

Eastern Regional Power Committee, Kolkata

Minutes of Special Meeting for discussion on installation of SPS at 400kV level at Rangpo S/s for reliable power evacuation through 400kV Rangpo – Siliguri D/c line held on 14th October, 2016 at ERPC, Kolkata

List of participants is at **Annexure-A**. Member Secretary, ERPC welcomed all the participants to the special meeting. He informed that this special meeting was convened in line with the decision of 125th OCC and the meeting held at CEA on 05-07-2016 to deliberate the SPS needed for more power evacuation through 400 kV Rangpo –Siliguri D/C line to accommodate the power of Teesta-III HEP. Thereafter, he requested Chief Engineer (PSP&A-II), CEA to start the deliberations as per agenda items of the meeting.

1. Progress of Rangpo – Kishanganj 400kV D/c (Quad) line:

1.1 Progress of Rangpo – Kishanganj 400kV D/c (Quad) line, as informed by Teestavalley Power Transmission Ltd. (TPTL), is given below:

	Total	Completed
Locations/Foundation	591	501
Erection	591	458
Stringing	215km	124km

1.2 TPTL informed that Teesta-III – Rangpo 400kV (Quad) D/c line (36km) would be completed by 31st Oct 2016 and the entire line is expected to be completed by Mar 2017.

1.3 POWERGRID informed that LILO portion of first circuit of Teesta-III – Kishanganj 400kV (Quad) D/c line at Rangpo has been completed and has been kept back charged from Rangpo S/s.

1.4 Subsequently, generation project developers of Sikkim updated the commissioning schedule of their respective projects, which is as given below:

Sl. No.	Name of the Developer (Project)	Unit No.	Commissioning Schedule
1	Teesta Urja Ltd. (Teesta-III) (6x200MW)	1, 2 & 3 4, 5 & 6	3 rd , 5 th & 7 th Nov 2016 respectively In January 17
2	Shiga Energy Pvt. Ltd. (Tashiding)(2x48MW)	1 & 2	Jan 2017
3	Sneha Kinetic Power Projects Ltd. (Dikchu) (2x48MW)	1 & 2	Nov 2016

2. Implementation of SPS at Teesta-III HEP in Sikkim

Teesta Urja Ltd. (TUL) informed that control logic has been made in master control of Teesta-III HEP so as to restrict power flow through the cable to 2000 Amp per circuit.

TUL was advised to share the details of SPS with ERLDC/ERPC.

3. Progress of bays by Sikkim for terminating Chuzachen HEP – Rangpo132kV D/c line

No representative of Govt. of Sikkim attended the meeting. However, it was informed by Chuzachen representative that tender for construction of 2 no. 132kV line bays at Rangpo for above line were floated on 07-10-2016 and the bids were expected to be opened on 11-11-2016, and the bays may get completed by Dec, 2017.

Govt of Sikkim to confirm the same.

4. Progress of implementation of the Dikchu Pooling Station (presently to be operated at 132kV), and Dikchu P.S. – Rangpo 220kV D/c line (to be initially operated at 132kV), being implemented by Sikkim

No representative of Govt. of Sikkim attended the meeting. However, it was informed that subject scope of works has already been awarded and anticipated commissioning schedule is as follows :

- (a) Dikchu Pool – Rangpo (Samardong) – Rangpo(POWERGRID) 220kV D/c line (initially charged at 132kV) –Sep, 2018
- (b) Dikchu Pool 132/66/11kV Substation – May 2019

Govt of Sikkim to confirm the same.

5. Operationalization of LTA of Sikkim IPPs

On the request of Teesta Urja Limited, the subject agenda was not deliberated and it was decided that the same shall be discussed at a later date in a separate meeting.

6. System Protection Scheme (SPS) for Rangpo – Siliguri 400kV D/c line

- 6.1 MS, ERPC stated that in the 125th OCC meeting of ERPC held on 20.09.2016, the above issue was deliberated and it was decided that the desired SPS would be discussed in a special meeting with CEA, CTU, POWERGRID, NLDC,ERLDC and ERPC.
- 6.2 POWERGRID informed that SPS may be required to facilitate maximum evacuation from the generation projects in Sikkim till the commissioning of the main evacuation line of the Sikkim IPPs viz. Rangpo – Kishanganj 400kV D/c (Quad) line. In this case, total power from generation projects in Sikkim would have to be evacuated to the other parts of the grid through the limited capacity of Rangpo – Siliguri 400kV D/c line which was planned for Teesta-V (510 MW) project. ERLDC however opined that the SPS may remain in the circuit even after the commissioning of Rangpo-Kishanganj line for secured operation of the grid during other eventualities.
- 6.3 It was pointed out by POWERGRID that the thermal rating of Rangpo-Siliguri line is about 1000MW per circuit for 400kV (twin moose) D/c line with design temperature of 85°C. After deliberation, members agreed for maximum power flow of 1500MW (750MW per circuit) on Rangpo – Siliguri 400kV D/c line for secure and safe operation of the Sikkim grid, in line with the decision taken in the meeting held at CEA on 05-07-2016.
- 6.4 SPS would have to be provided at Rangpo S/s which will control the power flow on the surviving ckt to about 750 MW during the outage of other circuit of Rangpo – Siliguri 400 kV D/c line by reducing the generation of the hydro projects except Teesta-V (510 MW) which already has long term allocation by Govt. of India. The SPS at Rangpo S/s would be implemented by POWERGRID which will communicate with Master Control of Teesta-III, Chuzachen, Dikchu, Jorethang and Tashiding HEPs. The cost of the SPS at Rangpo would be borne by Teesta Urja Ltd. SPS at generation projects would be installed by respective generation project developers.
- 6.5 After detailed deliberation, it was proposed that in case of outage of one circuit of Rangpo – Siliguri 400 kV D/c line, the SPS action would limit the power flow on the surviving ckt by keeping only one unit at each of the generation projects (Teesta-III, Chuzachen, Dikchu, Jorethang and Tashiding) in service. Considering that Teesta-III, Dikchu and Tashiding generation projects have been commissioned and all the units of Teesta-V and the surviving units of other generation project are running at their full capacity, there may be a possibility that the power flow through the surviving Rangpo-Silliguri line become about 900 MW [Teesta-V: 510 MW, Chuzachen, Dikchu, Jorethang & Tashiding each about 50 MW and Teesta-III HEP 200 MW].

6.6 It was therefore proposed that for safe operation of the grid, the line flow on the surviving ckt of Rangpo-Siliguri line have to be brought down to 750 MW through a second level SPS operation / manual intervention for further reduction in generation. In the most severe case where the power flow would be about 900MW, the additional reduction required is about 150MW which can be achieved through the following:

- (a) For one unit of Chuzachen, Dikchu, Jorethang and Tashiding HEPs, dispatch may be reduced to 25MW each or to minimum generation capacity of respective unit, whichever is higher (total reduction by $4 \times 25 = 100$ MW approx.)
- (b) For one unit of Teesta-III HEP dispatch may be reduced to about 150MW. (reduction by 50MW)

6.7 After detail deliberation, the following was concluded:

- i) *Maximum power flow of about 1500MW would be allowed in the Rangpo-Siliguri 400kV D/c line (Teesta-V: 510 MW, Teesta-III: 600 MW, Chuzachen: 99 MW, Dikchu: 96 MW, Jorethang: 96 MW and Tashiding: 97 MW). Under outage of any one circuit, the flow on the surviving ckt would be reduced to 750 MW through SPS operation.*
- ii) *In case of outage of one circuit of Rangpo-Siliguri 400kV D/c line if the power flow in the remaining circuit becomes more than 750MW, the SPS would send a control signal to each of the Teesta-III, Chuzachen, Dikchu, Jorethang and Tashiding HEPs generating stations so as to keep only one unit of each project in service and disconnect the remaining units.*
- iii) *Even after the above SPS operation, if the power flow in the surviving ckt of Rangpo-Siliguri still remains more than 750 MW, a 2nd level SPS operation or manual intervention would be carried out to bring down the power flow within 750MW, which will comprise of the following :*
 - *Reduction of about 25MW from each of the Chuzachen, Dikchu, Jorethang and Tashiding HEPs, subject to maintaining at least the minimum generation capacity of respective HEPs.*
 - *Reduction of 50MW from Teesta-III HEP.*
- iv) *POWERGRID would implement the SPS at Rangpo S/s and the respective HEPs (Teesta-III, Chuzachen, Dikchu, Jorethang & Tashiding HEPs) would implement the SPS at their respective end. The cost of the SPS at Rangpo would be borne by Teesta Urja Ltd. The tentative schedule of SPS installation is December 2016.*
- v) *The proposed logic for SPS operation would be finalized in the forthcoming OCC meeting of ERPC.*
- vi) *Powergrid will carry out the healthiness checking of Rangpo-Siliguri 400kV D/c line by November, 2016.*
- vii) *Before commissioning the generating units of Teesta-III, Dikchu and Tashiding HEPs the protection system along with PLCC should be commissioned fully to the satisfaction of ERLDC and ERPC.*

The SPS may be reviewed after commissioning of the Rangpo – Kishanganj line and/or commissioning of more units at Teesta-III.

Meeting ended with vote of thanks to the chair.
