

TECHNICAL INFORMATION ON PROJECT COMPONENTS

Part A: Transmission System Development

Part A (i): Kohalpur line - Second circuit stringing of the Kohalpur-Mahendranagar 132 kV transmission line

Summary

- i. Addition of a second circuit to the existing 132 kV line between Kohalpur in Western Nepal to Mahendranagar in the Mid-West.
- ii. Addition of one 132 kV line bay at Kohalpur
- iii. Construction of a new substation at Bhurigaon, consisting of two 132 kV line bays, one transformer bay, one control building, one 132/33kV transformer, and one 33/11kV transformer
- iv. Addition of two 132 kV line bays, one transformer bay and a double busbar at Lamki substation.
- v. Construction of a new substation at Pahalmanpur, consisting of two 132 kV line bays, one transformer bay, one control building, one 132/33kV transformer, and one 33/11kV transformer.
- vi. Addition of two 132 kV line bays and a double busbar at Attariya substation.
- vii. Addition of one 132 kV line bay and a double busbar at Mahendranagar.

Details

Work associated with the above are the following:

- (a) 188km second circuit conductor and insulators
- (b) 10 x 132kV line bays
- (c) 2 x 132kV transformer bays
- (d) 3 x 132kV bus coupler bays
- (e) 2 x 132/33kV, 30MVA transformers
- (f) 6 x 33kV line bays
- (g) 2 x 33/11kV, 6/8MVA transformers
- (h) 10 x 11kV line bays
- (i) 2 x control buildings
- (j) 2 x guard houses/stores/staff quarters buildings
- (k) Civil works, including stringing
- (l) Environmental mitigation and monitoring
- (m) Project management and construction supervision

Part A (ii): Khimti-Kathmandu Line

This line will be built to 400 kV rating but operated initially at 220 kV.

Summary:

- i. Construction of one 400 kV double circuit line from the New Khimti substation to Moolpani in Kathmandu via a new substation built at Barhabise.
- ii. Extension of the gas insulated substation (GIS) bay at Upper Tamakoshi power station
- iii. Upgrading of the existing Barhabise substation
- iv. Construction of a new 220/132kV substation at Moolpani (Kathmandu)
- v. Installation of communication interfaces at Tamakoshi, Barhabise, and Moolpani substations
- vi. Survey, EIA, land acquisition, compensation, environmental mitigation, forest clearance, and other related works.

Details

- (a) 400 kV rated towers, insulators, dual conductors, 100 km
- (b) 2 x 400 kV line bays at New Khimti substation

At Barhabise

- (c) 1 x 220/132/33kV, 100 MVA transformer
- (d) 4 x 220 kV line bays
- (e) 1 x 220 kV transformer bay
- (f) 1 x 132 kV transformer bay

At Moolpani

- (g) 2 x 220/132/33kV 100MVA transformers
- (h) 1x 132/11kV 30MVA transformer
- (i) 2 x 220kV transformer bays
- (j) 2 x 132kV transformer bays
- (k) 4 x 132kV line bays
- (l) 1 x 11kV switchgear group

Project

- (m) 2 x control buildings
- (n) Communications, SCADA and protection
- (o) Environmental mitigation and monitoring
- (p) Resettlement
- (q) Project management and construction supervision

Part A (iii): Expansion of Chapali Substation

Details

- (a) 2 x 132 kV line bays
- (b) 2 x 132 kV transformer bays
- (c) 4 x 66 kV line bays
- (d) 2 x 66 kV transformer bays
- (e) 1 x 132/66 kV 7 X 15 MVA single phase transformer set
- (f) 66 kV underground cable (2 circuits, 2.5 km)
- (g) Communication & SCADA and associated works
- (h) 66 kV underground cabling installation between Chapali and Lainchaur
- (i) 66 kV line bays for Chapali-Lainchaur

Part B: Energy Access Improvement

Summary: It is intended increase the capacity of 12 distribution substations by increasing transformer capacity and where necessary, associated line capacity. The following substations will be increased in capacity:

Details

- i. Gaur, Rautahat, 33/11kV, from 5 MVA to 6/8 MVA
- ii. Nijgarh, Bara, 33/11kV, from 1.5 MVA to 6/8 MVA
- iii. Chandragardhi, Jharpa, from 6/8 MVA to 2 x 6/ 8MVA
- iv. Jare, Dhading, from 3MVA to 6/8 MVA
- v. Belbari, Morang, from 3MVA to 6/8 MVA
- vi. Parasi, Nawalparasi, from 6/8 MVA to 2 x 6/8 MVA

- vii. Ghoroka, Ghoroka, from 3MVA to 6/8 MVA
- viii. Krishnanagar, Kapilbastu, from 3 MVA to 6/8 MVA
- ix. Taulihawa, Kapilbastu, from 4.5M VA to 6/8 MVA
- x. Amuwa, Rupendehi, from 5 MVA to 6/8 MVA
- xi. Gaddachauki, Kanchanpur, from 1.5 MVA to 6/8 MVA
- xii. Mirmi, Syangja, from 3 MVA to 6/8 MVA

Also this project component involves setting up and expanding distribution systems along the proposed Khimti-Kathmandu transmission line.

Part C: Small Hydropower Plant Rehabilitation

Summary: Rehabilitation of the Tinau (1 MW) and Sundarijal (640 kW) hydropower stations. Both stations have been in operation for decades and, although of sound civil, mechanical and electrical design, are facing increasing maintenance issues owing to age.

Details

(i) Tinau (2 x 250 kW and 1 x 500 kW generators and turbines, existing)

- New vacuum circuit breaker and control panel
- Replacement of the ventilation system
- Installation of new exciters for generators
- Installation of new governors for turbines
- Installation and commissioning of above
- Repairs to dam, flushing gate and de-silting chamber
- Repairs to penstock
- Repairs to head race and tail race tunnels
- Community development

(ii) Sundarijal (2 x 340 kW generators and turbines existing)

- Replacement of turbine and generator sets / or major parts of each
- Replacement of exciters for generators
- Replacement of control and protection system
- Repairs to sections of the penstock
- Rearrange or replace control cabling
- Procurement of special tools