

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
के न्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
विद्युत संचार वि कास प्रभाग
Power Communication Development Division

## CEA Case No. : TN-718

Induced Voltage (IV) calculation in respect of PTCC proposal for 400 kV D/C line from Udangudi Thermal Plant Switchyard to proposed Ottapidaram 400/230-110 kV SS (70.68 km) - regd.

| S. No | Reference No. | Dated |
| :---: | :--- | :--- |
| (i) | TANTRANSCO: 001088/SE/TR-I/EE/TSM/A1/F.PTCC/ | 01.02 .2023 |
| (ii) | TANTRANSCO: Email | 04.11 .2023 |
| (iii) | BSNL: PTCC/STN4653/06 | 24.05 .2023 |
| (iv) | Southern Railway: W.384/3/2/1227 | 07.02 .2023 |
| (v) | Defense: B/46937/Sigs 7(b)/3211 received via TANTRANSCO <br> email dated 20.10 .2023 | 11.08 .2023 |

The PTCC proposal and details submitted vide references (i) \& (ii) has been examined. The LF induction on communication cables of BSNL and Southern Railway with respect to details furnished vide above references (iii) \& (iv) respectively have been computed. The voltage likely to be induced on paralleling communication cables of BSNL and Southern Railway under Single Line to Ground fault condition are enclosed at Annexure-I \& II respectively. The screening factors as applicable have been considered. Vide reference (v) above, Defense have issued No Objection Certificate (NOC) (enclosed at Annexure-III).

EPR zone for the proposed substation is mentioned below:

| Name of the <br> proposed Substation | Half <br> diagonal <br> distance, <br> $\mathrm{D} / 2(\mathrm{mts})$ | Fault <br> Current <br> $\mathrm{I}(\mathrm{KA})$ | Resistance <br> of Earth <br> Mat, R <br> $(\mathrm{ohms})$ | d <br> $(\mathrm{mts})$ <br> at 430 <br> V | d <br> $(\mathrm{mts})$ <br> at 650 <br> V | d <br> $(\mathrm{mts})$ <br> at <br> 7 kV | d <br> $(\mathrm{mts})$ <br> at <br> 10 kV |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Ottapidaram 400/230- <br> 110 kV SS | 303.95 | 18.872 | 0.045 | 563 | 177 | NIL | NIL |
| Udangudi Thermal <br> Plant Switchyard | 132.8 | 45.072 | 0.045 | 493.65 | 281.62 | NIL | NIL |

As per the details submitted by BSNL, no telecom exchanges are existing within the EPR zone of proposed substations.

Taking above into consideration, necessary action for issuance of PTCC route approval may be taken under intimation to this office.

## Encl.: As above

Signed by Len.j.b
Date: 13-11-2023 16:07:57
Reason: Approved

## Director

To,

| 1. | Divisional Engineer <br> (PTCC), Southern Zone | BSNL, Inspection Circle,1st Floor, <br> Raj Bhavan Exchange No. 26, Sardar <br> Patel Road, Guindy, Chennai-600032 |  |
| :--- | :--- | :--- | :--- |
| 2. | General Manager (S\&T) | Southern Railway, Head Quarters <br> Office, S\&T Branch, Chennai - <br> 600003 |  |
| 3. | Superintending <br> Engineer/Transmission I | TANTRANSCO, 5th floor, <br> TANTRANSCO HQ, 144, Anna <br> Salai, Chennai-600002 |  |

## ANNEXURE-I

| CEA Case No.: TN-718 <br> Name of the Power line: 400 kV D/C line from Udangudi Thermal Plant Switchyard to proposed Ottapidaram 400/230-110 kV SS |  |  | Map Scale : $1 \mathrm{~cm}=500 \mathrm{~m}$ <br> Total Length : 70.68 km <br> S.R. Value : 25000 Ohm-cm |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| S.No. | Telecom. Details | Length of <br> Parallelis <br> m in Km. | Mutual <br> Coupling <br> in Ohms. | Effective <br> Fault current in Amps. | $\begin{gathered} \text { I.V } \\ \text { in } \\ \text { Volts. } \end{gathered}$ |




| 2 | Exge to P. 23 to DP. 2304 | IV less than 430 V |  |
| :---: | :---: | :---: | :---: |
| 3 | Exge to P. 24 to DP. 2401 |  |  |
| 4 | Exge to P. 25 to DP. 2526 |  |  |
| 5 | Exge to P. 31 to DP. 3105 |  |  |
| 6 | Exge to P. 31 to DP. 3103 |  |  |
| 7 | Exge to P. 31 to DP. 3101 |  |  |
| 8 | Exge to P. 21 to DP. 2135 |  |  |
| 9 | Exge to P. 21 to DP. 2119 |  |  |
| V TCH | TIRUCHENDUR TELEPHONE EXCHANGE |  |  |
| 1 | Exge to P. 21 to DP. 2101 | IV less than 430 V |  |
| 2 | Exge to P. 22 to DP. 2201 |  |  |
| 3 | Exge to P. 22 to DP. 2202 |  |  |
| 4 | Exge to P. 23 to DP. 2301 |  |  |
| 5 | Exge to P. 23 to DP. 2302 |  |  |
| 6 | Exge to P. 24 to DP. 2401 |  |  |
| 7 | Exge to P. 24 to DP. 2402 |  |  |
| 8 | Exge to P. 24 to DP. 2403 |  |  |
| 9 | Exge to P. 24 to DP. 2404 |  |  |
| 10 | Exge to P. 25 to DP. 2501 |  |  |
| 11 | Exge to P. 25 to DP. 2502 |  |  |
| 12 | Exge to P. 25 to DP. 2503 |  |  |
| 13 | Exge to P. 25 to DP. 2504 |  |  |
| 14 | Exge to P. 26 to DP. 2601 |  |  |
| 15 | Exge to P. 26 to DP. 2602 |  |  |
| 16 | Exge to P. 26 to DP. 2603 |  |  |
| 17 | Exge to P. 31 to DP. 3101 |  |  |




| 9 | Exge to P. 22 to DP. 2205 |  |
| :---: | :---: | :---: |
| 10 | Exge to P. 22 to DP. 2206 |  |
| 11 | Exge to P. 22 to DP. 2207 |  |
| 12 | Exge to P. 23 TO DP. 2301 |  |
| 13 | Exge to P. 23 TO DP. 2302 |  |
| 14 | Exge to P. 23 TO DP. 2303 |  |
| 15 | Ex eto P. 31 TO DP. 3101 |  |
| 16 | Exge to P. 31 TO DP. 3102 |  |
| 17 | Exge to P. 31 TO DP. 3103 |  |
| 18 | Exge to P. 31 TO DP. 3104 |  |
| 19 | Exge to P. 31 to DP. 3105 | IV less than 430 V |
| 20 | Exge to P. 31 to DP. 3106 |  |
| 21 | Exge to P. 31 to DP. 3107 |  |
| 22 | Exge to P. 31 to DP. 3108 |  |
| 23 | Exge to P. 31 to DP. 3109 |  |
| 24 | Exge to P. 32 to DP. 3201 |  |
| 25 | Exge to P. 31 to DP. 3202 |  |
| 26 | Ex e to P. 31 to DP. 3203 |  |
| 27 | Exge to P. 34 TO DP. 3401 |  |
| 28 | Exge to P. 34 TO DP. 3402 |  |
| 29 | Exge to P. 34 TO DP. 3403 |  |
| 30 | Exge to P. 34 TO DP. 3404 |  |
| 31 | Exge to P. 34 TO DP. 3405 |  |
| 32 | Exge to P.36TO DP. 3601 |  |
| 33 | Exge to P. 36 TO DP. 3602 |  |
| 34 | Exge to P.36TO DP. 3603 |  |





| 9 | Exge to P. 31 to DP. 18 |  |
| :---: | :---: | :---: |
| 10 | Exge to P. 31 to DP. 16 |  |
| 11 | Exge to P. 24 to DP. 10 |  |
| 12 | Exge to P. 24 to DP.14A |  |
| 13 | Exge to P. 24 to DP.18A |  |
| 14 | Exge to P. 24 to DP. 26 |  |
| 15 | Exge to P. 24 to DP.26A |  |
| 16 | Exge to P. 23 to DP. 009 |  |
| 17 | Exge to P. 23 to DP.26A |  |
| 18 | Exge to P. 23 to DP.16B |  |
| 19 | Exge to P. 23 to DP.16A |  |
| 20 | Exge to P. 23 to DP.5B |  |
| 21 | Exge to P. 23 to DP. 24 |  |
| 22 | Exge to P. 23 to DP. 18 |  |
| 23 | Exge to P. 21 to DP. 19 |  |
| 24 | Ex eto P. 21 to DP.5A |  |
| 25 | Exge to P. 21 to DP. 15 |  |
| 26 | Exge to P. 21 to DP. 18 |  |
| 27 | Exge to P. 21 to DP. 41 |  |
| 28 | Exge to P. 21 to DP. 011 |  |
| 29 | Exge to P. 21 to DP. 50 |  |
| 30 | Exge to P. 22 to DP.2A |  |
| 31 | Exge to P. 22 to DP. 34 |  |
| 32 | Exge to P. 22 to DP. 05 |  |
| 33 | Ex e to P. 22 to DP. 23 |  |
| 34 | Exge to P. 22 to DP.34A |  |



| 26 | Exge to P. 21 to DP. 28 B |  |  |
| :---: | :---: | :---: | :---: |
| 27 | Exge to P. 21 to DP.26B |  |  |
| 28 | Exge to P. 21 to DP.6B |  |  |
| 29 | Exge to P. 21 to DP. 14 |  |  |
| 30 | Exge to P. 22 to DP. 6 |  |  |
| 31 | Exge to P. 22 to DP. 41 |  |  |
| 32 | Exge to P. 22 to DP. 40 |  |  |
| 33 | Exge to P. 22 to DP. 3 |  |  |
| 34 | Exge to P. 22 to DP. 31 | IV less than 430 V |  |
| 35 | Exge to P. 22 to DP. 7 |  |  |
| 36 | Exge to P. 22 to DP. 15 |  |  |
| 37 | Exge to P. 22 to DP. 01 |  |  |
| 38 | Exge to P. 22 to DP. 36 |  |  |
| 39 | Exge to P. 23 to DP.41A |  |  |
| 40 | Exge to P. 23 to DP. 44 |  |  |
| 41 | Exge to P. 23 to DP. 15 |  |  |
| 42 | Exge to P. 23 to DP.16B |  |  |
| 43 | Exge to P. 23 to DP. 18 |  |  |
| 44 | Exge to to DP. 007 |  |  |
| 45 | Exge to to DP.39B |  |  |
| 46 | Exge to to DP. 13 |  |  |
| 47 | Exge to to DP.33A |  |  |
| 48 | Exgeto to DP. 008 |  |  |
| 49 | Exge to to DP. 005 |  |  |
| $\begin{aligned} & \text { XV } \\ & \text { DLM } \end{aligned}$ | DEIVACHEYALPURAM TELEPHONE EXCHANGE |  |  |
| 1 | Exge to P. 21 to DP. 003 | IV less than 430 V |  |






| 16 | Exge to P. 23 to DP. 29 |  |  |
| :---: | :---: | :---: | :---: |
| 17 | Exge to P. 24 to DP. 05 |  |  |
| 18 | Exge to P. 24 to DP. 10 |  |  |
| 19 | Exge to P. 24 to DP. 19 |  |  |
| 20 | Exge to P. 24 to DP. 25 |  |  |
| 21 | Exge to P. 24 to DP. 36 |  |  |
| 22 | Exge to P. 24 to DP. 43 |  |  |
| 23 | Exge to P. 25 to DP. 07 |  |  |
| 24 | Exge to P. 25 to DP. 26 |  |  |
| 25 | Exge to P. 31 to DP. 13 |  |  |
| 26 | Exge to P. 31 to DP. 15 |  |  |
| 27 | Exge to P. 31 to DP. 19 |  |  |
| 28 | Exge to P. 31 to DP. 32 |  |  |
| 29 | Exge to P. 31 to DP. 33 |  |  |
| 30 | Exge to P. 34 to DP. 13 |  |  |
| 31 | Exge to P. 34 to DP. 16 |  |  |
| 32 | Exge to P. 34 to DP. 19 |  |  |
| 33 | Exge to P. 34 to DP. 20 |  |  |
| $\begin{aligned} & \hline \mathrm{XXI} \\ & \text { NAZ } \end{aligned}$ | NAZARETH TELEPHONE EXCHANGE |  |  |
| 1 | Exge to P. 20 to DP. 06 | IV less than 430 V |  |
| 2 | Exge to P. 20 to DP. 07 |  |  |
| 3 | Ex e to P. 20 to DP. 08 |  |  |
| 4 | Exge to P. 21 to DP. 01 |  |  |
| 5 | Exge to P. 21 to DP. 07 |  |  |
| 6 | Exge to P. 21 to DP. 08 |  |  |
| 7 | Exge to P. 21 to DP. 19 |  |  |


| 8 | Exge to P. 21 to DP. 22 |  |
| :---: | :---: | :---: |
| 9 | Exge to P. 21 to DP. 23 |  |
| 10 | Exge to P. 21 to DP. 24 |  |
| 11 | Ex e to P. 21 to DP. 28 |  |
| 12 | Exge to P. 21 to DP. 29 |  |
| 13 | Exge to P. 21 to DP. 30 |  |
| 14 | Exge to P. 21 to DP. 31 |  |
| 15 | Ex e to P. 21 to DP. 33 |  |
| 16 | Exge to P. 21 to DP. 34 |  |
| 17 | Exge to P. 21 to DP. 35 |  |
| 18 | Exge to P. 22 to DP. 14 |  |
| 19 | Exge to P. 22 to DP. 15 |  |
| 20 | Exge toP. 22 to DP. 31 |  |
| 21 | Exge to P. 22 to DP. 35 |  |
| 22 | Exge to P. 22 to DP. 36 |  |
| 23 | Ex e to P. 22 to DP. 41 |  |
| 24 | Exge to P. 26 to DP. 02 |  |
| 25 | Exge to P. 26 to DP. 08 |  |
| 26 | Exge to P. 26 to DP. 09 |  |
| 27 | Exge to P. 26 to DP. 11 |  |
| 28 | Exge to P. 26 to DP. 12 |  |
| 29 | Exge to P. 26 to DP. 27 |  |
| 30 | Exge to P. 26 to DP. 28 |  |
| 31 | Exge to P. 27 to DP. 10 |  |
| 32 | Exge to P. 27 to DP. 11 |  |
| 33 | Exge to P. 27 to DP. 15 |  |


| 34 | Exge to P. 27 to DP. 18 |  |
| :---: | :---: | :---: |
| 35 | Exge to P. 27 to DP. 20 |  |
| 36 | Exge to P. 31 to DP. 01 |  |
| 37 | Exge to P. 31 to DP. 05 |  |
| 38 | Exge to P. 31 to DP. 12 |  |
| 39 | Exge to P. 31 to DP. 16 |  |
| 40 | Exge to P. 31 to DP. 22 |  |
| 41 | Exge to P. 31 to DP. 24 |  |
| 42 | Exge to P. 32 to DP. 15 | IV less than 430 V |
| 43 | Exge to P. 32 to DP. 16 |  |
| 44 | Exge to P. 32 to DP. 17 |  |
| 45 | Exge to P. 32 to DP. 18 |  |
| 46 | Exge to P. 32 to DP. 19 |  |
| 47 | Exge to P. 32 to DP. 20 |  |
| 48 | Exge to P. 33 to DP. 15 |  |
| 49 | Exge to P. 33 to DP. 16 |  |
| 50 | Exge to P. 34 to DP. 02 |  |
| 51 | Exge to P. 34 to DP. 01 |  |
| $\begin{aligned} & \text { XXII } \\ & \text { ALW } \end{aligned}$ | ALWARTIRUNAGARI TELEPHONE EXCHANGE |  |
| 1 | Exge to P. 21 to DP. 01 |  |
| 2 | Exge to P. 21 to DP. 02 |  |
| 3 | Exge to P. 21 to DP.15B |  |
| 4 | Exge to P. 22 to DP. 05 | IV less than 430 V |
| 5 | Exge to P. 22 to DP. 10 |  |
| 6 | Exge to P. 22 to DP. 16 |  |
| 7 | Exge to P. 22 to DP.16B |  |


| 8 | Exge to P. 22 to DP.37A |  |
| :---: | :---: | :---: |
| 9 | Exge to P. 22 to DP.37B |  |
| 10 | Exge to P. 23 to DP. 09 |  |
| 11 | Exge to P. 23 to DP. 11 |  |
| 12 | Exge to P. 23 to DP. 12 |  |
| 13 | Exge to P. 23 to DP. 16 |  |
| 14 | Exge to P. 23 to DP. 19 | IV less than 430 V |
| 15 | Exge to P. 23 to DP. 20 |  |
| 16 | Exge to P. 25 to DP. 02 |  |
| 17 | Exge to P. 25 to DP.10B |  |
| 18 | Exge to P. 25 to DP.18B |  |
| 19 | Exge to P. 25 to DP. 31 |  |
| $\begin{aligned} & \text { XXIII } \\ & \text { AUT } \end{aligned}$ | AUTHOOR TELEPHONE EXCHANGE |  |
| 1 | Exge to P. 21 to DP. 12 |  |
| 2 | Ex e to P. 21 to DP. 24 |  |
| 3 | Exge to P. 21 to DP. 33 |  |
| 4 | Exge to P. 21 to DP. 39 |  |
| 5 | Exge to P. 21 to DP. 43 |  |
| 6 | Exge to P. 22 to DP. 05 |  |
| 7 | Exge to P. 22 to DP. 10 | IV less than 430 V |
| 8 | Exge to P. 22 to DP. 14 |  |
| 9 | Exge to P. 22 to DP. 31 |  |
| 10 | Exge to P. 22 to DP. 37 |  |
| 11 | Exge to P. 23 to DP. 01 |  |
| 12 | Exge to P. 23 to DP. 07 |  |
| 13 | Exgc to P. 23 to DP. 13 |  |


| 14 | Exge to P.32 to DP.12 |  |
| ---: | :--- | :--- |
| 15 | Exge to P.32 to DP.32 |  |
| 16 | Exge to P.32 to DP.33 |  |
| 17 | Exge to P.32 to DP.35 |  |
| 18 | Exge to P.41 to DP.08 |  |
| 19 | Exge to P.41 to DP.10 P.41 to DP.34 |  |
| 20 | Exge to P.41 to DP.43B |  |
| 21 |  |  |


| CEA Case No.: TN-718 <br> Name of the Power line: 400 kV D/C line from Udangudi Thermal Plant Switchyard to proposed Ottapidaram 400/230-110 kV SS |  |  | Map Scale : $1 \mathrm{~cm}=500 \mathrm{~m}$ <br> Total Length : 70.68 km <br> S.R. Value : 25000 Ohm-cm |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| S.No. | Telecom. Details | Length of <br> Parallelis <br> m in Km. | Mutual Coupling in Ohms. | Effective <br> Fault current in Amps. | $\begin{gathered} \text { I.V } \\ \text { in } \\ \text { Volts. } \end{gathered}$ |
| Southern Railway Letter No: W.384/3/2/1227 Date: 07.02.2023 |  |  |  |  |  |
| 1. | Vanchimaniyachchi - Tattaparai | 3.5 | 0.0029 | 17931 | 52 |
| 2. | Tattaparai - Milavittan | 3.6 | 0.0086 | 16395 | 140 |
| 3. | Milavittan - Tuticorin | Out of parallelism |  |  | 0 |
| 4. | Seydunganallur - Srivaikuntam |  |  |  | 0 |
| 5. | Srivaikuntam - Nazareth | 5.6 | 0.0012 | 20401 | 24 |
| 6. | Nazareth - Arumuganeri | 8.5 | 0.0143 | 26224 | 375 |
| 7. | Arumuganeri - Tiruchendur | 9.6 | 0.0053 | 32642 | 173 |

## PTCC PROPOSAL -ERECTION OF $4 O K \mathrm{KV} D E$ EITNE ON DC TOWERS WITH QUAD MOOSE CONDUCTOR FROM UDANGUDI THERMAL PLANT SWITCHYARD TO PROPOSED OTTAPIDARAM 400/230-110KV SS-REG.

1. Refer your letter No 001088/SE/TR-I/EE/TSM/A1/F.PTCC/ dt 01 Feb 2023.
2. No Objection Certificate (NOC) is accorded based on inputs provided as per Map sheets received vide your letter mentioned above.
3. Documents alongwith map sheets (in original) are returned herewith for your further necessary action.


General Staff Officer Grade 1 (Communication) for Additional Director General (Telecommunication)

## Enclosures : As above

## Copy to :-

The Director (PTCC), CEA
Power Communication Development Division NRPC Complex, 18-A Shaheed Jeet Singh Marg Katwaria Sarai, New Delhi - 110016

The DET(PTCC), Northern Zone Bharat Sanchar Nigam Limited O/o PGM (North), QA \& Inspection Circle, D-Tax Building, Eastern Court, Janpath New Delhi-110001

