

Annex - Agenda - 12

TAMILNADU TRANSMISSION CORPORATION LTD.
(Subsidiary of TNEB Ltd.)

From

T.Senthivelan, B.E.,
Director/Transmission Projects,
TANTRANSCO,
144, Anna Salai,
Chennai -2.

To

The Member (Power System),
Central Electricity Authority,
Sewa Bhavan, R.K.Puram,
New Delhi 110 066.

Lr.No.CE/Plg.&R.C/SE/SS/EE1/AEE3/F.Adani/D. 84 dt. 26.02.16

Dear Sir,

Sub: M/s.Adani -Optional arrangement for terminating 400 KV D/C
Kamudhi to Karaikudi transmission line at 400 KV Karaikudi SS
Till 400 KV Bays at Karaikudi SS get ready -Reg.

M/S.Adani and other solar developers have applied under preferential tariff to TANGEDCO to a tune of 648MW and their connectivity have been finalized at Kamudhi 400/230-110 KV SS which is detailed below:

Name of the Developers	Location	MW	Voltage (KV)
M/s.Adani Green Energy (Tamil Nadu) Ltd. - Phase-1 (AGETL)	Kamuthi Taluk, Ramnad District	216	230 KV
M/s.Kamuthi Solar Power Ltd.(KSPL)	Kamuthi Taluk, Ramnad District	216	230 KV
M/s.Ramnad Solar Power Ltd., (RSPL)	Kamuthi Taluk, Ramnad District	72	110 KV
M/s.Kamuthi Renewable Energy Ltd.(KREL)	Kamuthi Taluk, Ramnad District	72	110 KV
M/s.Ramnad Renewable Energy Ltd.(RREL)	Kamuthi Taluk, Ramnad District	72	110 KV

O/o Member (Power System)

Dy. No. : 411

Date : 01/03/16

Pl examine.
[Signature]

CE (PSP&PA-II)

3.0 Establishment of 400/230-110 KV Kamudhi SS has been sanctioned with the following arrangement:

- i) Erection of 2 Nos. 400/230 KV, 315 MVA ICTs
- ii) Erection of 3 Nos. 400/110 KV, 200 MVA ICTs
- iii) Erection of 400 KV DC Quad Moose feeder from Kamudhi to Karaikudi(PGCIL) 400 KV SS.
- iv) Erection of 230 KV DC line to the existing Kavanoor 230 KV SS.
- v) Erection of 230 KV DC line to the upcoming Thiruchuli 230 KV SS.
- vi) Erection of 110 KV DC line to the existing Kamudhi 110 KV SS and
- vii) Erection of 2 Nos. 80 MVAR, 400 KV Bus Reactors with breakers.

4.0 The 400 KV DC line work and bays construction work at 400 KV Kamuthi SS are nearing completion. The 400 KV bays at Karaikudi SS may not be ready in line with the completion of Kamuthi SS. In view of the above, M/s.Kamuthi Solar Power Ltd. have requested for linking one circuit of 400 KV Kamuthi to Karaikudi line with one circuit of 400 KV Kayathar-Karaikudi line temporarily near 400 KV Karaikudi substation. The diagram showing the proposed arrangement is enclosed herewith. In this connection, load flow results with the proposed arrangement are furnished below:

400 KV Line	Full Wind condition	Nil Wind Condition
Kayathar-Karaikudi SC QuadMoose	347 MW	-35 MW
Kamudhi-Karaikudi SC QuadMoose	356 MW	296 MW

5.0 Under these circumstances, it is requested for approval for linking one circuit of 400 KV Kamuthi to Karaikudi line with one circuit of 400 KV Kayathar-Karaikudi line temporarily near 400 KV Karaikudi substation.


(M.A.Helen)^{2/3}

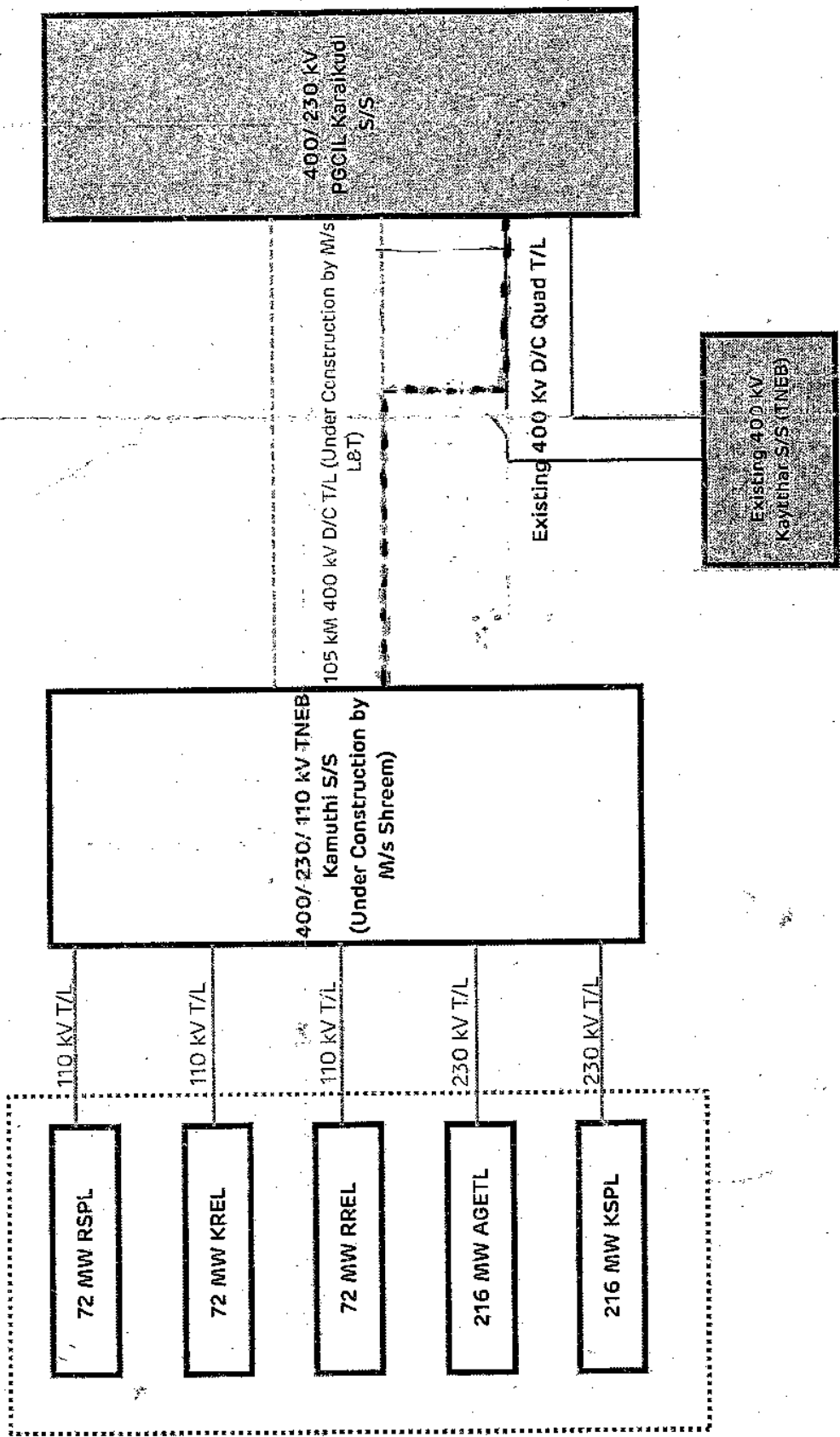
Chief Engineer/Planning & R.C
For Director/Transmission Projects

Encl:As above

Copy to Executive Director/PGCIL/Saudamini, Plot No.2, Sector 29, Gurgaon,
Haryana -122 001.

**OPTIONAL ARRANGEMENT FOR TERMINATING 400 KV D/C KAMUDHI TO KARAIKUDI TRANSMISSION LINE AT
400 KV KARAIKUDI SUBSTATION TILL 400 KV BAYS GET READY**

648 MW Solar Power Projects at
Ramnathpuram



72 MW RSPL

72 MW KREL

72 MW RREL

216 MW AGETL

216 MW KSPL

110 KV T/L

110 KV T/L

110 KV T/L

230 KV T/L

230 KV T/L

400/230 KV
PGCIL Karaikudi
S/S

400/230/110 KV TNEB
Kamuthi S/S
(Under Construction by
M/s Shreem)

105 KM 400 KV D/C T/L (Under Construction by M/s
L&T)

Existing 400 Kv D/C Quad T/L

Existing 400 KV
Kayrthar S/S (TNEB)

Annex - Agenda 12

TAMILNADU TRANSMISSION CORPORATION LTD.
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From

T.Senthilvelan, B.E.,
Director/Transmission Projects,
TANTRANSCO,
144, Anna Salai,
Chennai -2.

To

The Member (Power System),
Central Electricity Authority,
Sewa Bhavan, R.K.Puram,
New Delhi 110 066.

Lr.No.CE/Plg.&R.C/SE/SS/EE1/AEE1/F.Kamuthi/D. 200 / dt. 04.06.16

Dear Sir,

Sub: Optional arrangement for making LILO of Kayathar - Karaikudi 400 KV DC transmission line at Kamuthi 400 KV SS near Karaikudi 400kV SS till 400 KV Bays at Karaikudi SS get ready - Approval requested - Reg.

Ref: 1. Lr.No.CE/Plg.&R.C/SE/SS/EE1/AEE3/F.Adani/D.84 dt.26.02.16
2. CEA/PSPASPA-II/56/23/2016/2734 dated 01.04.2016

In the letter under reference (2) cited above, two options were suggested for terminating 400 KV DC quad line from Kamuthi 400kV SS to Karaikudi 400kV substation and requested TANTRANSCO to send the revised proposal in this regard.

2.0 In this connection, the following are stated.

1. Bunching option is not preferred in view of N-1 criteria.
2. i. In the Kayathar - Karaikudi 400kV DC line, 1X63MVAR switchable line reactor is available at each line at the Kayathar end.
ii. In the Kamuthi 400kV substation, 2X80MVAR bus reactors have been sanctioned and the erection work is yet to be awarded.
iii. Hence, during wind season the Kamuthi 400kV bus will be charged first from the Kayathar 400kV SS end by closing the Kayathar - Kamuthi 400kV line of 300KM length. During this wind season, the Kayathar voltage is

less than 390kV and while charging the Kamuthi 400kV bus by charging the Kayathar – Kamuthi 400kV SC line from Kayathar end, the rise in voltage will be around 22kV.

iv. Then the Kamuthi – Karaikudi 400kV SC line of 110KM length and the 400/230kV ICT and 400/110kV ICT will be charged one by one depending upon the prevailing operating condition. Then the Kamuthi 400kV bus voltage will be reduced considerably depending on the loading.

v. With the above operation, the bus voltage will be maintained as per IEGC code, with the help of 2X63MVAR line reactors at Kayathar end. Hence additional reactive compensation will not be required for first charging of Kamuthi 400kV SS during full wind season.

vi. The 2X80MVAR bus reactors will be erected at the earliest in the Kamuthi 400kV SS for maintaining the bus voltage.

vii. During nil wind season, the Kayathar bus voltage will be more i.e., around 420kV. In this case, the Kamuthi 400kV bus may be initially charged from Karaikudi 400kV SS end or by through 400/230kV ICT or 400/110kV ICT. The Kamuthi – Kayathar 400kV line will then be charged from Kamuthi end with 1X63MVAR line reactor at Kayathar end and bus reactor at Kamuthi.

3.0 Under these circumstances, it is requested that approval is requested for making LILO of one of the Kayathar-Karaikudi 400kV Quad DC line at Kamuthi 400kV substation temporarily near 400 KV Karaikudi substation.

Sd/- (04.06.16)
Chief Engineer/Planning &RC
for Director/ Transmission Projects

Minutes of the Meeting on “Evacuation of Solar Power through Kamuthi-Karaikudi line of TNEB” held on 20th June, 2016 at Conference Hall, 2nd Floor, CEA, New Delhi

1. A meeting was held in CEA regarding evacuation of power from solar projects in Kamuthi. The meeting was chaired by Member(PS) and participated by representatives of CEA, CTU, POSOCO and TNEB. List of participants is enclosed at Annex I.
2. Chief Engineer (PSPA-2 Division), informed that these Solar Projects are connected at Kamuthi Substation of TNEB and their ATS was agreed in the 39th meeting of SCPSPSR held on 28th -29th December, 2015 (Extract at Annex-II).
3. TNEB informed that Kamuthi- Karaikudi line which was agreed in 37th meeting of SCPSPSR held on 31st July, 2015, is nearing completion, however, the bays at Karaikudi which are to be built by PGCIL under Deposit work basis on behalf of TNEB, are not ready. So, there are constraints in evacuation of Solar power from Kamuthi. This issue was also discussed in the Joint Study meeting during March 14-17, 2016 at Bangalore (Extract of MoM at Annex-III). Accordingly, TNEB vide their letter dated 04.06.2016 (Annex-IV) has proposed that one circuit of Kayathar- Karaikudi 400kV DC line can be LILOed at Kamuthi using Kamuthi- Karaikudi line on temporary basis.

TNEB informed that during wind season, the Kamuthi 400kV bus will be charged from Kayathar 400kV SS end by closing Kayathar- Kamuthi 400kV line of 300 km. During the wind season, the Kayathar voltage is less than 390kV and while charging the Kayathar- Kamuthi 400kV SC line from Kayathar end, the rise in voltage would be around 22kV.

TNEB further said that during nil wind season, Kayathar bus voltage will be more and so, the Kamuthi SS may be charged from Karaikudi 400kV SS end or by through 400/230kV or 400/110kV ICT. The Kamuthi- Kayathar 400kV line will be charged from Kamuthi end with 1x63 MVAR line reactor at Kayathar end.

4. Regarding, the 2x80MVAR bus reactor at Kamuthi, TNEB informed that they are yet to do NIT and said that they would be able to commission the same by January, 2018. TNEB also said that they were trying to arrange for a 63 MVAR or 50 MVAR bus reactor on temporary basis for Kamuthi. CEA requested TNEB/TANTRANSCO to expedite commissioning of these bus reactors.
5. Regarding bays at Karaikudi, PGCIL informed that these bays are being implemented by them as deposit work of TNEB, who had paid first installment in April, 2016. As such, they had already done the NIT and will award the same

in August, 2016 and expected COD is August, 2017. CEA requested PGCIL to expedite commissioning of these bays as the line is already nearing completion.

6. DGM (NLDC), POSOCO said that the conditions for charging and regular operation may also be stated in the minutes. NLDC said that in normal operation, when voltages are high (i.e. during nil/low wind scenario), The Kayathar- Kamuthi line may have to be opened on regular basis. Also, TNEB may have to back down the solar generation at Kamuthi, in case of overloading under N-1 contingency on any one of the three sections i.e. Kayathar-Karaikudi, or Kayathar- Kamuthi, or Kamuthi-Karaikudi line.
7. After discussions following was agreed:
 - i. TNEB/TANTRANSCO may implement the LILO of one circuit of Kayathar- Karaikudi 400kV DC line at Kamuthi using the Kamuthi-Karaikudi 400kV DC line. TNEB may also shift PLCC for these lines.
 - ii. TNEB/TANTRANSCO may expedite the implementation of reactors at Kamuthi.
 - iii. PGCIL may expedite the implementation of bays at Karaikudi.
 - iv. Under high wind conditions, the Kamuthi- Kayathar line may be charged from Kayathar end when voltages are less than 390 kV.
 - v. During low/no Wind condition, Kamuthi- Kayathar line may be charged from Kamuthi end.
 - vi. During normal operation, if the voltage at Kamuthi is more than 410kV, the Kayathar- Kamuthi line may be kept open.
 - vii. TNEB may have to back down the solar generation at Kamuthi, in case of overloading under N-1 contingency on any one of the three sections i.e: Kayathar- Karaikudi, or Kayathar- Kamuthi, or Kamuthi-Karaikudi line.

Tamil Naidu Meeting : Meeting on 20.06.2016

	NAME	DESIG	ORGANISATION	EMAIL	Phone No	Signature	
1.	M. SUDARSHAN	Executive Engineer / System Studies	TANTRANSCO	sess@tneb.net.org	9445856444	my	
2.	G. RAMESH KUMAR.	ASST. EXECUTIVE ENGINEER / System Studies	TANTRANSCO.	- do -	9444224641	lg.	
3.	N. NALLARASAN	DGM, POSOCO,	NLDC	nallarasan@posoco.in	8527077022	atul	
4.	MUKESH KHANNA	AGM (CTU-Plg)	POWERGRID	mkhanna@powergridindia.com	9910378098	Rajeev	
5.	Pradeep Reddy	Sr. Engr (NLDC)	NLDC	pradeep.reddy@posoco.in	8800977993	gaty	
6.	S.D. Debroy	M (PS)	CEA	} HH	-		
7.	Pandey Jindal	CE (PSIA-2)	CEA				
8.	Shivani Shasna	Dy Dir	CEA				

400kV D./C line was not agreed by TANTRANSCO and CEA was requested to issue a corrigendum in this regard. Also termination of 400kV d/c line from Kayathar to Tirunelveli PS will overload the existing Kaythar –Karikudi 400kV D/C line and Kayathar –Kanarpatty 400kV D/c line due to wind injection (who have applied PGCIL for connectivity) at Tirunelveli PS.

- 31.3** AGM(CTU-Plg), PGCIL informed that there is no space at Abhisekhapatty (Tirunelveli) and no bay is likely to be vacant after commissioning of modified ATS of Kudankulam project. After the request of TANTRANSCO, a site inspection was carried out to look into availability of space at Tirunelveli and it was identified that a 63 MVAR 400kV bus reactor is available and the line can be terminated in the bay by converting the bus reactor into switchable line reactor.
- 31.4** Director(Trans), TANTRANSCO informed that the Kayathar – Koilpatty 400kV DC quad line which has been included in the kfw German funding is dropped due to non availability of two numbers of 400kV bays at Koilpatty pooling station. In this connection, a joint study was conducted with PGCIL during 30,31st October 2015 and concluded for the 2nd Kanarpatty – Abisekapatty 400kV circuit for reliability purpose
- 31.5** After further discussions it was agreed that the Kanarpatty to Tirunelveli (Abishekapatty) 400kV (quad) DC line would be mainly for reliability purpose and not for injection of power into ISTS Grid.

32.0 Transmission Scheme for evacuation of 1000 MW Solar Park to be developed by M/S Adani at Kamuthi

- 32.1** Director, CEA said that TANTRANSCO has conveyed that M/S Adani has proposed to develop 1000 MW Solar Park at Kamuthi in Ramnad district of Tamil Nadu within a period of one year. It has been further proposed that TANTRANSCO would enter into PPA with M/S Adani for buying 1000 MW of solar power. Accordingly, TANTRANSCO has requested CEA for in-principle approval for following transmission system of solar park at Kamuthi.
- a) Establishment of 400kV substation at Kamuthi for pooling the proposed 1000 MW solar park to be established by M/S Adani.
 - b) 400kV D/C line from the proposed Kamuthi Solar park to the sanctioned Kamuthi 400/230-110kV S/S (TANTRANSCO).
 - c) 400kV D/C line from the sanctioned Thoppakundu 400/110kV wind substation to the sanctioned Kamuthi 400/230-110kV S/S (TANTRANSCO).

- d) 2x80 MVAR bus reactor at Kamuthi 400/230-110kV S/S (TANTRANSCO).

32.2 Director(Trans), TANTRANSCO informed that as of now, M/S.Adani and other developers have applied under preferential tariff to TANGEDCO at Kamuthi 400/230-110kV SS to a tune of 680 MW only. During the 37th Standing Committee meeting, it was also agreed that a maximum of 1000MW of Solar power would be injected at Kamuthi 400kV SS.

32.3 He further said that in addition to the above, there will be solar power injection from the nearby 230kV new Muthuramalingapuram 230kV SS also. Hence, it is suggested that the Kamuthi – Thappagundu 400kV DC line will be planned later, if any additional quantum of solar generation is proposed. The Kamuthi 400/230-110kV substation work is under progress and it is expected to be commissioned by the end of the year 2016

32.4 Considering that the Adani Solar Park injection is within the earlier agreed 1000 MW power injection at Kamuthi, the above scheme was agreed by the members.

33.0 Implementation of 24x7 power supply in the state of Goa- Interconenction with SR grid to Mapusa-Xeldam(New S/s) – Narendra 400kV D/c line.

33.1 Director, CEA informed that in the 39th SCPSP of WR establishment of 2X500 MVA, 400/200 kV substation at Xeldam and its interconnection with SR grid, was discussed for providing 24x7 power supply in the state of Goa. He further said that out of the 8 alternatives that were discussed in that meeting, there was consensus on **alternative no 6**.

Alternative	Details	Remarks
1	Narendra (existing) - Xeldam- Mapusa 400 kV D/c quad line.	Also proposed in 38 th SCM. Technically better alternative for providing 2 nd 400 kV ISTS feed to Goa system.
2	Kolhapur (PG) - Mapusa – Xeldam 400 kV D/C quad line.	Alternative suggested by POWERGRID along with re-conductoring of Sholapur (PG) – Kolapur 400kV D/C line with HTLS conductor. There would a single source for feeding Goa at 400kV level i.e., 400 kV Kolhapur (PG).
3	Kolhapur(PG) – Xeldam-Mapusa 400 kV D/C quad line	
4	Kolhapur(PG) – Xeldam 400 kV D/C quad line and LILO of one ckt at Mapusa	

Tamil Nadu informed 500 MW at Ramanathapura Still under consideration of Government. This will be taken up after due approval from Government. They also informed that TEDA will be nodal agency for this project.

v. Transmission System for enabling 648 MW solar parks projects near Kamuthi

CE(PSPA-II), CEA informed that TANTRANSCO, vide letter Lr.No. CE/PIg.&R.C./SE/EE1/AEE3/F.Adani/D.84 dt. 26.02.2016 regarding solar parks of 648 MW in Kamuthi Taluk, Ramnad District to be connected at Kamuthi 400/230 – 110 kV substation of TANTRANSCO. These solar generation projects shall be supplying power to TANGEDCO. Details of the solar parks as given by TANTRANSCO are given below:

Sl. No.	Name of the developers	MW	Connected Voltage (kV)
1	M.s Adani Green Energy (Tamil Nadu) Ltd. – Phase-1 (AGETL)	216	230 kV
2	M/s. Kamuthi Solar Power Ltd. (KSPL)	216	230 kV
3	M/s. Ramnad Solar Power Ltd. (RSPL)	72	110 kV
4	M/s. Kamuthi Renewable Energy Ltd. (KREL)	72	110 kV
5	M/s. Ramnad Renewable Energy Ltd. (RREL)	72	110

For evacuation of power from Kamuthi substation onwards, the transmission system at 400kV level has been discussed in the 37th and the 39th meeting of the Standing Committee of Power System Planning of Southern Region held on 31st July, 2014 and 28-29 December, 2015 respectively. In these meetings, following transmission system has been agreed to evacuate up to 1000MW solar power projects that may be connected at Kamuthi 400kV substation. The agreed system is given below:

- i. 400/230 - 100 kV substation at Kamuthi with 3x315 MVA, 400/230 kV transformers and 3x200 MVA, 400/110kV transformers.
- ii. Kamuthi – Karaikudi (PGCIL) 400kV Quad Moose DC line.
- iii. 2x80 MVAR bus reactor at Kamuthi 400kV substation

TANTRANSCO has informed that for terminating the Kamuthi – Karaikudi 400kV DC line at the Karaikudi substation of PGCIL, the 400 kV bays at Karaikudi end may not be ready in the time frame of completion of the Kamuthi substation. Therefore, they have proposed that one circuit of the Kamuthi – Karaikudi line may be linked with one circuit of Kayathar -Karaikudi 400kV DC line near Karaikudi substation, on a temporary basis. On this proposal of TANTRANSCO, we have following observations:

- I. The TANTRANSCO proposal will result in only one circuit between Kayathar – Karaikudi. The second circuit being kept open. Similarly, there will be only one circuit between Kamuthi and Karaikudi. As such, this proposal of TANSTRASCO is not feasible.
- II. However, this issue was also discussed during the joint study meeting at Bangalore held on 14-17 March, 2016. During these discussions, following alternatives were proposed for which TANTRANSCO had agreed to explore and come out with a feasible solution:

Alt(i): Both circuits of Kamuthi – Karaikudi 400 kV line to be connected with one circuit of Kayathar – Karaikudi 400 kV DC line so as to make LILO of one circuit of Kayathar – Karaikudi at Kamuthi. In this proposal, the length from Kamuthi to Kayathar would be more than 300 kilometers and the line reactors at both the ends may be needed. Also, as Kayathar is presently not connected with any other 400 kV substation (other than Karaikudi), the total length from Kamuthi to Kayathar to Karaikudi may be even more than 500 kms which would require additional reactive compensation on this line. For this alternative, Tamil Nadu would explore the possibility of LILO of the Kayathar – Karaikudi line at some place in between instead of near the Karaikudi so that the length of Kamuthi – Kayathar could be reduced.

Alt(ii): Both circuits of the Kayathar - Karaikudi 400 kV DC line may be bunched and connected using only one bay at Karaikudi. Similarly, both the circuits of the new Kamuthi – Karaikudi line may also be bunched and connected in one bay that gets evacuated by bunching both circuits of Kayathar – Karaikudi line. In this alternative, TANTRANSCO will have to ensure that there will not be any constraint in evacuation of power from renewable energy projects that are presently injecting at Kayathar.

TAMILNADU TRANSMISSION CORPORATION LTD.
(Subsidiary of TNEB Ltd.)

From

T.Senthilvelan, B.E.,
Director/Transmission Projects,
TANTRANSCO,
144, Anna Salai,
Chennai -2.

To

✓ The Member (Power System),
Central Electricity Authority,
Sewa Bhavan, R.K.Puram,
New Delhi 110 066.

Lr.No.CE/Plg.&R.C/SE/SS/EE1/AEE1/F.Kamuthi/D. 200 / dt. 04.06.16

Dear Sir,

Sub: Optional arrangement for making LILO of Kayathar - Karaikudi 400 KV DC transmission line at Kamuthi 400 KV SS near Karaikudi 400KV SS till 400 KV Bays at Karaikudi SS get ready - Approval requested - Reg.

Ref: 1. Lr.No.CE/Plg.&R.C/SE/SS/EE1/AEE3/F.Adani/D.84 dt.26.02.16
2. CEA/PSPASPA-II/56/23/2016/2734 dated 01.04.2016

In the letter under reference (2) cited above, two options were suggested for terminating 400 KV DC quad line from Kamuthi 400KV SS to Karaikudi 400KV substation and requested TANTRANSCO to send the revised proposal in this regard.

2.0 In this connection, the following are stated.

1. Bunching option is not preferred in view of N-1 criteria.
2. i. In the Kayathar - Karaikudi 400KV DC line, 1X63MVAR switchable line reactor is available at each line at the Kayathar end.
 - ii. In the Kamuthi 400KV substation, 2X80MVAR bus reactors have been sanctioned and the erection work is yet to be awarded.
 - iii. Hence, during wind season the Kamuthi 400KV bus will be charged first from the Kayathar 400KV SS end by closing the Kayathar - Kamuthi 400KV line of 300KM length. During this wind season, the Kayathar voltage is

Ms. Shivani, Dy. Dir.

[Signature]
15/6/16

C/o Member (Power System)
Dy. No. : 1034
Date : 13/06/16

CE (PSPA-II)

[Signature]
14/6/16

CC - PSPA-II - 155
14/6/16

less than 390kV and while charging the Kamuthi 400kV bus by charging the Kayathar – Kamuthi 400kV SC line from Kayathar end, the rise in voltage will be around 22kV.

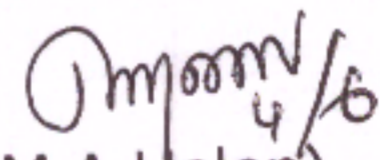
iv. Then the Kamuthi – Karaikudi 400kV SC line of 110KM length and the 400/230kV ICT and 400/110kV ICT will be charged one by one depending upon the prevailing operating condition. Then the Kamuthi 400kV bus voltage will be reduced considerably depending on the loading.

v. With the above operation, the bus voltage will be maintained as per IEGC code, with the help of 2X63MVAR line reactors at Kayathar end. Hence additional reactive compensation will not be required for first charging of Kamuthi 400kV SS during full wind season.

vi. The 2X80MVAR bus reactors will be erected at the earliest in the Kamuthi 400kV SS for maintaining the bus voltage.

vii. During nil wind season, the Kayathar bus voltage will be more i.e., around 420kV. In this case, the Kamuthi 400kV bus may be initially charged from Karaikudi 400kV SS end or by through 400/230kV ICT or 400/110kV ICT. The Kamuthi – Kayathar 400kV line will then be charged from Kamuthi end with 1X63MVAR line reactor at Kayathar end and bus reactor at Kamuthi.

3.0 Under these circumstances, it is requested that approval is requested for making LILO of one of the Kayathar-Karaikudi 400kV Quad DC line at Kamuthi 400kV substation temporarily near 400 KV Karaikudi substation.


(M.A.Helen) (2/2)

Chief Engineer/Planning &RC
For Director/ Transmission Projects

Am 40th

TN

TAMILNADU TRANSMISSION CORPORATION LTD.

(Subsidiary of TNEB Ltd.)

From

T.Senthilvelan, B.E.,
Director/Transmission Projects,
TANTRANSCO,
144, Anna Salai,
Chennai -2.

Annex - Agenda - (B.)

To

The Member (Power System),
Central Electricity Authority,
Sewa Bhavan, R.K.Puram,
New Delhi 110 066.

Lr.No.CE/Plg.&R.C/SE/SS/EE1/AEE1/F.39th Stg. Committee/D.55 dt.08.02.16

Dear Sir,

Sub: 39th Standing Committee meeting held at New Delhi on 28.12.2015 & 29.12.2015 - Load Flow study for the utilization of Tirunelveli - Edamon portion of Tirunelveli - Cochin 400kV Quad DC line - reg.

In the 39th SCSPSR meeting held on 28.12.2015 & 29.12.2015 at New Delhi, the following have been stated by TANTRANSCO in the discussion on the utilization of Tirunelveli - Edamon portion of Tirunelveli - Cochin 400kV Quad DC line,

1.1. TANTRANSCO has some reservation on account of possible congestion of 230kV network. Load flow study will be conducted by the TANTRANSCO to check for any congestion in Tirunelveli (Abisekapatty) SS associated 230kV network during wind season to access the reality and the report will be sent.

2.0 In this connection, Load Flow study has been conducted for the present network condition. From the study results, the following are observed.

- i. By doing the suggested interim arrangements, it is observed that during wind season, the Kayathar, Veeranam and Udayathur 230kV feeders to Tirunelveli 230kV SS are in fully loaded condition.

O/o Member (Power System)
Dy. No. 307
Date 12/02/16

SP&PA-II)

Ms. Shivani
Cup
15/2/16

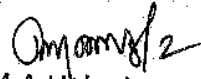
ii. During nil wind season, the Kayathar – Tirunelveli 230kV feeder is in fully loaded condition.

iii. The Tirunelveli 400/230kV ICT loading is within the limit.

3.0 Hence, it is suggested that the completed Tirunelveli - Edamon portion of Tirunelveli - Cochin 400kV Quad DC line ~~may~~ be utilised by terminating the above feeder at Edamon 230kV SS and may be charged at 230kV level as an interim arrangement, subject to the following condition,

The power flow in Edamon – Tirunelveli ^{line} during wind season has to be maintained by Kerala in such a way that the 230kV feeders of TANTRANSCO should not get over loaded, by providing necessary Special Protection Scheme (SPS) to limit the load drawn by Kerala.

In this context PGCIL is requested to expedite the commissioning of Edamon - Cochin portion of the 400kV DC line at the earliest so as to complete the transmission system associated with Kudankulam APP.



(M.A.Helen)

Chief Engineer/Planning & R.C
For Director/Transmission Projects

(2/3)

Copy to Executive Engineer/Business Development, PGCIL, B-0, Qutab Institutional Area, Katwaria Sarai, New Delhi – 110 016.

Annex - Agenda - 14.1

TAMILNADU TRANSMISSION CORPORATION LTD.
(Subsidiary of TNEB Ltd.)

From

T.Senthilvelan, B.E.,
Director/Transmission Projects,
TANTRANSCO,
144, Anna Salai,
Chennai -2.

To

The Member (Power System),
Central Electricity Authority,
Sewa Bhavan, R.K.Puram,
New Delhi 110 066.

Lr.No.CE/Plg.&R.C/SE/SS/EE1/AEE1/F.Edayarpalayam/D. 210 dt. 13.06.16

Dear Sir,

Sub: Revised Connectivity for Edayarpalayam 400/230-110kV substation – CEA
Approval requested - Reg.

1.0 In the 36th Standing Committee meeting on Power System Planning of Southern Region held on 4th September, 2013, while deciding the HVDC system from Raigarh (Chattisgarh) – Pugalur (TN), establishment of Edayarpalayam substation has been agreed as system strengthening as given below, for dispersal of power received from Chattisgarh.

- o Establishment of 400/230kV substation with 2x500 MVA transformers at Edayarpalayam.
- o Pugalur HVDC station - Edayarpalayam 400kV DC quad line with 63 MVar switchable line reactor at Edayarpalayam end.
- o Edayarpalayam – Udumalpet 400kV (quad) D/c line.

2.0. In the 38th Standing Committee meeting on Power System Planning of Southern Region meeting, TANGEDCO has stated that the land for the establishment of Edayarpalayam 400/230-110kV SS has been purchased and the tendering work is under progress and the establishment of Edayarpalayam 400/230-110kV substation will be under the scope of TANTRANSCO. After deliberation, the following was decided in the 38th Standing Committee meeting.

(PSPA-II)

Rev with 500MVA
... Dubic

Member (Power System)
10/18
20/06/16

In the scope of TANTRANSCO:

Establishment of Edayarpalayam 400/230-110kV substation with 2X500MVA ICT and 2X125MVA bus reactors.

In the scope of PGCIL as ISTS:

- i. Edayarpalayam – Myvady 400kV DC quad line
- ii. Pugalur HVDC station - Edayarpalayam 400kV DC quad line.

3.0 In this connection, the following are stated.

- i. The following 230kV and 110kV wind energy substations are to be connected to the Edayarpalayam 400/230-110kV substation.

230kV substation:

- a. Ponnapuram 230kV SS
- b. Palladam 230kV SS
- c. MMpatty (O.K.Mandapam) 230kV SS

110kV substations:

- a. Edayarpalayam 110kV SS
- b. Sultanpettai 110kV SS
- c. Poolavadi 110kV SS
- d. Karadibavi 110kV SS
- e. Kethanur 110kV SS

- ii. The Edayarpalayam 400/230-110kV SS is used for load dispersal during nil wind season and during wind season wind power is also injected to Edayarpalayam 400/230-110kV SS.
- iii. Hence, it is suggested that the Edayarpalayam 400/230-110kV SS may be connected to the ongoing Anikadavu 400/230-110kV wind SS, for additional connectivity to the Anikadavu SS, instead of connectivity to Myvady 400kV PGCIL substation.
- iv. Thereby, the wind power injected in the Edayarpalayam 400kV SS will be transmitted to the wind corridor of Thoppakundu – Anikadavu – Rasipalayam 400kV substations.
- v. TANTRANSCO may take up the Edayarpalayam – Anikadavu 400kV DC quad line work and Pugalur HVDC station - Edayarpalayam 400kV DC quad line may be taken up by PGCIL as already approved.

4.0 Under these circumstances, approval is requested for revising the 400kV connectivity of Edayarpalayam 400kV substation as below.

"Edayarpalayam - Myvady 400kV DC quad line in the scope of PGCIL may be dropped and instead of that line Edayarpalayam - Anikadavu 400kV DC quad line shall be taken up by TANTRANSCO."

M.A. Helen
13/6

(M.A.Helen)
Chief Engineer / Planning & RC
For Director/Transmission Projects

2/2