@dhbvn.org.in
36	Jaipur Vidyut Vitran Nigam Ltd.		Director (Technical)	dirtechnical@jvvnl.org
37	Madhyanchal Vidyut Vitaran Nigam Ltd.			nomination awaited
38	UPCL		Director (P)	dpupcl29@gmail.com
39	HPSEB			nomination awaited
40	Prayagraj Power Generation Co. Ltd.	IPP having more than 1000 MW installed capacity	Head – Commercial & Regulatory	Sanjay.bhargava@tatapower.com
41	Aravali Power Company Pvt. Ltd		GM (O&M)	sanjayasati@ntpc.co.in
42	Apraava Energy Private Limited			nomination awaited
43	Talwandi Sabo Power Ltd.		Dy. Head O&M	ravinder.thakur@vedanta.co.in
44	Nabha Power Limited			nomination awaited
45	Lanco Anpara Power Ltd			nomination awaited
46	Rosa Power Supply Company Ltd		VP-Technical Services	Niranjan.Jena@relianceada.com
47	Lalitpur Power Generation Company Ltd		President	rnbedi.ltp@lpgcl.com
48	MEJA Urja Nigam Ltd.		GM (O&M)	piyushkumar@ntpc.co.in
49	Adani Power Rajasthan Limited		AVP	Manoj.taunk@adani.com
50	JSW Energy Ltd. (KWHEP)		Head of Plant	kaushik.maulik@jsw.in
51	RENEW POWER	IPP having less than 1000 MW installed capacity (alphabetical rotaional basis)		nomination awaited
52	UT of J&K	From each of the Union Territories in the region, a representative nominated by the administration of the Union Territory concerned out of the entities engaged in generation/ transmission/ distribution of electricity in the Union Territory.		nomination awaited
53	UT of Ladakh			nomination awaited
54	UT of Chandigarh			nomination awaited
55	BYPL	Private Distribution Company in region (alphabetical rotaional basis)	VP	Jitendra.nalwaya@relianceada.com
56	Bikaner Khetri Transmission Limited	Private transmission licensee (nominated by cetral govt.)	Associate Vice President- O&M	nitesh.ranjan@adani.com
57	Adani Enterprises	Electricity Trader (nominated by central govt.)	Manager	mayursinhd.gohil@adani.com
58	Ajmer Vidyut Vitran Nigam Ltd.	Special Invitee	Director (Technical)	DT.AVVNL@RAJASTHAN.GOV.IN

Special Invitees:

1. Shri. Chowna Mein, Hon'ble Dy. Chief Minister and I/C Power, Govt. of Arunachal Pradesh, Block No.2, 5th Floor, A.P. Civil Secretariat, Itangar-791111. [Email: chowna.mein@gov.in]Tel -03602212671
2. Shri Ginko Lingi, Chairman, TCC, NERPC & Chief Engineer (P), TPMZ , Department of Power, Govt. of Arunachal Pradesh, Vidyut Bhawan, zero Point, Itanagar-791111. [Email: ginko.lingi@gmail.com] Tel -9612153184
3. Shri K Vijayanand, Chairperson, SRPC, Chairman & Managing Director , Transmission Corporation of Andhra Pradesh Limited, Vidyut Soudha, Gunadala, Eluru Rd, Vijayawada, Andhra Pradesh 520004. [Email: cmd.aptransco@aptrandco.in ; vjanand@nic.in] Tel -08662429201
4. Shri AKV Bhaskar, Chairperson TCC, SRPC, Director (Trasmission & Grid Management), Transmission Corporation of Andhra Pradesh Limited, Vidyut Soudha, Gunadala,Eluru Rd, Vijayawada, Andhra Pradesh 520004. [Email: kannanvenkatabhaskar.angulabharanam@aptransco.co.in] Tel -.08662429209
5. Sri Nikunja Bihari Dhal, IAS, Chairman, ERPC, Additional Chief Secretary to Govt., Department of Energy, Govt. of Odisha, Bhubaneswar. [Email-chairman@gridco.co.in] Tel -06742540098
6. Shri Trilochan Panda, Managing Director, GRIDCO, Chairperson TCC, ERPC, GRIDCO Limited, Regd. Office: Janpath, Bhubaneswar – 751022. Tel -06742540877 [Email- md@gridco.co.in]
7. Shri Sanjay Dubey, Chairman, WRPC & Principal Secretary(Energy), GoMP, VB-2, Vallabh Bhawan Annex, Mantralay, Bhopal: 462 001 (M.P.), Email: psenergyn@gmail.com, Tel. 0755-2708031
8. Shri Raghuraj Rajendran, Chairman-TCC, WRPC & Managing Director MPPMCL, Block No-15, Shakti Bhawan, Vidyut Nagar, Rampur, Jabalpur-482008. [Email-mdofmppmcl@gmail.com]
9. Smt. Rishika Saran, Member Secretary, NPC, Sewa Bhawan, R. K. Puram, New Delhi-66 [Email-cenpc-cea@gov.in]
10. Shri Deepak Kumar, Member Secretary, WRPC, Plot No- F-3, MIDC Area, Marol, Opp. SEEPZ, Central Road, Andheri (East), Mumbai-40093.[email: ms-wrpc@nic.in] Tel - 02228221636
11. Shri Asit Singh, Member Secretary, SRPC, No.29, Race Course Cross Road, Bengaluru-560009. [Email: mssrpc-ka@nic.in] Tel -08022287205/9449047107
12. Shri N.S. Mondal, Member Secretary, ERPC,14,Golf Club Road, ERPC Building, Tollygunje,Kolkata-700033. [Email: mserpc-power@nic.in]- Tel 03324239651/9958389967
13. Shri K B Jagtap, Member Secretary, NERPC, NERPC Complex, Dong Parmaw, Lapalang, Shillong-793006. [Email: ms-nerpc@gov.in] Tel -03642534077/ 8652776033

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Annexure-1

S. No.	Task Name	Total Scope		Start Date	Likely Completion Date	Partial Shutdown						Complete Shutdown					
						Apr'24				May'24				Jun'24			
		Unit	Qty.			W-1	W-2	W-3	W-4	W-1	W-2	W-3	W-4	W-1	W-2	W-3	W-4
1	**Work during Partial Shutdown Period (1st April 24 to 15th May 24)**																
A.	**Balance work of BAFFLE WALL CONSTRUCTION AT HPP – TRT OUTLET**																
1	Construction of approach road up to El.611.00m	Rm	70.0	4/1/2024	4/20/2024	40	30										
2	Upstream and downstream ramp construction	Cum	2450	4/1/2024	5/15/2024	300	350	400	400	500	500						
3	Drilling and Grouting at center portion of baffle wall	Rm	280	4/1/2024	5/15/2024	45	45	45	45	45	55						
4	Partial Micro piling work in front of 3A & 3B.	Nos	58	4/1/2024	5/15/2024		18		22		18						
5	Slope Protection work (Left Bank)	Sqm	2640	4/1/2024	5/15/2024	440	440	440	440	440	440						
6	Slope Protection work (Right Bank)	Sqm	1110	4/1/2024	5/15/2024	185	185	185	185	185	185						
B.	**Approach road construction PSP – TRT OUTLET**																
1	Construction of access road upto Baffle wall at EL 603.0m.	Rm	90	4/15/2024	5/6/2024			30	30	30							
C. a	**TRT OUTFALL –** Breaking of Flood Protection Wall upto EL 609.00m	Cum	8000	4/1/2024	5/15/2024	1000	1000	1500	1500	1500	1500						
b.	Extension of raft (Upto EL 598.50m)	Cum	450	4/15/2024	5/7/2024			200		250							
C.	Curtain Grouting from EL 598.00 m			4/24/2024	5/14/2024				200	200	200						
2	**Work during Complete Shutdown Period (16th May'24 to 30th June'24)**																
	WORKS OF TRT OUTFALL																
1	The entire dismantling of FPW from EL 609.00m to EL 596.50m.	Cum	19000	5/16/2024	6/30/2024							1500	1500	4000	4000	4000	4000
2	Extension of approach from baffle wall to flood protection wall at EL 598m.	RM	20	5/16/2024	5/30/2024							10	10				
3	Balance micro piling (200 Nos Approx.)	Nos	70	5/25/2024	6/15/2024								22	24	24		
4	Extension of raft (Upto EL 598.50m)	Cum	650	5/16/2024	6/24/2024							200		250	200	200	
5	Extension of U/s & D/s Guide wall up to river. (about 30m each from EL 598m to EL616m)	Cum	800	5/16/2024	6/30/2024										250	250	300
6	Construction of access road at left bank, reaching up to the River bank	RM	60	5/16/2024	6/30/2024							10	10	10	10	10	10
7	BAFFLE WALL,Construction of access road from El 603.0m to EL598.0m & RAMP CONSTRUCTION PSP – TRT OUTLET	Cum	2970	5/16/2024	6/30/2024							470	500	500	500	500	500
8	Concrete in U/S and D/s Guide wall extension	Cum	800	6/8/2024	6/30/2024										250	250	300
9	Curtain Grouting from EL 598.00 m	RM	1400	5/16/2024	6/30/2024							200	200	250	250	250	250
10	Slope Protection work (Left Bank)	Sqm	2640	5/16/2024	6/30/2024							440	440	440	440	440	440
11	Slope Protection work (Right Bank)	Sqm	1110	5/16/2024	6/30/2024							185	185	185	185	185	185

Annexure-2

RIVER JOINING WORKS OF TEHRI PSP (4x250 MW)

(Considering partial shutdown from 01.04.2024 to 15.05.2024 and Complete shutdown from16.05.2024 to 30.06.2024)

Why Partial & Complete shutdown is required?

- Two nos baffle walls are required to be constructed to avoid the entry of debris etc in the water conductor system of PSP from TRT side during Pumping Mode of operation. The location of the proposed baffle wall is as below:

  U/s of HPP TRT from EL.600.00m to El.607.00m.

  U/s of PSP TRT from EL.597.00m to El.603.00m.

During operation of HPP & KHEP, the water level is generally above El.603.00m. Hence, the above two nos Baffle wall cannot be constructed without partial & complete shutdown of HPP & KHEP.

- The adjacent rock condition of river valley near U/s of PSP TRT area is filled with loose materials & required to be protected before operation of PSP. Further, the proposed approach road for the treatment (left & right bank) is upto EL.597.00m. Hence, to take up the work of slope protection with construction of approach road for baffle wall & as well as for slope protection works, the proposed partial & complete shutdown of HPP & KHEP is required.

- The existing Flood protection wall at PSP TRT outfall area (from El.616.00m to El.597.00m) is required to be removed before operation of PSP and subsequently raft at EL. 598.00m and U/s & D/s guide walls upto El.616.00m are required to be constructed.

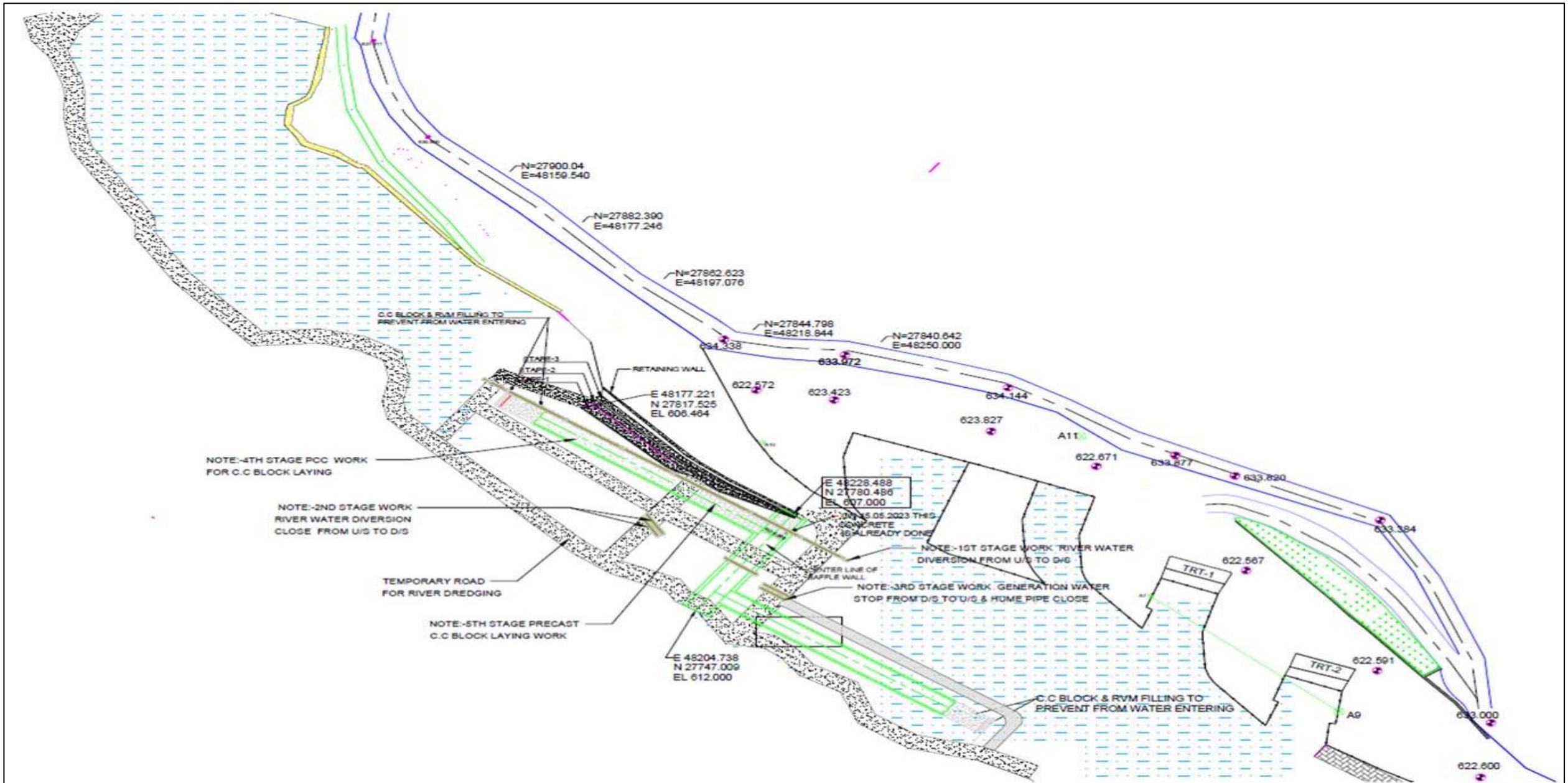
Requirement of partial & complete shutdown of Tehri HPP & KHEP

- *Partial Shutdown (THPP & KHEP): 1st April-24 to 14th May-24.*
- *Complete Shutdown(THPP & KHEP): 15th May-24 to 30th Jun-24.*

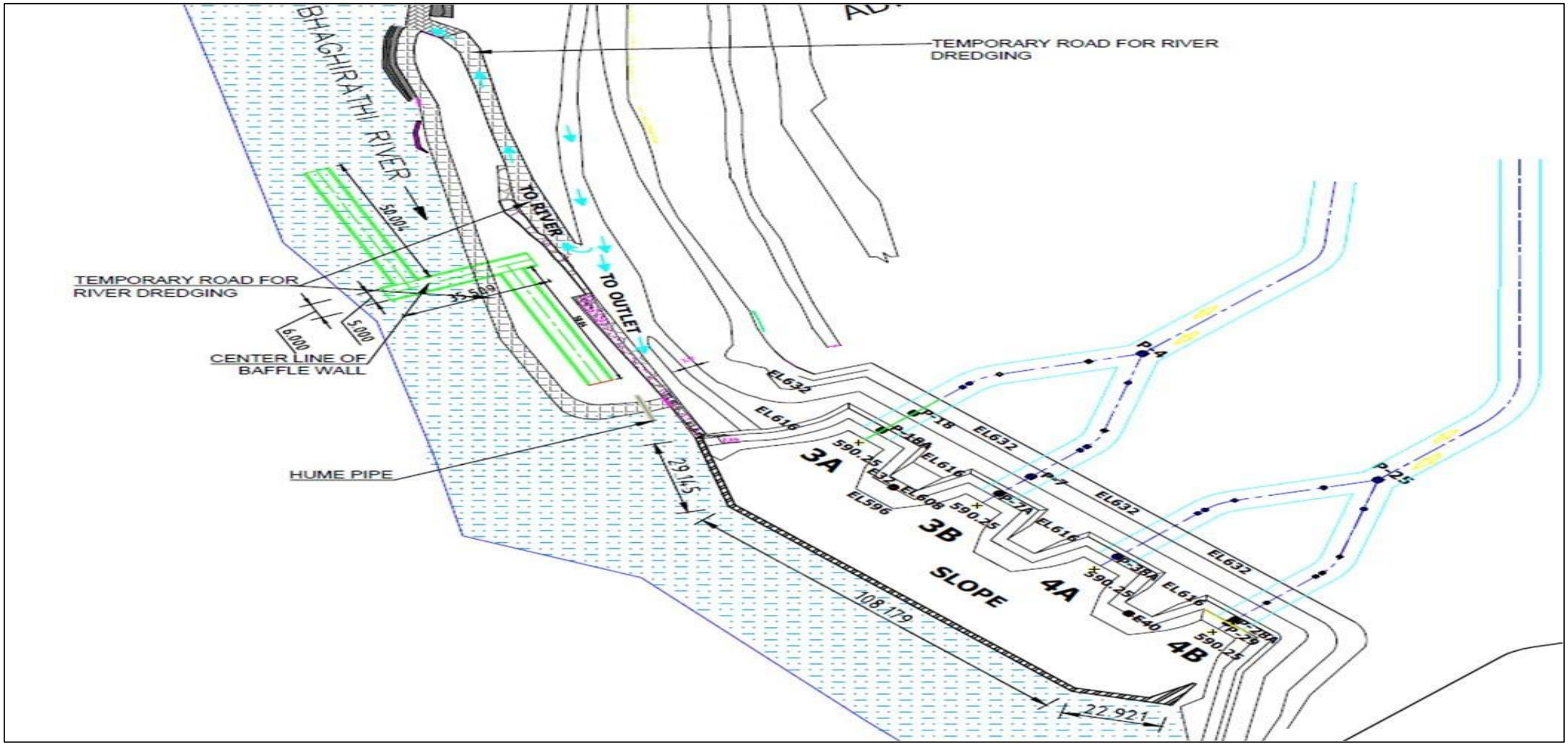
S. No.	Task Name	Total Scope		Start Date	Likely Completion Date	Partial Shutdown						Complete Shutdown					
						Apr'24				May'24				Jun'24			
		Unit	Qty.			W-1	W-2	W-3	W-4	W-1	W-2	W-3	W-4	W-1	W-2	W-3	W-4
1	**Work during Partial Shutdown Period (1st April 24 to 15th May 24)**																
A.	**Balance work of BAFFLE WALL CONSTRUCTION AT HPP – TRT OUTLET**																
1	Construction of approach road up to El.611.00m	Rm	70.0	01-04-2024	20-04-2024	40	30										
2	Upstream and downstream ramp construction	Cum	2450	01-04-2024	15-05-2024	300	350	400	400	500	500						
3	Drilling and Grouting at center portion of baffle wall	Rm	280	01-04-2024	15-05-2024	45	45	45	45	45	55						
4	Partial Micro piling work in front of 3A & 3B.	Nos	58	01-04-2024	15-05-2024		18		22		18						
5	Slope Protection work (Left Bank)	Sqm	2640	01-04-2024	15-05-2024	440	440	440	440	440	440						
6	Slope Protection work (Right Bank)	Sqm	1110	01-04-2024	15-05-2024	185	185	185	185	185	185						
B.	**Approach road construction PSP – TRT OUTLET**																
1	Construction of access road upto Baffle wall at EL 603.0m.	Rm	90	15-04-2024	06-05-2024			30	30	30							
C. a	**TRT OUTFALL –** Breaking of Flood Protection Wall upto EL 609.00m	Cum	8000	01-04-2024	15-05-2024	1000	1000	1500	1500	1500	1500						
b.	Extension of raft (Upto EL 598.50m)	Cum	450	15-04-2024	07-05-2024			200		250							
C.	Curtain Grouting from EL 598.00 m			24-04-2024	14-05-2024				200	200	200						
2	**Work during Complete Shutdown Period (16th May'24 to 30th June'24)**																
	WORKS OF TRT OUTFALL																
1	The entire dismantling of FPW from EL 609.00m to EL 596.50m.	Cum	19000	16-05-2024	30-06-2024							1500	1500	4000	4000	4000	4000
2	Extension of approach from baffle wall to flood protection wall at EL 598m.	RM	20	16-05-2024	30-05-2024							10	10				
3	Balance micro piling (200 Nos Approx.)	Nos	70	25-05-2024	15-06-2024								22	24	24		
4	Extension of raft (Upto EL 598.50m)	Cum	650	16-05-2024	24-06-2024							200		250	200	200	
5	Extension of U/s & D/s Guide wall up to river. (about 30m each from EL 598m to EL616m)	Cum	800	16-05-2024	30-06-2024										250	250	300
6	Construction of access road at left bank, reaching up to the River bank	RM	60	16-05-2024	30-06-2024							10	10	10	10	10	10
7	BAFFLE WALL,Construction of access road from El 603.0m to EL598.0m & RAMP CONSTRUCTION PSP – TRT OUTLET	Cum	2970	16-05-2024	30-06-2024							470	500	500	500	500	500
8	Concrete in U/S and D/s Guide wall extension	Cum	800	08-06-2024	30-06-2024										250	250	300
9	Curtain Grouting from EL 598.00 m	RM	1400	16-05-2024	30-06-2024							200	200	250	250	250	250
10	Slope Protection work (Left Bank)	Sqm	2640	16-05-2024	30-06-2024							440	440	440	440	440	440
11	Slope Protection work (Right Bank)	Sqm	1110	16-05-2024	30-06-2024							185	185	185	185	185	185

Tehri - River Dredging, Baffle Wall, Flood Protection wall dismantling

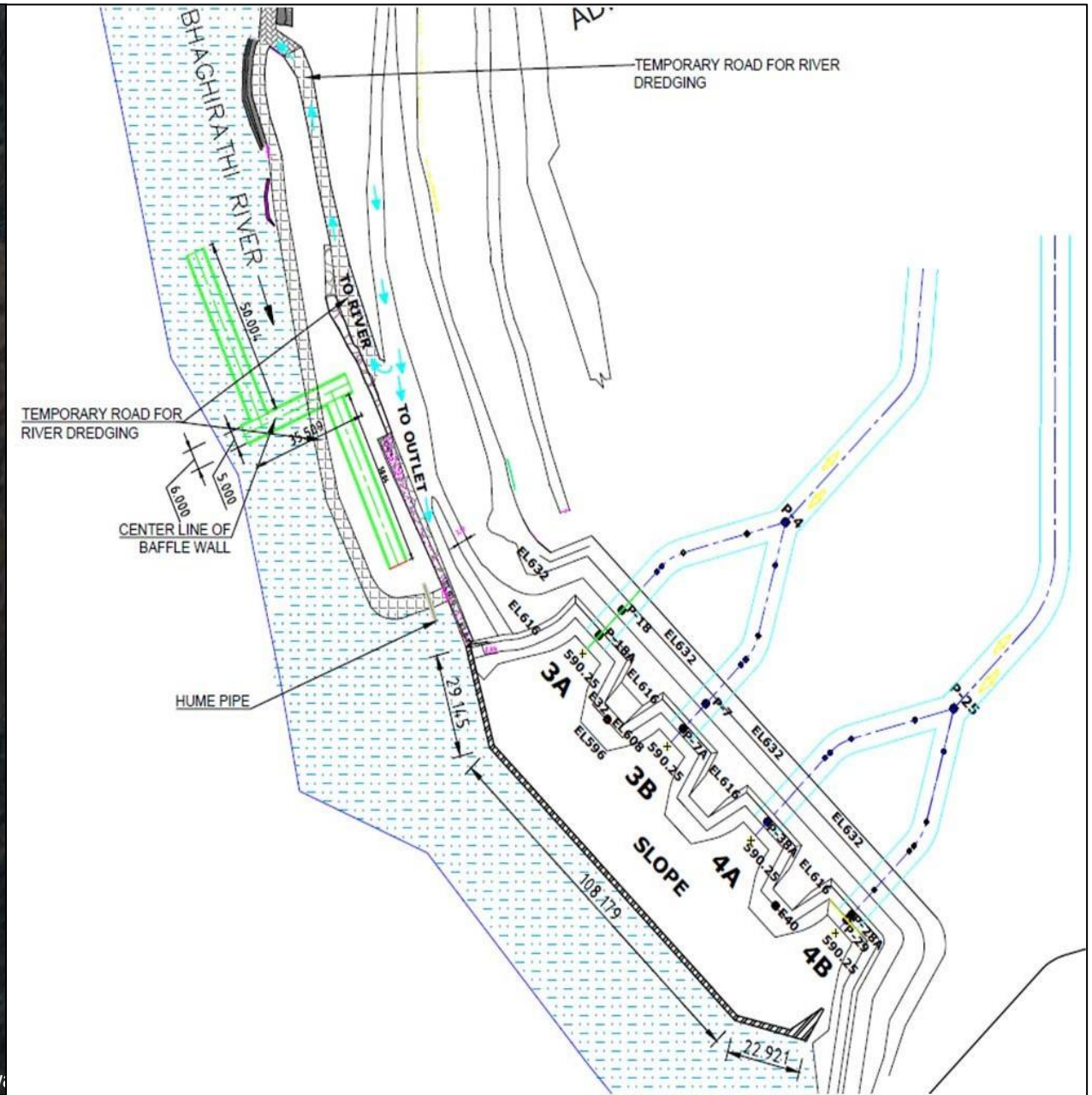
BAFFLE WALL CONSTRUCTION AT HPP – TRT OUTLET



Approach road construction PSP – TRT OUTLET



BAFFLE WALL & RAMP CONSTRUCTION PSP – TRT OUTLET



DISMANTLING OF Flood Protection Wall:

सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड
(पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड के स्वामित्व में)
(भारत सरकार का उद्यम)
CENTRAL TRANSMISSION UTILITY OF INDIA LTD.
(A wholly owned subsidiary of Power Grid Corporation of India Limited)
(A Government of India Enterprise)

Ref: C/CTUIL/IEGC/2023/1

Dated: 27/06/2023

To,
The Secretary,
Central Electricity Regulatory Commission,
3rd Floor, Chandralok Building,
36, Janpath, New Delhi-110001.
Kind Attn.: Mr. H S Pruthi

Sub: Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2023 notified dtd. 29.05.2023

Dear Sir,

This is in reference to the **Clause no 49. 12: "Energy Metering and Accounting" of recently notified** Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2023 notified dtd. 29.05.2023. In this regard, we would like to highlight some clauses of IEGC & CEA Metering regulation as follows:

➢ Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2023

- *Clause no 49.12.(b)*

The installation, operation, calibration and maintenance of Interface Energy Meters (IEMs) with automatic remote meter reading (AMR) facility shall be in accordance with the CEA Metering Regulations 2006.

- *Clause no 2. 2.(b)*

The concerned RLDC will be responsible for processing the interface meter data and computing the net injections at pooling station represented by each QCA or REGS or Lead Generator, as the case may be, ...

- *Clause no 49.12.(e)*

Entities in whose premises the IEMs are installed shall be responsible for ...(ii) taking weekly meter readings for the seven day period ending on the preceding Sunday 2400 hrs and transmitting them to the RLDC by Tuesday noon, in case such readings have not been transmitted through automatic remote meter reading (AMR) facility .."

➢ Central Electricity Authority (Installation and Operation of Meters) (Amendment) Regulations, 2019

- *Clause no 4. (1).(a) -"(1) (a) all new Interface Meters and Energy Accounting and Audit Meters shall be of static type and shall have automatic remote meter reading facility."*

सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड
(पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड के स्वामित्व में)
(भारत सरकार का उद्यम)
CENTRAL TRANSMISSION UTILITY OF INDIA LTD.
(A wholly owned subsidiary of Power Grid Corporation of India Limited)
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- *Clause no 14. (1). (a)*

"It shall be the responsibility of the Generating Company or the licensee, in whose premises the meter has been installed, to download the meter data, record the metered data and furnish such data to various agencies as per the procedure laid down by the Appropriate Commission".

In view of the above, following are our observations/suggestions:

➢ **Nodal agency for implementation of Automatic Meter Reading (AMR):**

Nodal agency for AMR (Automated Meter Reading) system implementation has not been addressed either in the CEA metering regulations or the notified IEGC 2023.

As per the regulations, the responsibility of recording, downloading, and sending meter data to RLDC is with the concerned agencies, in whose premises the meters are installed. And the responsibility of processing the meter data is with RLDC.

Automatic Meter reading (AMR) system is to perform the above tasks of acquiring meter data automatically from all ISTS IEMs and processing of such meter data to compute time block wise actual net injection and drawal of regional entities.

In view of above, RLDC(GRID-INDIA) may be assigned as nodal agency for finalization of metering scheme and for implementation of AMR system comprising of meter data acquisition and its processing to compute time block wise actual net injection and drawal of regional entities and cross border entities within their control area.

Accordingly following clauses may be considered for suitable inclusion in Grid Code or as appropriate.

- **RLDC shall be the nodal agency for implementation of Automatic Meter Reading (AMR) system.**
- **RLDC/SLDC shall finalize the metering scheme in line with Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 and its amendments thereafter and provide the same to concerned agencies (with an information to CTU) for installation.**

Thanking you,

Yours faithfully

Nutan Mishra

Sr. GM (UNMS & Metering)

सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड
(पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड के स्वामित्व में)
(भारत सरकार का उद्यम)
CENTRAL TRANSMISSION UTILITY OF INDIA LTD.
(A wholly owned subsidiary of Power Grid Corporation of India Limited)
(A Government of India Enterprise)

Ref: C/CTUIL/Metering/NPC/2023/1 Dated: 24/07/2023

To,
The Member Secretary,
National Power Committee Division
Central Electricity Authority,
1st Floor, Wing-5, West Block-II,
R K Puram, New Delhi-66

Kind Attn.: Smt. Rishika Sharan.

Sub: Metering Regulatory Provisions in CEA & IEGC and Technical Specification by JC- NPC; Time block of ISTS Interface Energy meters reg.

Dear Madam,

This is in reference to the Time Block of ISTS Interface Energy Meters. In this regard we would like to bring to your kind notice that there is a mismatch between Metering Regulations and Technical Specification for ISTS Metering System prepared by Joint Committee (constituted in Nov'2020) under NPC.

- **CEA metering regulation 2019 amendment- Year 2019**

  As per CEA metering regulation 2019 amendment, the time block for recording of meter data by the ISTS meters is defined as 15 minutes as quoted below:

  Quote

  "Provided that the time block for recording of meter data by the meter shall be 15 minutes or as specified by the Central Commission."

  Unquote

- **Technical Specification by JC, NPC- July'2022**

  The Technical Specification finalized by JC, calls for 5 min time block configuration for all new ISTS IEMs quoted as below:

  Quote

  ." All the new IEMs shall be factory manufactured as 5 min Time Block and the AMR system shall collect 5 min Load Survey data from all interface points and share the same with MDP system. In case the MDP application chooses the settlement period to be 15 min, then the collected data of 5 min interval shall be converted to 15 min interval in MDP application software before sharing the data with RPC for energy accounting for all interface points."

  "All the procured IEMs shall be configured as 5 min time block. These meters shall record and send 5 min block data to regional AMR system. AMR system shall share [. npc] file of 5 min Time Block data to POSOCO

through reliable communication. MDP at its end shall do the necessary computation to convert 5 min Time Block data to 15 min Time block data until complete replacement of 15 min existing IEMs with new 5 min IEM"
Unquote

- **Metering Regulations Provisions in IEGC 2023- Issued by CERC- May'2023**

Further as per recently issued IEGC 2023, monthly data asked from Solar plant generation, Wind plant generation in 15 min time block only. The mentioned formats are also in 15 min time block.

- **SRPC sub-committee deliberation, June 2023**

The Time Block for ISTS meters in light of issued IEGC was deliberated in 55th Meeting of Commercial Sub-Committee of SRPC and the same is as below:

"...and the forum clarified that as per TS of AMR SEMs should be capable of 5min recording but currently since scheduling and accounting is 15min, the same shall be set as default configuration is AMR SEMs."

Keeping in view aforesaid regulations and RPC deliberations, wherein the CEA Metering Regulations & CERC IEGC 2023 mentions regarding 15 Min Time block, and Technical Specification by JC mentions about 5 minute Time block and subsequent deliberation of SRPC CCM, you are requested to review and advise us expeditiously regarding the time block to be considered for procurement of new ISTS meters, AMR & MDP to be implemented region wise in PAN India basis.
Matter may be treated most urgent.

Thanking you,

Yours faithfully

24/7/23

Nutan Mishra
Sr. GM (UNMS & Metering)

Enclosure: Relevant clause of CEA Metering Regulation, IEGC 2023 & Technical Specification

CC:

1. Member (PS), CEA
2. Chief (Engg), CERC
3. MS, NRPC, ERPC, SRPC, NERPC & WRPC
4. ED, NLDC

Grid Controller of India Limited
(A Govt. of India Enterprise)
(Formerly Power System Operation Corporation Limited)
National Load Despatch Centre

Date:28.07.2023

Grid-India Inputs regarding the time block to be considered for procurement of new ISTS IEM, AMR & MDP to be implemented region wise in PAN India basis.

Ref: Email from NPC division of CEA dtd 25.07.2023

With reference to above, Input from Grid-India is as below:

1. **CERC** in Petition No. 07/SM/2018, in the matter of "Pilot Project on 05-Minute Scheduling, Metering, Accounting and Settlement for Thermal/Hydro, and on Hydro as Fast Response Ancillary Services (FRAS)", has given order on 16.07.2018**(Attached as Annexure-1).** Relevant part of the order is as follows:

Quote
……. All future procurements of Interface Energy Meters should ideally have recording at 5- min interval and frequency resolution of 0.01 Hz. They should be capable of recording Voltage and Reactive Energy at every 5-min and should have feature of auto-time synchronization through GPS…….
Unquote

2**. CEA** vide notification dated 23.12.2019 has notified Central Electricity Authority (Installation and Operation of Meters) (Amendment) Regulations, 2019**(Attached as Annexure-2).** Relevant part of the Regulations is as follows
Quote

"under the Schedule Part II (Standards for interface meters), 1 b (viii),
…. Provided that the time block for recording of meter data by the meter shall be 15 minutes or **as specified by the Central Commission**."
Unquote

3. **NPC (CEA) Joint Committee** after due deliberation has finalised the "Technical Specification (TS) of Interface Energy Meters, Automatic Meter Reading system and Meter Data Processing system" and notified the same on 06.12.2022**(Attached as Annexure-3).** Relevant part of the provisions covered in the Technical Specifications is as follows:

Quote
"All the procured IEMs shall be configured as 5 min time block. These meters shall record and send 5 min block data to regional AMR system. AMR system shall share [. npc] file of 5 min Time Block data to POSOCO through reliable communication. MDP at its end shall do the necessary computation to convert 5 min Time Block data to 15 min Time block data until complete replacement of 15 min existing IEMs with new 5 min IEMs."
Unquote

4. Group constituted by **Ministry of Power** for "Development of Electricity Market in India" proposed comprehensive solutions to address key issues, inter-alia, implementation of 5-minutes based metering, scheduling, dispatch, and settlement in May 2023. **(Attached as Annexure-4).**

In view of above, 5 minute time block could be considered for procurement of new ISTS IEM, AMR & MDP.

FW: Letter to NPC- IEM Meters & Time Block Reg.

Sangita Sarkar {संगीता सरकार} <jana.sangita@powergrid.in>

Wed 02-08-2023 16:10

To:Rahul Kumar Shakya {} <rshakya@powergrid.in>

5 attachments (6 MB)

Grid-India Inputs regd time block of IEM AMR and MDP.pdf; Annexure-1 CERC-order-07SM2018 dtd 16.07.2018.pdf; Annexure-2-CEA (Installation and Operation of Meters) (Amendment) Regulations, 2019.pdf; Annexure-3 NPC- Joint Committee_TS_CEA_6July-2022.pdf; Annexure-4 MOP-PressRelease.pdf;

Important.. Please file .

Regards

From: NPC CEA <cenpccea@gmail.com>
Sent: Monday, July 31, 2023 12:59 PM
To: Ashok Pal {अशोक पाल} <ashok@powergrid.in>; Nutan Mishra {नूतन मिश्रा} <nutan@powergrid.in>; Sangita Sarkar {संगीता सरकार} <jana.sangita@powergrid.in>
Cc: sharan Rishika <rishika_sh@yahoo.com>; satyendra dotan <skdotan21@gmail.com>
Subject: Fwd: Letter to NPC- IEM Meters & Time Block Reg.

Sir,

With reference to the trailing email, the inputs received from GRID-India is forwarded herewith.

---------- Forwarded message ---------
From: **Neeraj Kumar (नीरज कुमार)** <neeraj.kumar@grid-india.in>
Date: Fri, 28 Jul 2023 at 18:00
Subject: RE: Letter to NPC- IEM Meters & Time Block Reg.
To: NPC CEA <cenpccea@gmail.com>, Vandana Singhal <cedpr-cea@gov.in>, sharan Rishika <rishika_sh@yahoo.com>, satyendra dotan <skdotan21@gmail.com>
Cc: CMD - Grid-India(सीएमडी - ग्रिड-इंडिया) <cmd@grid-india.in>, S. S. Barpanda (एस. एस. बरपंडा) <ssbarpanda@grid-india.in>, R K Porwal (आर के पोरवाल) <rk.porwal@grid-india.in>, S. C. Saxena (एस. सी. सक्सेना) <scsaxena@grid-india.in>, N Roy (एन रॉय) <nroy@grid-india.in>, R Sutradhar (आर सूत्रधार) <rajibsutradhar@grid-india.in>, S P Kumar (एस पी कुमार) <spkumar@grid-india.in>, V Balaji (वी बालाजी) <vbalaji@grid-india.in>, Amaresh Mallick (अमरेश मल्लिक) <amareshmallick@grid-india.in>

Sir,

With reference to the trailing email from National Power Committee Division, Grid-India Inputs on the captioned subject are attached herewith.

With Regards,

Neeraj Kumar

From: NPC CEA <cenpccea@gmail.com>
Sent: 25 July 2023 15:09

To: CMD - Grid-India(सीएमडी - ग्रिड-इंडिया) <cmd@grid-india.in>; Vandana Singhal <cedpr-cea@gov.in>; Neeraj Kumar (नीरज कुमार) <neeraj.kumar@grid-india.in>
Cc: sharan Rishika <rishika_sh@yahoo.com>; satyendra dotan <skdotan21@gmail.com>
Subject: Fwd: Letter to NPC- IEM Meters & Time Block Reg.

Sir,

The trailing email received from CTU regarding time block of ISTS IEM is forwarded herewith wherein it has been requested to review the time block of ISTM IEM (as per the Technical Specifications of IEM, AMR and MDP) in line with the IEGC 2023 and CEA metering regulations. **In this regard, it is requested to provide the comments by 28.07.2023.**

---------- Forwarded message ---------
From: **Nutan Mishra {नूतन मिश्रा}** <nutan@powergrid.in>
Date: Mon, 24 Jul 2023 at 18:55
Subject: Letter to NPC- IEM Meters & Time Block Reg.
To: Rishika Sharan <rishika@nic.in>, rishika sh <rishika_sh@yahoo.com>, cenpccea <cenpccea@gmail.com>, Chief Engineer NPC <cenpc-cea@gov.in>
Cc: Ashok Kumar Rajput <akrajput@nic.in>, rajput ashok <rajput.ashok@gmail.com>, "Shilpa Agarwal" <shilpa@cercind.gov.in>, "Awdhesh Kumar Yadav" <awdhesh@nic.in>, memeberpscea@nic.in <memeberpscea@nic.in>, mserpc-power@nic.in <mserpc-power@nic.in>, Satyanarayan S <ms-wrpc@nic.in>, mssrpc-ka@nic.in <mssrpc-ka@nic.in>, ms-nerpc@nic.in <ms-nerpc@nic.in>, ms-nrpc@nic.in <ms-nrpc@nic.in>, S C Saxena <scsaxena@posoco.in>, Vikram Singh Bhal {विक्रम सिंह भाल} <vsbhal@powergrid.in>, Sangita Sarkar {संगीता सरकार} <jana.sangita@powergrid.in>, Ashok Pal {अशोक पाल} <ashok@powergrid.in>, P C Garg {पी.सी. गर्ग} <pcgarg@powergrid.in>

Dear Madam,

Pls find enclosed the letter regarding Time Block of ISTS IEM for kind review & advise for further implementation.

Warm regards,

Nutan Mishra
Sr GM, CTUIL- POWERGRID
9873918449 (M)

--
Regards,

O/o Chief Engineer (National Power Committee Division)
Central Electricity Authority
Phone No: 011-26732014 / 9868021299
New Delhi - 110066.
Follow Grid-India on:

--
Regards,

O/o Chief Engineer (National Power Committee Division)
Central Electricity Authority
Phone No: 011-26732014 / 9868021299
New Delhi - 110066.

From: "Vandana Singhal" <cedpr-cea@gov.in>
To: cenpccea@gmail.com, secy@cercin.gov.in, "Awdhesh Kumar Yadav" <chiefengg@cercind.gov.in>, cmd@grid-india.in
Sent: Tuesday, August 8, 2023 12:49:03 PM
Subject: Letter to NPC- IEM Meters & Time Block Reg.

This in reference to the Time Block of ISTS Interface Energy Meters in which CTU has raised a problem of mismatch between CEA (Installation and Operation of Meters) regulations, 2019 and Technical Specification for ISTS Metering System prepared by Joint commission (Nov' 2020) under NPC. In light of this, **a meeting has been scheduled on 18 August 2023 at 11:00 AM in Room No: 628, 6th floor, Sewa Bhawan, Sector 1, R K Puram, New Delhi 110066.**

You are requested to nominate a person well versed with subject to attend the meeting. Further, documents related to above pertaining matter is attached for your reference.

Regards,
Vandana Singhal,
Chief Engineer(Distribution Policy and Regulatory Division),
Central Electricity Authority
Ph: 011-26732661
Fax: 011-26102793

Enclosure-I

Transmission scheme for evacuation of power from Ratle HEP (850MW)

S. No.	Items	Details
1.	Name of Scheme	**Transmission scheme for evacuation of power from Ratle HEP (850MW)**
2.	Scope of the scheme	**Details of Scheme enclosed in Annexure -1**
3.	Depiction of the scheme on Transmission Grid Map	Attached at **Exhibit-I**
4.	Upstream/downstream system associated with the scheme	400/220kV Kishenpur (PG), Samba (PG) & Jalandhar (PG) S/s are existing ISTS substation of POWERGRID. 400/220kV Kishenpur S/s is interconnected with New Wanpoh, Baglihar, Dulhasti, Chamer-II, Moga & Samba S/s at 400kv level. 400/220kV Samba (PG) S/s is interconnected with New Wanpoh, Amargarh & Kishenpur S/s at 400kV level whereas 400/220kV Jalandhar (PG) S/s is interconnected with Amritsar, Chamera PS, Chamera-I, Nakodar, Hamirpur, Kurukshetra & Ludhiana S/s at 400kV level 400/132kV Kishtwar S/s is under implementation by M/s Sterlite and being interconnected with Kishenpur S/s, Dulhasti S/s, Pakadul HEP at 400kV level.
5.	Objective / Justification	1. In the 3rd CMETS-NR meeting held on 28/01/2022, connectivity system for Ratle HEP (850MW) was deliberated. In the meeting, It was informed that the transmission system for evacuation of Ratle HEP (850 MW) was discussed and agreed during the 4th NRPC(TP) meeting held on 05/10/2021 & 12/10/2021 wherein it was deliberated that Ratle HEP (850 MW) is a Run of River scheme located on river Chenab, in Kishtwar District of Jammu & Kashmir, with design overload of 10% and its completion schedule is Feb/March 2026. 2. Further in above meeting, it was decided to grant connectivity to RHPCL for Ratle HEP (850 MW) through following transmission system for Connectivity: • Ratle HEP - Kishtwar (GIS) PS 400 kV D/c line (line suitable for carrying around 935 MW on each circuit at nominal voltage) along with 2 nos. of 400kV bays at Kishtwar S/s - To be implemented by the applicant (RHPCL) • 125 MVAR, 420 kV bus reactor at Ratle HEP - To be implemented by applicant (RHPCL) • Establishment of 400 kV Kishtwar (GIS) PS by LILO of one circuit of Kishenpur – Dulhasti 400kV D/c (Quad) line (Single Circuit Strung) and 125 MVAR Bus reactor at Kishtwar (GIS) PS– being implemented under ISTS 3. Subsequently, in 23rd CMETS-NR meeting held on 29.08.23, application for GNA transition of M/s RHPCL (Applicant) under

S. No.	Items	Details
		37.2 of GNA regulation was deliberated. In the meeting,, the transmission system for Connectivity under GNA was proposed as below A. Transmission system for Connectivity (under scope of Applicant): • 400 kV Ratle HEP Switchyard - Kishtwar D/c line along with bays at both ends B. Common Transmission system for Connectivity under GNA (under ISTS): • 400 kV Kishenpur-Samba D/c line(Quad) (2nd) • Bypassing of one ckt of 400kV Kishtwar – Kishenpur D/c line (Quad) at Kishenpur and connecting it with one of the circuit of Samba-Kishenpur 400kV D/c line(Quad), thus forming 400kV Kishtwar-Samba (Quad) direct line (one ckt) Termination of another circuit of 400 kV Kishenpur-Samba D/c line(Quad) at Kishenpur at 400Kv bay vacated at Kishenpur • Bypassing both ckts of 400kV Kishenpur – Samba D/c line (Twin) & 400 kV Samba – Jalandhar D/c line (Twin) at Samba and connecting them to form Kishenpur– Jalandhar D/c direct line (Twin) • 400kV Samba- Jalandhar D/c line(Quad) (only one circuit is to be terminated at Jalandhar while second circuit would be connected to bypassed circuit of Jalandhar –Nakodar 400kV D/c line) • Bypassing 400kV Jalandhar – Nakodar line (Quad) at Jalandhar and connecting it with one of the circuit of Samba-Jalandhar 400kV D/c line(Quad Moose), thus forming Samba –Nakodar line • Termination of another circuit of 400 kV Samba -Jalandhar D/c line (Quad) at Jalandhar at bay vacated at Jalandhar (After bypassing of one ckt of 400 kV Jalandhar - Nakodar at Jalandhar) • Reconductoring of remaining portion of Dulhasti-Kishtwar 400 kV D/c line with Quad conductor • Reconductoring of 400 kV Kishenpur-Dulhasti S/c line (Twin) (minimum 2100 MVA capacity) 4. Further, in the meeting it was deliberated that the scheme is tentative, which shall be finalized in the ensuing CMETS-NR meeting. The scheme along with implementation schedule shall be confirmed as part of in principle grant of connectivity. 5. As part of scheme, Reconductoring of remaining portion of Dulhasti-Kishtwar 400 kV D/c line (twin moose) and Reconductoring of 400 kV Kishenpur-Dulhasti line (twin zebra) is also required. In 3rd NRPC-TP meeting it was also deliberated that outlet beyond Dulhasti is Dulhasti-Kishenpur 400kV line which is a single circuit line, the amount of power that can be exported/imported is limited. Hence, Dulhasti - Ratle section would be optimized to the extent possible. bay rating at Dulhasti is 2000A, which is further reduced to 700/800A due to reduced capacity of XLPE/OIL cable for connection of line to GIS bus at Dulhasti end. 6. In view of above a meeting was convened on 13.09.23 by CEA with NHPC in which it was decided that NHPC shall explore the feasibility for upgradation of the switchgear and cables at Dulhasti substation to rating of 3150 A. NHPC may also explore the option of replacement of cables with GIB bus duct. The same was to be intimated to CEA within one month.

S. No.	Items	Details
		7. NHPC vide mail dated 16.10.23 informed that GIS bay equipment installed at Dulhasti Power Station have a rating of 2000A. As suggested, complete replacement of GIS system would be required to accommodate requisite 3150 A. Accordingly, the existing rating of GIS busbar and associated switchgear like CB, CT, ES/ISO etc. needs to be uprated to 3150 A from 2000A.. It is envisaged that the space for the complete GIS compatible for 3150A may be required more than that of existing one and may not be feasible to accommodate within the existing underground space. 8. Further NHPC informed that there are two 400 kV cables (Line-1 is oil filled and Line-2 XLPE insulation) of 630 Sq.mm each used for Power evacuation from Dulhasti GIS which can carry approx. 700-800A. As suggested, replacement of cables with GIB bus duct may not be feasible at Dulhasti Power Station considering the constraints of cable tunnel space. Considering the above facts, the uprating of all the above items will require significant Prolonged outages of generating units causing Generation and PAF Loss which will attract huge financial loss on account of loss of generation. Further, equipment replacement cost would also put an additional financial implication. In view of above factors, it is not possible to uprate the existing systems at Dulhasti Power station from 2000 A to 3150 A. 9. In view of above constraints, various other options were carried out and studies were reviewed. In the revised proposal, LILO of 400 kV Kishenpur- Dulhasti line (2nd ckt) at Kishtwar S/s (one ckt already LILOed as part of Pakaldul transmission system) along with Reconductoring of 400 kV Kishenpur-Kishtwar line (formed after LILO of Kishenpur- Dulhasti line at Kishtwar S/s) is proposed. In the revised scheme, there will be no requirement of space for installation of new GIS equipment and replacement of cables at Dulhasti switchyard for time being. 10. CTU vide mail dated 20.11.23 to POWERGRID requested information regarding maximum rating of the HTLS conductor suitable for Reconductoring of 400 kV Kishenpur-Kishtwar line (Twin Zebra), considering altitude and the bundle size of the line. CTU vide mail dated 26.12.23 to POWERGRID informed that the minimum Ampacity requirement is 1516A/ckt (2100MVA/ckt) for Reconductoring of 400 kV Kishenpur-Kishtwar line (Twin Zebra) and requested to provide the conductor configuration in order to avoid Corona inception gradient at high altitude. POWERGRID vide mail 26.02.24 informed that Conductor configuration shall remain the same as that of existing transmission line i.e. twin bundle of conductor diameter-28.62mm. It was also requested that POWERGRID may confirm the feasibility of the line bay upgradation requirements at Kishenpur Substation pertaining to the above line. In this regard POWERGRID vide mail 08.12.23 informed that 400 kV Kishenpur-Dulhasti line (Twin Zebra) line has bay equipment rating of 2000A (CB,CT, Isolator). In view of that bay upgradation is also required with Reconductoring of 400 kV Kishenpur-Kishtwar line (Zebra).

S. No.	Items	Details
		11. M/s Ratle HEP vide letter dated 27.12.23 informed the commissioning schedule progressively from Sep'26 (30.09.26) 12. Grid-India in the meeting as well as in mail dated 04.12.23 queried about expected timelines of other HEP in the area such as Kiru, Kawar, Kirthai-I, Kirthai-II etc. as maximum of nearly 4000MW could be evacuated through 3 outgoing lines from Kishtwar i.e. 2 lines to Kishenpur and one line to Samba. CTUIL informed that at present connectivity application received at Reoli Dugli, Purthi, Bardang and Dugar HEPs with schedule progressively from 2029, however no application is yet received from Kiru, Kawar, Kirthai-I and Kirthai-II HEPs. 13. Recently connectivity application from CVPPL for Kiru HEP(624MW) was received on 06.02.24 which is under process 14. For evacuation of power from Reoli Dugli, Purthi and Bardang HEPs, separate high capacity transmission system will be planned and based on studies, connectivity of above high capacity corridor with Kishtwar S/s (via Dugar HEP) will be finalized. Grid-India also stated that fault level at Kishtwar & Kishenpur also need to checked after the proposed interconnections. Based on the fault level assessments & transmission plan, switchgear rating may be selected. From the studies it is emerged that with Ratle HEP, fault level of Kishtwar S/s is about 23kA (designed capacity:50KA) and Kishenpur S/s is about 37kA (designed capacity: 40kA) which is within limits. 15. Further Grid-India stated that the requirement of line reactors for lines such as 400kV Kishtwar-Kishenpur (132km) and 400kV Kishtwar-Samba (160km) may be studied given the persistent issues of high voltage in hydro complex in winter months during off-peak hours. CTU informed that requirement of line reactor will be reviewed considering space availability. Accordingly, CTU analyzed the reactive compensation requirement, however feasibility for installation of line reactors along with space confirmation from POWERGRID & Sterlite was awaited. Same was intimated to be decided in next CMETS-NR meeting. Grid-India also mentioned in mail that the bay allocation of feeders at Kishtwar station is very important & incomer and outgoing feeders need to be kept in same diameter. 16. PSTCL stated that they are planning to establish new substation at 400kV Wadala Granthian for which LILO of 400kV Jallandhar-Samba is under planning. CTU stated that at present with proposed scheme 400kV Samba-Jalandhar (Twin) (after bypassing above line will be Kishenpur-Samba (Twin)) and 400kV Samba-Jalandhar (Quad) line will be available for LILO in 2026-27 timeframe. In view of that PSTCL may carried out studies for both the alternatives and share with CEA & CTU. PSTCL agreed for the same. 17. Further based on inputs received from TSPs i.e. POWERGRID & Sterlite regarding space availability and feasibility for installation of line reactors & bay equipment rating, reactive compensation & upgradation requirement is also agreed as part

S. No.	Items	Details
		of Transmission scheme for Ratle HEP (850MW) in 28th CMETS-NR Meeting held on 27.03.24 18. Considering grant of connectivity to Ratle HEP as well as for evacuation of power, transmission scheme (as per Annexure-1) was agreed in 26th & 28th CMETS-NR meeting held on 20.12.23 & 27.03.24 respectively
6.	**Estimated Cost**	**Rs. 1450 Cr. (Approx) (Rs 1.7 Cr./MW)**
7.	**Need of phasing, if any**	Not Applicable
8.	**Implementation timeframe**	30.09.26*
9.	**System Study for evolution of the proposal**	Studies discussed and agreed in following meeting • 26th CMETS-NR meeting held on 20.12.23 (Minutes of meeting enclosed in Annexure-II) • 28th CMETS-NR meeting held on 27.03.24 (Minutes of meeting awaited) Load flow results is attached at **Exhibit-II**

M/s Ratle HEP informed the commissioning schedule progressively from 30.09.26

Annexure-1

Transmission scheme for evacuation of power from Ratle HEP (850MW)

Sl. No.	Description of Transmission Element	Scope of work (Type of Substation/Conductor capacity/km/no. of bays etc.)
1	400 kV Kishenpur-Samba D/c line (Quad) (2nd) (only one circuit is to be terminated at Kishenpur while second circuit would be connected to bypassed circuit of 400kV Kishtwar – Kishenpur line (Quad))	Length -35 km (Quad)
2	Bypassing of 400kV Kishtwar – Kishenpur line (Quad) (Under implementation as part of Pakaldul transmission scheme) at Kishenpur and connecting it with one of the circuit of Kishenpur-Samba 400kV D/c line(Quad), thus forming 400kV Kishtwar - Samba (Quad) direct line (one ckt)	
3	1x80 MVAr Switchable line reactor at Samba end of 400kV Kishtwar-Samba 400kV line-165km (Quad) [formed after bypassing of 400kV Kishtwar – Kishenpur line (Quad) at Kishenpur and connecting it with one of the circuit of Kishenpur-Samba 400kV D/c line(Quad))	• 420 kV, 80 MVAr switchable line reactors at Samba S/s end– 1 nos. • Switching equipment for 420kV, 80 MVAr switchable line reactors at Samba S/s end – 1 no
4	Bypassing both ckts of 400kV Kishenpur – Samba D/c line (Twin) & 400 kV Samba – Jalandhar D/c line (Twin) at Samba and connecting them together to form 400kV Kishenpur– Jalandhar D/c direct line (Twin)	
5	Bays upgradation works (2000A to 3150A) at Samba end (bays vacated after bypassing of Kishenpur – Samba D/c line (Twin) & 400 kV Samba – Jalandhar D/c line (Twin))	400kV Bay upgradation works- 4 nos. bays
6	1x80 MVAr Switchable line reactor at each ckt at Jallandhar end of Kishenpur– Jalandhar D/c direct line -170km(Twin) (formed after bypassing both ckts of 400kV Kishenpur – Samba D/c line (Twin) & 400 kV Samba – Jalandhar D/c line (Twin) at Samba and connecting them together to form Kishenpur– Jalandhar D/c direct line (Twin))	• 420 kV, 80 MVAr switchable line reactors at Jallandhar S/s end– 2 nos. • Switching equipment for 420kV, 80 MVAr switchable line reactors at Jallandhar S/s end – 2 no
7	400kV Samba- Jalandhar D/c line(Quad) (2nd) (only one circuit is to be terminated at Jalandhar while second circuit would be connected to bypassed circuit of Jalandhar –Nakodar 400kV D/c line)	Line Length -135 km

Sl. No.	Description of Transmission Element	Scope of work (Type of Substation/Conductor capacity/km/no. of bays etc.)
8	1x80 MVAr Switchable line reactor at Samba end of Samba –Nakodar direct line (Quad) (formed after bypassing of 400kV Jalandhar – Nakodar line-177km (Quad) at Jalandhar and connecting it with one of the circuit of Samba-Jalandhar 400kV D/c line(Quad Moose), thus forming Samba –Nakodar line (Quad))	• 420 kV, 80 MVAr switchable line reactors at Samba S/s end– 1 nos. • Switching equipment for 420kV, 80 MVAr switchable line reactors at Samba S/s end – 1 no
9	Bypassing 400kV Jalandhar – Nakodar line (Quad) at Jalandhar and connecting it with one of the circuit of Samba-Jalandhar 400kV D/c line(Quad Moose), thus forming Samba –Nakodar line	
10	LILO of 400 kV Kishenpur- Dulhasti line at Kishtwar S/s (one ckt already LILOed as part of Pakaldul transmission system)	LILO Length- 10kms (Twin HTLS) (minimum 2100 MVA capacity)
11	Reconductoring of 400 kV Kishenpur-Kishtwar line with Twin HTLS (minimum 2100 MVA capacity) (formed after LILO of Kishenpur-Dulhasti line at Kishtwar S/s) along with bay upgradation works (2000A to 3150A) at Kishenpur end for above line	Length – 132kms 400kV Bay upgradation works- 1 nos. bay

Annex-II

सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड
(पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड के स्वामित्व में)
(भारत सरकार का उद्यम)
CENTRAL TRANSMISSION UTILITY OF INDIA LTD.
(A wholly owned subsidiary of Power Grid Corporation of India Limited)
(A Government of India Enterprise)

Ref: CTU/N/00/CMETS_NR/26

Date: 20-12-2023

As per distribution list

Subject: 26th Consultation Meeting for Evolving Transmission Schemes in Northern Region-Minutes of Meeting

Dear Sir/Ma'am,

Please find enclosed the minutes of the 26th Consultation Meeting for Evolving Transmission Schemes in Northern Region held on 1st December, 2023 (Friday) through virtual mode.

The minutes are also available at CTU website (www.ctuil.in)

Thanking you,

Yours faithfully,

20/12/23

(Kashish Bhambhani)
General Manager (CTU)

All statutory clearances in respect of above DTL configuration shall be the responsibility of M/s Adani.

C. ISTS Expansion

i. Transmission system scheme for Ratle HEP (850MW)

It was deliberated that in 3rd Consultation meeting for Evolving Transmission Schemes in NR held on 28/01/2022, connectivity system for Ratle HEP (850MW) was deliberated. In the meeting, It was informed that the transmission system for evacuation of Ratle HEP (850 MW) was discussed and agreed during the 4th NRPC(TP) meeting held on 05/10/2021 & 12/10/2021 wherein it was deliberated that Ratle HEP (850 MW) is a Run of River scheme located on river Chenab, in Kishtwar District of Jammu & Kashmir, with design overload of 10% and its completion schedule is Feb/March 2026. It was also agreed that Ratle HEP is approx. 20 km from Kishtwar PS, therefore, it can be directly connected with Kishtwar PS with 400 kV D/c line with high capacity conductor. During the above meeting, it was deliberated that RHPCL shall explore the possibility of single-phase units of either 125 MVAR bus reactor or 80 MVAR reactor in case of transportation constraints.

In this meeting, RHPCL informed that they have already awarded 1x125 MVAr Bus Reactor at generation switchyard, wherein, supply of 1-phase or 3-phase units is left to the EPC contractor's scope. Accordingly in 3rd CMETS-NR meeting, it was decided to grant connectivity to RHPCL for Ratle HEP (850 MW) through following transmission system for Connectivity:

- Ratle HEP - Kishtwar (GIS) PS 400 kV D/c line (line suitable for carrying around 935 MW on each circuit at nominal voltage) along with 2 nos. of 400kV bays at Kishtwar S/s - To be implemented by the applicant (RHPCL)
- 125 MVAR, 420 kV bus reactor at Ratle HEP - To be implemented by applicant (RHPCL)
- Establishment of 400 kV Kishtwar (GIS) PS by LILO of one circuit of Kishenpur – Dulhasti 400kV D/c (Quad) line (Single Circuit Strung) and 125 MVAR Bus reactor at Kishtwar (GIS) PS– being implemented under ISTS

Further in 23rd CMETS-NR meeting held on 29.08.23, application for GNA transition of M/s RHPCL (Applicant) under 37.2 of GNA regulation was deliberated with following details

S. No	Name of Applicant	Connectivity Quantum (MW)	System for GNA	Start Date Requested	Start date of Connectivity/GNA	Bank Guarantee Requirement as per GNA Regulation (BGs, if any submitted in Connectivity Regulations, 2009 shall be adjusted)
1	Ratle Hydroelectric Power Corporation Limited	850	Augmentation Without ATS	16-Feb-26	16-Feb-26 (Interim)	Conn-BG1 : Rs. 50 lakh Conn-BG3 : Rs. 2 lakh/MW

In the meeting it was stated that confirmation was taken from CEA for applicability of hydro potential zones for Ratle HEP. CEA confirmed that Ratle HEP falls under hydro potential area in HP/J&K. Considering this, the transmission system for Connectivity under GNA was proposed as augmentation without considering Associated Transmission System (ATS) as given below:

Details of Associated Transmission System (Augmentation Without ATS):

A. Associated Transmission System (ATS): NIL

B. Transmission system for Connectivity (under scope of Applicant):

- 400 kV Ratle HEP Switchyard - Kishtwar D/c line along with bays at both ends

C. Common Transmission system for Connectivity under GNA (under ISTS):

.

- 400 kV Kishenpur-Samba D/c line(Quad) (2nd)
- Bypassing of one ckt of 400kV Kishtwar – Kishenpur D/c line (Quad) at Kishenpur and connecting it with one of the circuit of Samba-Kishenpur 400kV D/c line(Quad), thus forming 400kV Kishtwar-Samba (Quad) direct line (one ckt)
- Termination of another circuit of 400 kV Kishenpur-Samba D/c line(Quad) at Kishenpur at 400Kv bay vacated at Kishenpur (After bypassing of one ckt of 400 kV Kishtwar-Kishenpur at Kishenpur)
- Bypassing both ckts of 400kV Kishenpur – Samba D/c line (Twin) & 400 kV Samba – Jalandhar D/c line (Twin) at Samba and connecting them to form Kishenpur– Jalandhar D/c direct line (Twin)
- 400kV Samba- Jalandhar D/c line(Quad) (only one circuit is to be terminated at Jalandhar while second circuit would be connected to bypassed circuit of Jalandhar –Nakodar 400kV D/c line)
- Bypassing 400kV Jalandhar – Nakodar line (Quad) at Jalandhar and connecting it with one of the circuit of Samba-Jalandhar 400kV D/c line(Quad Moose), thus forming Samba –Nakodar line
- Termination of another circuit of 400 kV Samba -Jalandhar D/c line (Quad) at Jalandhar at bay vacated at Jalandhar (After bypassing of one ckt of 400 kV Jalandhar - Nakodar at Jalandhar)
- Reconductoring of remaining portion of Dulhasti-Kishtwar 400 kV D/c line with Quad conductor
- Reconductoring of 400 kV Kishenpur-Dulhasti S/c line (Twin) (minimum 2100 MVA capacity)

Further, in the meeting it was deliberated that the above scheme is tentative, which shall be finalized in the ensuing CMETS-NR meeting. The scheme along with implementation schedule shall be confirmed as part of in principle grant of connectivity. Feasibility of HTLS conductor has been reviewed in view of altitude aspects. It was also deliberated during the meeting that the above-mentioned CON-BG1 & 3 shall need to be submitted within two months from intimations. As part of scheme, Reconductoring of remaining portion of Dulhasti-Kishtwar 400 kV D/c line (twin moose) and Reconductoring of 400 kV Kishenpur-Dulhasti line (twin zebra) is also required.

In 3rd NRPC-TP meeting it was also deliberated that outlet beyond Dulhasti is Dulhasti-Kishenpur 400kV line which is a single circuit line, the amount of power that can be exported/imported is limited. Hence, Dulhasti - Ratle section would be optimized to the extent possible. bay rating at Dulhasti is 2000A, which is further reduced to 700/800A due to reduced capacity of XLPE/OIL cable for connection of line to GIS bus at Dulhasti end.

In view of above a meeting was conveyed on 13.09.23 by CEA and CTU with NHPC to discuss upon feasibility for upgradation of switchgear equipment's incl. cable at 400kV Dulhasti switchyard as well as reconductoring of part system of 400kV Dulhasti-Kishtwar line. In the meeting, it was decided that NHPC shall explore the feasibility for upgradation of the switchgear and cables at Dulhasti substation to rating of 3150 A. NHPC may also explore the option of replacement of cables with GIB bus duct. The same would be intimated to CEA within one month.

NHPC vide mail dated 16.10.23 informed that GIS bay equipment installed at Dulhasti Power Station have a rating of 2000A. As suggested, complete replacement of GIS system would be required to accommodate requisite 3150 A. Accordingly, the existing rating of GIS busbar and associated switchgear like CB, CT, ES/ISO etc. needs to be uprated to 3150 A from 2000A. The compatibility issue of New GIS with old GIS will attract huge financial implication. It is envisaged that the space for the complete GIS compatible for 3150A may be required more than that of existing one and may not be feasible to comfortably accommodate within the existing underground space. Further, the existing items of pothead yard like wave traps, Isolators etc. also needs to be replaced which has an additional cost implication.

Further NHPC informed that there are two 400 kV cables (Line-1 is oil filled and Line-2 XLPE insulation) of 630 Sq.mm each are used for Power evacuation from Dulhasti GIS which can carry approx. 700-800A. As suggested, the replacement of cables with GIB bus duct may not be feasible at Dulhasti Power Station considering the constraints of cable tunnel space.

Considering the above facts, the uprating of all the above items will require significant Prolonged outages of generating units causing Generation and PAF Loss which will attract huge financial loss on account of loss of generation. Further, equipment replacement cost would also put an additional financial implication. In view of above factors, it is not possible to uprate the existing systems at Dulhasti Power station from 2000 A to 3150 A.

In view of above constraints, various other options were carried out and studies were reviewed. In the revised proposal, LILO of 400 kV Kishenpur- Dulhasti line (2nd ckt) at Kishtwar S/s (one ckt already LILOed as part of Pakaldul transmission system) along with Reconductoring of 400 kV Kishenpur-Kishtwar line (formed after LILO of Kishenpur- Dulhasti line at Kishtwar S/s) is proposed. In the revised scheme, there will be no requirement of space for installation of new GIS equipment and replacement of cables at Dulhasti switchyard for time being**.** Study files were also circulated on 24.11.23.

In the CMETS meeting it was stated that as part of transmission scheme, 400kV Kishenpur-Samba D/c line(Quad) line is proposed. Due to higher loading on 400/220kV ICTs as well as space constraint at Kishenpur S/s, bypassing of 400kV Kishtwar – Kishenpur line (Quad) at Kishenpur and connecting it with one of the circuit of Kishenpur-Samba 400kV D/c line (Quad) (thus forming 400kV Kishtwar-Samba (Quad) direct line (one ckt) & Kishenpur- Samba (Quad) (other ckt) line) is proposed. Further 4 nos. of bays shall be vacated at Samba S/s through bypassing both ckts of 400kV Kishenpur – Samba D/c line (Twin) & 400 kV Samba – Jalandhar D/c line (Twin) at Samba and connecting them together to form Kishenpur–Jalandhar D/c direct line (Twin). These bays will be utilized in present scheme through Kishenpur-Samba D/c line(Quad) line (one ckt bypassed at Kishenpur) & 400kV Samba- Jalandhar D/c line(Quad) line.

In view of space constraint for 400kV bays at Jalandhar S/s as well as higher loading on 400/220kV ICTs, bypassing 400kV Jalandhar – Nakodar line (Quad) at Jalandhar and connecting it with one of the circuit of Samba-Jalandhar 400kV D/c line (Quad) is proposed (forming Samba –Nakodar direct line). The vacated bay at Jalandhar S/s will be utilized for termination of another circuit of 400 kV Samba -Jalandhar D/c line (Quad).

It was deliberated that CTU vide mail 20.11.23 to POWERGRID requested information regarding maximum rating of the HTLS conductor suitable for Reconductoring of 400 kV Kishenpur-Kishtwar line (Twin Zebra), considering altitude and the bundle size of the line. It was also requested that POWERGRID may confirm the feasibility of the line bay upgradation requirements at Kishenpur Substation pertaining to the above line. In this regard POWERGRID vide mail 08.12.23 informed that 400 kV Kishenpur-Dulhasti line (Twin Zebra) line has bay equipment rating of 2000A (CB,CT, Isolator). In view of that bays upgradation is also required with Reconductoring of 400 kV Kishenpur-Kishtwar line (Zebra). Conductor configuration for reconductoring of 400 kV Kishenpur-Kishtwar line will be finalized based on POWERGRID inputs.

In the latest JCC meeting, M/s RHPCL informed commission schedule for their 850MW (4x205+1x30MW) HEP project. progressively from May'26. Further in the present meeting, M/s RHPCL confirmed the commissioning schedule of generation project progressively from May'26. It was also requested that M/s RHPCL may also confirm generation schedule through mail/letter.

Grid-India in the meeting as well as in mail 04.12.23 queried about expected timelines of other HEP in the area such as Kiru, Kawar, Kirthai-I, Kirthai-II etc. as maximum of nearly 4000MW could be evacuated through 3 outgoing lines from Kishtwar i.e. 2 lines to Kishenpur and one line to Samba.

CTUIL informed that at present connectivity application received at Reoli Dugli, Purthi, Bardang and Dugar HEPs with schedule progressively from 2029, however no application is yet to received from Kiru, Kawar, Kirthai-I and Kirthai-II HEPs.

For evacuation of power from Reoli Dugli, Purthi and Bardang HEPs, separate high capacity transmission system will be planned and based on studies, connectivity of above high capacity corridor with Kishtwar S/s (via Dugar HEP) will be finalized.

Grid-India also stated that fault level at Kishtwar & Kishenpur also need to checked after the proposed interconnections. Based on the fault level assessments & transmission plan, switchgear rating may be selected. From the studies it is emerged that with Ratle HEP, fault level of Kishtwar S/s is about 23kA (designed capacity:50KA) and Kishenpur S/s is about 37kA (designed capacity: 40kA) which is within limits.

Further Grid-India stated that the requirement of line reactors for lines such as 400kV Kishtwar-Kishenpur (132km) and 400kV Kishtwar-Samba (160km) may be studied given the persistent issues of high voltage in hydro complex in winter months during off-peak hours. CTU informed that requirement of line reactor will be reviewed considering space availability. Accordingly, CTU analyzed the reactive compensation requirement, however feasibility for installation of line reactors along with space confirmation from POWERGRID & Sterlite is awaited. Same will be intimated in next CMETS-NR meeting.

Grid-India also mentioned in mail that the bay allocation of feeders at Kishtwar station is very important & incomer and outgoing feeders need to be kept in same diameter. PSTCL stated that they are planning to establish new substation at 400kV Wadala Granthian for which LILO of 400kV Jallandhar-Samba is under planning. CTU stated that at present with proposed scheme 400kV Samba-Jalandhar (Twin) (after bypassing above line will be Kishenpur-Samba (Twin)) and 400kV Samba-Jalandhar (Quad) line will be available for LILO in 2026-27 timeframe. In view of that PSTCL may carried out the studies for both the alternatives and share with CEA & CTU. PSTCL agreed for the same.

In view of above, following ISTS transmission scheme is agreed for evacuation of power for Ratle HEP (850MW):

Common Transmission system for Connectivity under GNA (under ISTS) :

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1. 400 kV Kishenpur-Samba D/c line (Quad) (2nd) - 35kms
2. Bypassing of 400kV Kishtwar – Kishenpur line (Quad) (Under implementation as part of Pakaldul transmission scheme) at Kishenpur and connecting it with one of the circuit of Kishenpur-Samba 400kV D/c line(Quad), thus forming 400kV Kishtwar-Samba (Quad) direct line (one ckt)
3. Termination of another circuit of 400 kV Kishenpur-Samba D/c line(Quad) at Kishenpur at 400kV bay vacated at Kishenpur (After bypassing of one ckt of 400 kV Kishtwar-Kishenpur at Kishenpur) –160km
4. Bypassing both ckts of 400kV Kishenpur – Samba D/c line (Twin) & 400 kV Samba – Jalandhar D/c line (Twin) at Samba and connecting them together to form Kishenpur– Jalandhar D/c direct line (Twin)

5. 400kV Samba- Jalandhar D/c line(Quad) (only one circuit is to be terminated at Jalandhar while second circuit would be connected to bypassed circuit of Jalandhar –Nakodar 400kV D/c line) – 205km
6. Bypassing 400kV Jalandhar – Nakodar line (Quad) at Jalandhar and connecting it with one of the circuit of Samba-Jalandhar 400kV D/c line(Quad Moose), thus forming Samba –Nakodar line
7. Termination of another circuit of 400 kV Samba -Jalandhar D/c line (Quad) at Jalandhar at bay vacated at Jalandhar (After bypassing of one ckt of 400 kV Jalandhar - Nakodar at Jalandhar)-177km
8. LILO of 400 kV Kishenpur- Dulhasti line (Twin Zebra) at Kishtwar S/s (one ckt already LILOed as part of Pakaldul transmission system)
9. Reconductoring of 400 kV Kishenpur-Kishtwar line* (Twin HTLS) (minimum 2100 MVA capacity) (formed after LILO of Kishenpur-Dulhasti line at Kishtwar S/s) along with bay upgradation works (2000A to 3150A) at Kishenpur end for above line

**** Conductor configuration for reconductoring of 400 kV Kishenpur-Kishtwar line will be finalized based on POWERGRID inputs. Line reactors will be finalized based on POWERGRID/Sterlite inputs***

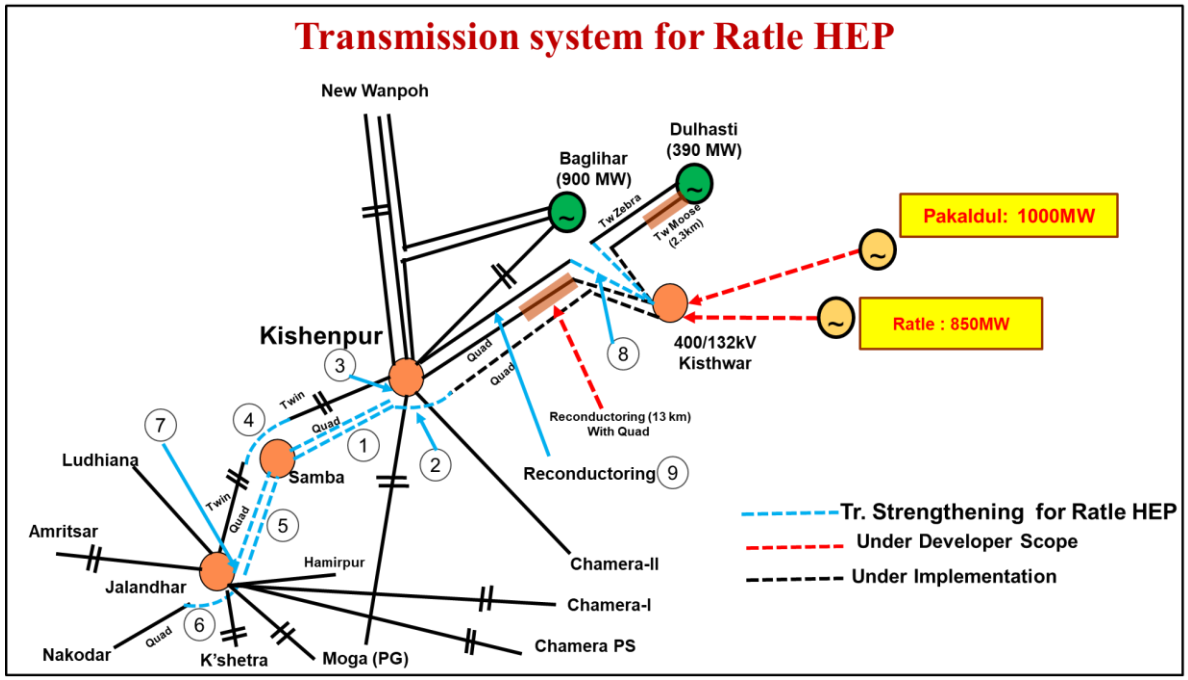


Fig: Transmission scheme for Ratle HEP (Scheme S.No. as mentioned above is indicated near each element in diagram)

Exhibit-I

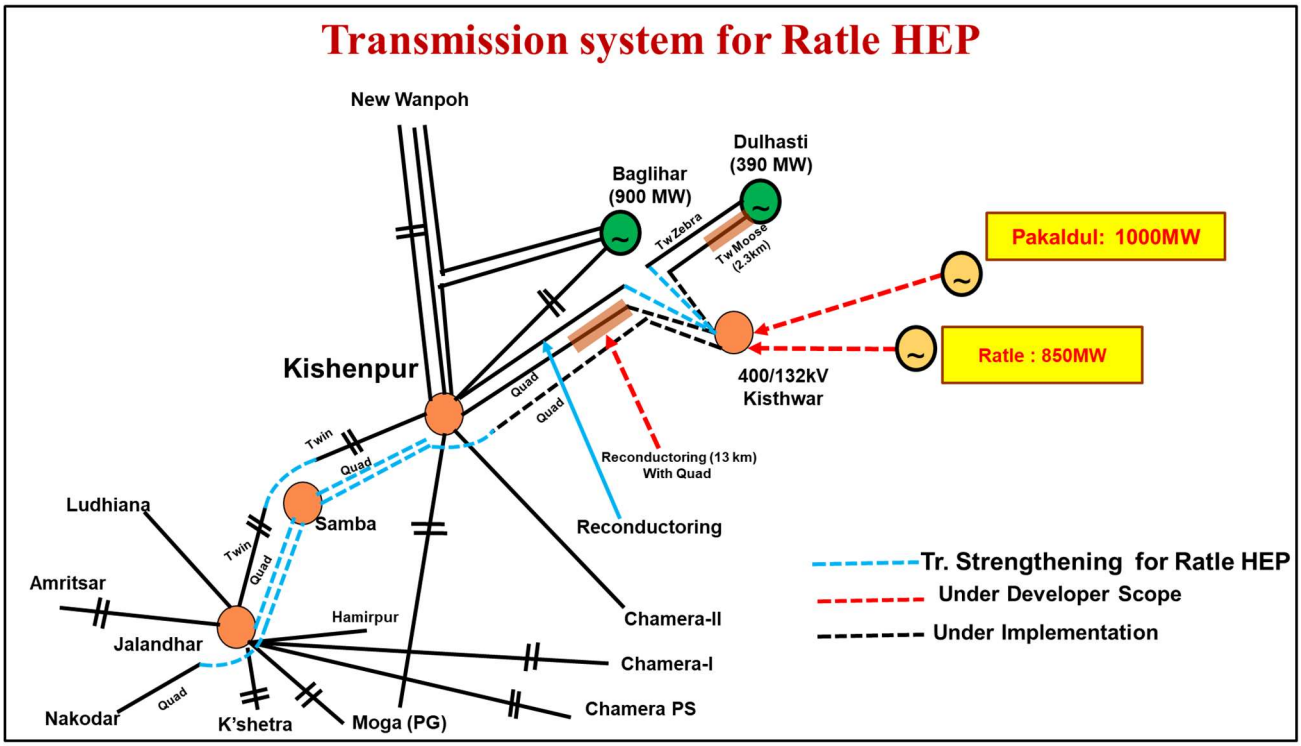
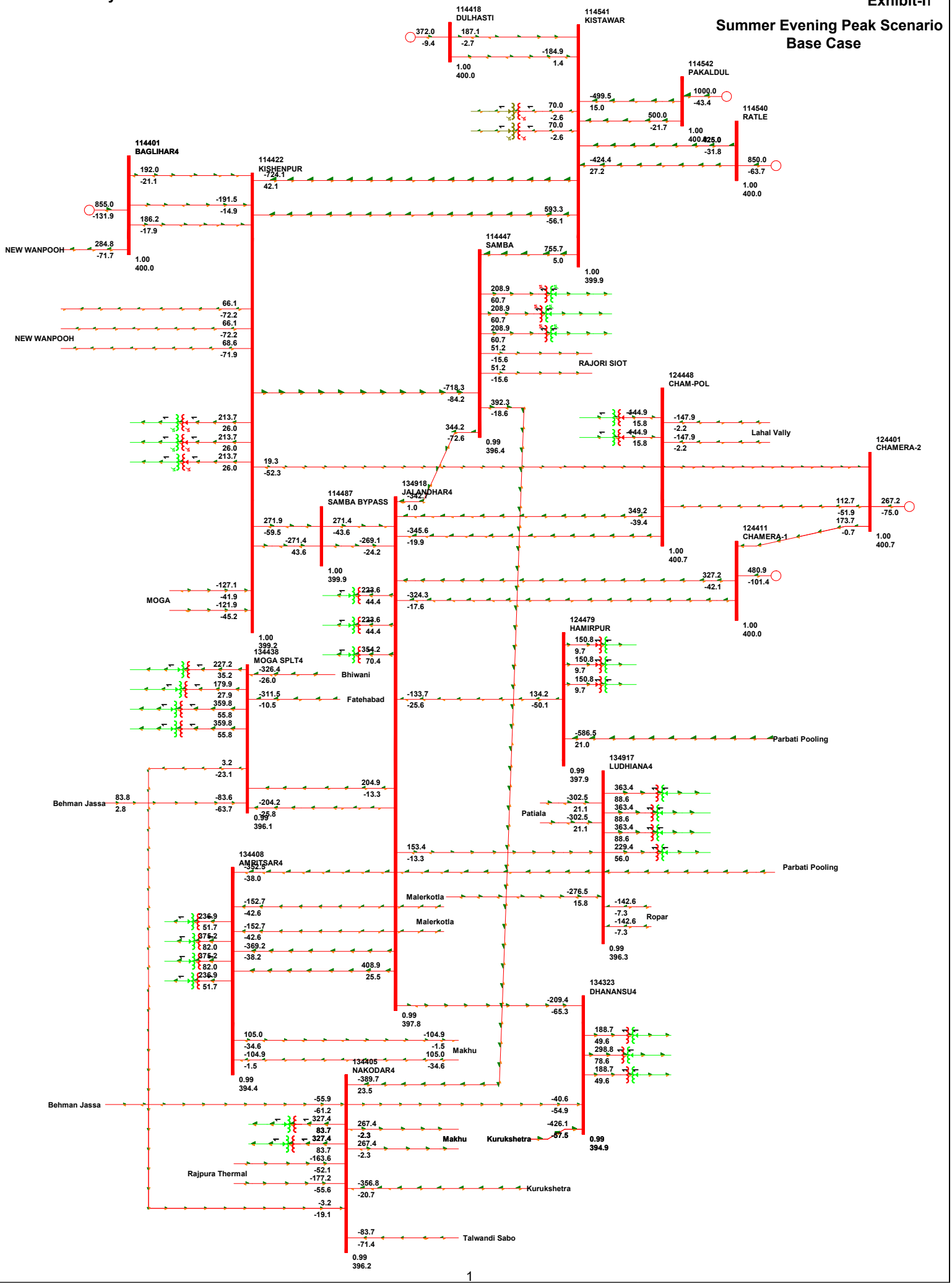


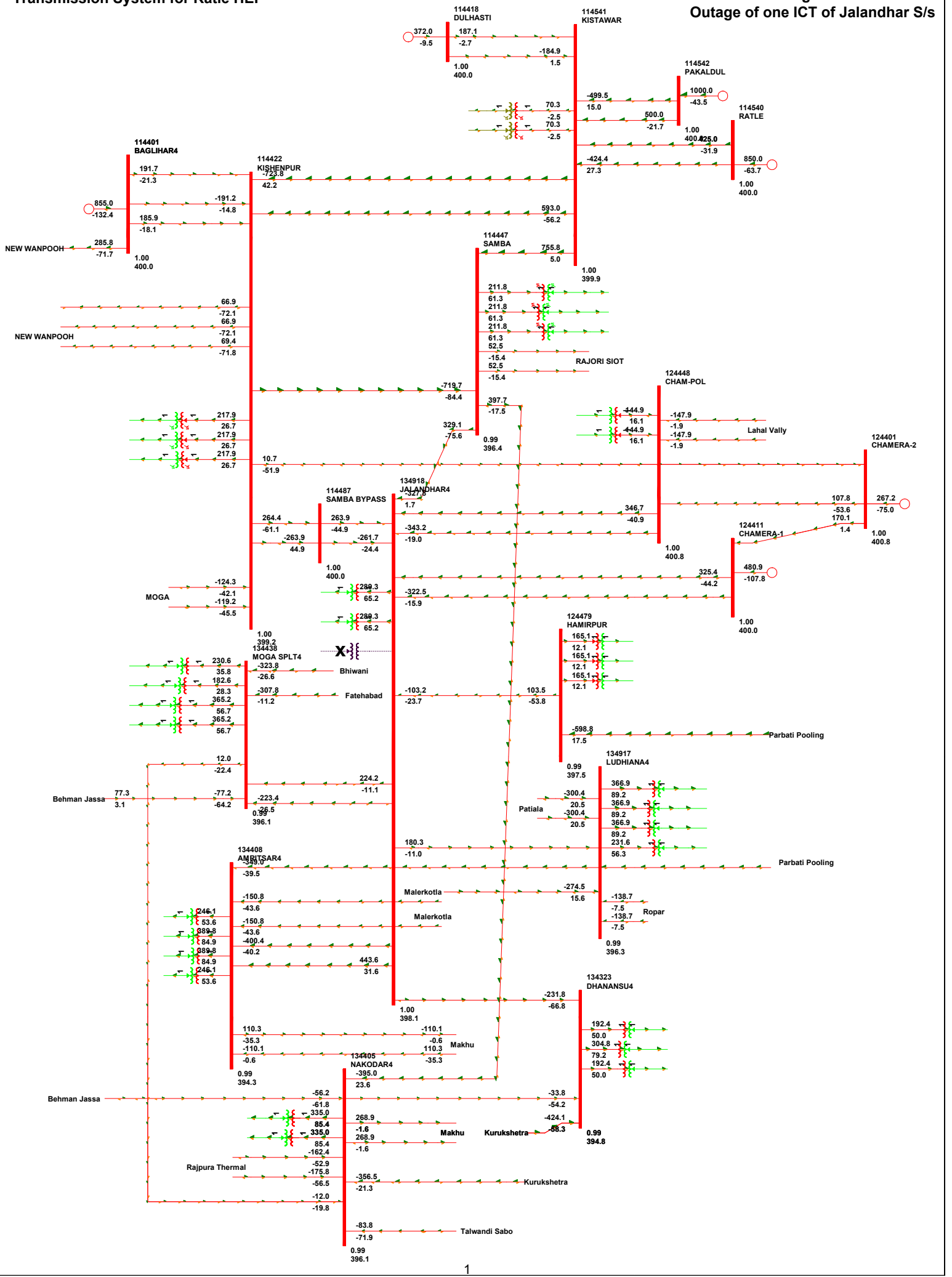
Fig : Transmission system for evacuation of power from Ratle HEP (850MW)

Transmission System for Ratle HEP

Exhibit-II

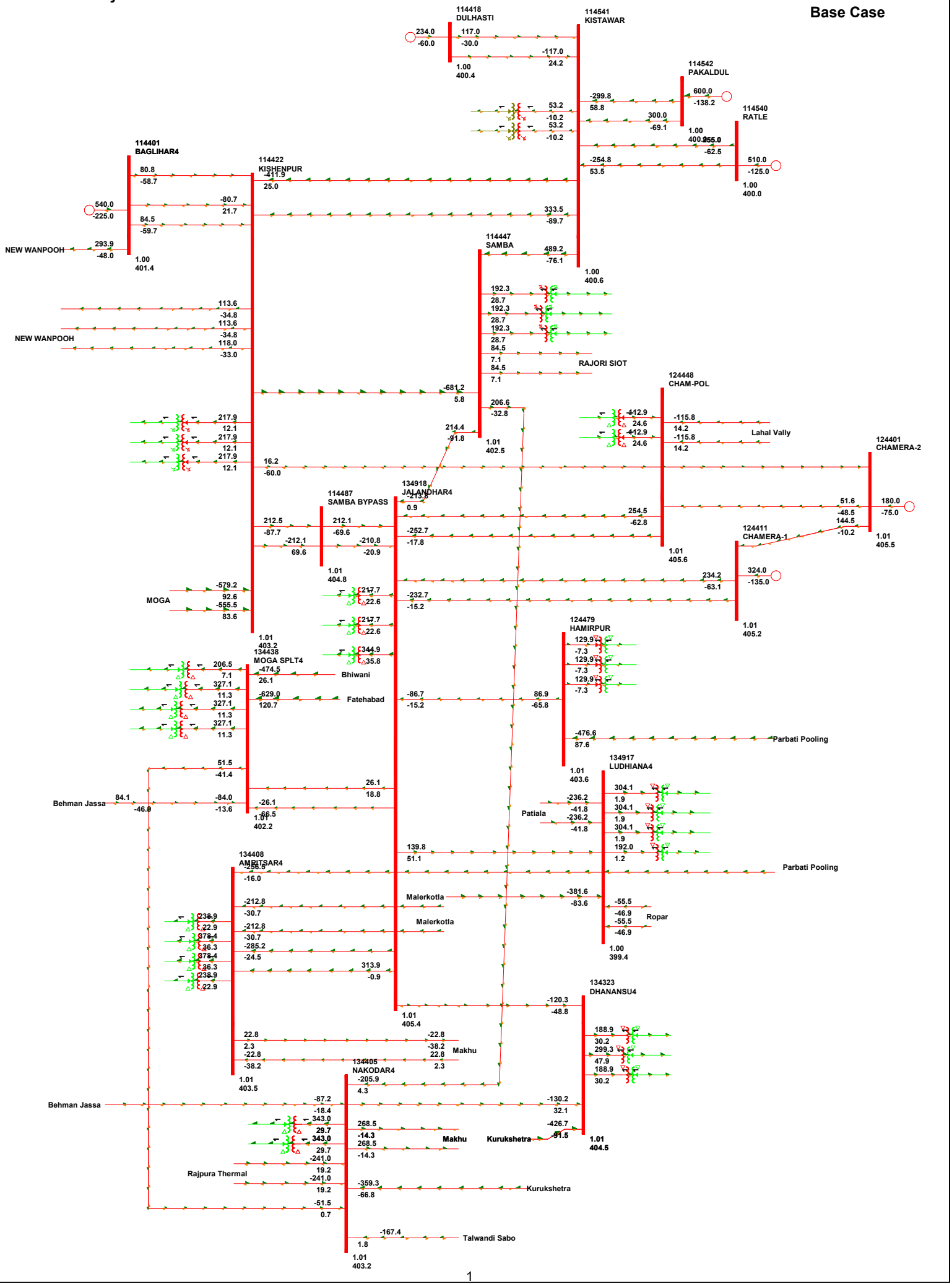
Summer Evening Peak Scenario
Base Case




Transmission System for Ratle HEP
Summer Evening Peak Scenario
Outage of one ICT of Jalandhar S/s
114418
DULHASTI
114541
KISTAWAR
114542
PAKALDUL
114540
RATLE
114401
BAGLIHAR4
114422
KISHENPUR
NEW WANPOOH
114447
SAMBA
RAJORI SIOT
124448
CHAM-POL
Lahal Vally
124401
CHAMERA-2
124411
CHAMERA-1
134918
JALANDHAR4
114487
SAMBA BYPASS
MOGA
134438
MOGA SPLT4
Bhiwani
Fatehabad
124479
HAMIRPUR
Parbati Pooling
134917
LUDHIANA4
Patiala
Ropar
134408
AMRITSAR4
Malerkotla
Makhu
134323
DHANANSU4
Kurukshetra
134405
NAKODAR4
Behman Jassa
Rajpura Thermal
Talwandi Sabo

Transmission System for Ratle HEP

Summer Solar Peak Scenario
Base Case



Transmission System for Ratle HEP

Summer Solar Peak Scenario
Outage of one ICT of Jalandhar S/s