Annex - Agenda - 16.1

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.

observations in 40th SCTSPSR

Lr.No.CE/Plg.&R.C/SE/SS/EE1/AEE1/F.39th StgComm Modification/D.85 dt. 25.02.16

Dear Sir,

Sub: 39th Standing Committee Meeting on Power System Planning of Southern Region - MOM received – Observation & Modification requested - reg.

*****

1.0 The following points are to be included in the minutes of the 39th Standing Committee Meeting on Power System Planning of Southern Region.

2.0 SEPC -1X525MW:

2.1 In the 38th Standing Committee minutes of the meeting, for the evacuation of M/S.SEPC (IPP, 1X525MW), the study results were furnished by TANTRANSCO. In the meeting, SRPC pointed out that the bus voltages were not exhibited in the studies. Further, CEA pointed out that, there is overloading in the Kanarpatty – Tirunelveli 400kV SC line. After deliberation, the following was decided in the meeting.

i. Prima-facie the transmission system that was earlier agreed for Udangudi Stage I and II may be sufficient to evacuate power from Udangudi 2X660MW and SEPC 1X525MW.

ii. TANGEDCO will furnish fresh studies.

C/o Member (Power System)
Dy. No. 423
Date 9/3/16

Ms Shivani, Dy Dir 15/3/2016

CE (PSP&PA-II)

2.2. Based on the outcome of the meeting, the study results with voltage profile were already furnished to CEA. However, the approval was not included in the MoM. Hence, it is requested to include the approval for the ATS of the M/S.SEPC -1x525MW Thermal power project in the minutes.

3.0 Evacuation scheme for Uppur -2X800MW:

3.1 A joint Load Flow Study was conducted with PGCIL/Gurgaon during 30-31st October 2015, to decide the evacuation of the Uppur Thermal Power project to be set up in Ramanathapuram district. In the meeting, it has been suggested that since Uppur Generators are proposed to be radially connected to Coimbatore 765kV SS through 350kM long line, stability will be an issue for which a proper anchoring is required. As the generation is to be consumed within the state, evacuation through 400kV lines to the nearby substations/load centers could be a feasible alternative. Further study will be conducted to finalise the scheme.

3.2. The above discussion shall be included in the 39th MoM. Further, it is requested to give suitable dates for conducting load flow study for finalizing the evacuation scheme for the Uppur – 2X800MW project.

4.0 Start-up Power Requirement for ETPS SEZ – 2X600MW:

4.1. The transmission scheme for the evacuation ETPS SEZ- 2X660MW project has already been approved in the 37th Standing committee meeting for which the start up power has been decided by making LILO of one of the existing NCTPS II – SvChatram 400kV DC line by forming a separate new 400kV start up bus. The above point shall also be included in the minutes.

It is requested that corrigendum to the minutes incorporating the above points may be issued.

(M.A. Helen) (2/2)
Chief Engineer/Planning & R.C
For Director/Transmission Projects

Annex – Agenda – 16.2

TANTRANSCO

(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.CEA/D.281 /2016 dt. 28.07.16

Dear Sir,

Sub: TANGEDCO –Power evacuation scheme for the proposed 2X800MW power project of TANGEDCO at Uppur in Ramnad district and other schemes – Approval-Reg.

Ref : 1. Lr.No.CE/Plg&RC/SE/SS/EE1/AEE1/F.Uppur ATS/D169/2016 dt.05.05.16.
2. Lr.No.CE/Plg&RC/SE/SS/EE1/AEE1/F.Stgcommittee/D293/2015 dt.07.08.15.
3. Lr.No.CE/Plg&RC/SE/SS/EE1/AEE1/F.39th Stgcomm Modification/D85/ 2016 dt.27.02.16.
4. Lr.No.CE/Plg&RC/SE/SS/EE1/AEE1/F.Edayarpalayam/D 210dt.13.06.16.

*****

Transmission system for evacuation of power from Uppur TPS (2X800MW) of TANGEDCO in Tamil Nadu was studied in the joint study meeting of Southern Region held on Bangaluru during 14th to 17th March, 2016. The detailed study report on the above was furnished to CEA vide TANTRANSCO letter cited under reference (1) and requested to approve the above scheme in the forthcoming Standing Committee meeting on Power System planning on Southern Region.

The following proposals have been evolved in respect of evacuation of Power from Uppur 2x800MW Power project:

Ms Mirdula Dy Dir's

CE (PSPA II)

903 CEPSPA-II

(i) Establishment of 765/400KV SS in Virudhunagar (For Uppur ATS and Renewable Generation pooling)

765kV Connectivity:

a. 765 kV DC connectivity to the Coimbatore 765/400kV SS with 240 MVAr, 765 kV switchable line Reactors at each line at both ends.
b. 765 kV DC connectivity to the Ariyalur 765/400 kV SS with 240 MVAr, 765 kV switchable line reactors at each line at both ends. This work will be taken up with the proposal of Udangudi thermal power projects of Stage II & III.
c. 2X1500MVA, 765/400 kV ICTs at the proposed Virudhunagar 765/400KV SS.

400kV Connectivity:

a. 400 kV DC Quad line from Kayathar 400 kV SS
b. 400 kV DC Quad line from Kamudhi 400 kV SS
c. 400 kV DC Twin Moose line from Thappagundu 400 kV SS

(ii) Transmission system for evacuation of power from Uppur TPS – 2X800MW.

For evacuation of Power from Uppur TPS – 2 X 800 MW, the following Associated Transmission System (ATS) has been evolved.

a. 765kV DC Line from Uppur Switchyard to the proposed Virudhunagar 765/400KV SS
b. 2X240 MVAr, 765 kV Bus Reactors at the Uppur 765 kV Switchyard

The expected year of commissioning for the proposed 2x800MW Uppur power project is 2019-20 and LOA has been awarded for the same.

2. With regard to the start up power for four power projects of TANGEDCO and evacuation scheme for SEPC, the following was informed vide TANTRANSCO letters to CEA cited under references (2) and (3):

(i) **Start up power requirement for ETPS SEZ-2X600MW and Udangudi project**

The start up power requirement of ETPS SEZ-2X600MW and Udangudi project and others are finalised as follows

Sl.No	Name of the Project	Start up power voltage
1	ETPS Expansion -1x660MW	230kV level
2	ETPS SEZ-2X660MW	400kV level
3	NCTPS Stage III-1X800MW	230kV level
4	Udangudi stage-I -2X660MW	400kV level

The transmission scheme for the evacuation ETPS SEZ – 2 X 660 MW project has already been approved in the 37th Standing committee meeting for which the start up power has been decided by making LILO of one of the existing NCTPS II – SVChatram 400 KV DC line by forming a separate new 400 KV start up bus.

For the Udangudi stage I - 2X660MW project, the evacuation line planned i.e., Kayathar 400 KV DC line, may be used for the Start up power requirement also.

(ii) **Evacuation Scheme for SEPC – 1X525MW**

In the 38th Standing Committee minutes of the meeting, for the evacuation of power from M/s. SEPC (IPP, 1X525MW), the study results were furnished by TANTRANSCO. In the meeting, SRPC pointed out that the bus voltages were not exhibited in the studies. The study results with voltage profile was sent to CEA and once again requested to include the approval for the ATS of the M/s.SEPC -

1X525MW thermal power project in the minutes with the following evacuation scheme.

"400kV D/C line to the proposed Ottapidaram 400/230-110kV substation".

The expected date of requirement of start up Power for the proposed 1X525MW SEPC Thermal power project will be in April – May 2018.

3. Further, the following proposals may be considered in the forthcoming Standing Committee meeting on PSPS:

(i) **Revised connectivity for Edayarpalayam 400/230-110kV substation**

Since, the Edayarpalayam 400/230-110kV SS is used for load dispersal during nil wind season, CEA has been requested vide letter cited under reference(4) that the Edayarpalayam - Myvady 400kV DC quad line which was in the scope of PGCIL may be dropped and instead Edayarpalayam - Anikadavu 400kV DC quad line shall be taken up by TANTRANSCO.

(ii) **Ariyalur – Thiruvalam 765KV Line reactor**

As the line length of Thiruvalam-Ariyalur 765KV DC line is less than 170km, the line reactors at Ariyalur end may not be required for charging the Ariyalur – Thiruvalam 765KV DC line. Hence, erection of 2x240MVAR line reactor at Ariyalur end in Thiruvalam –Ariyalur 765kV DC line may not be required.

Hence, it is requested that the forthcoming 40th Standing Committee Meeting on Power System Planning for Southern Region may be convened at the earliest in order to get approval for the above mentioned schemes.

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

Annex-Agenda-17.1

From

Dr.M.Saikumar, I.A.S
Principal secretary,
Chairman / Tamil Nadu Transmission Corporation,
144, Anna Salai,
Chennai – 600002.

To

The Chairman cum Managing Director,
Nuclear Power Corporation of India Limited,
Vikram Sarabhai Bhavan, Anushakthinagar,
Mumbai – 400 094.

Lr.No.CE/Plg.&R.C/SE/SS/EE1/AEE1/Kudankulam/D.321 /2016 dt.06-09-16

Sub: Kudankulam Units 3 & 4 (2X1000MW) - Additional Evacuation lines required by NPCIL - Regarding.

****

CE/PSPP-II-613
15/9/16

The construction work of second phase of Kudankulam Nuclear power project (unit 3 & 4) is to be started. In this regard for the evacuation of power from Kudankulam Nuclear Power Project (KKNPP) - Units 3 & 4, the following Associated Transmission System (ATS) has been evolved in the 36th Standing Committee meeting on Power System Planning.

"400 kV Quad D/c line to Koilpatty (Tuticorin) Pooling station (PS) from Units 3 & 4 switchyard and suitable rearrangement at Kudankulam Units 1 & 2 Generation switchyard."

With the final rearrangement, there will be 3 numbers of 400kV lines (2 numbers to Tirunelveli (Abisekapatty) 400kV SS and 1 number to Koilpatty PS) will emanate from both of the plants i.e., KKNPP – 1&2 and KKNPP - 3 &4.

O/o Member (Power System)
Dy. No. 1520
Date 14/9/16

2.0 In this connection, in the 37th Standing Committee meeting, NPCIL has stated the following.

"NPCIL opined that under outage of two towers of each circuit of Kudankulam - Tirunelveli D/c line, only one line shall be available for evacuation of power from Units 1,2 & 3,4. Based on the above observations, NPCIL proposed to review the scheme and plan additional lines for safe evacuation of power from Kudankulam units."

SE/PSPP-II

Further, in the meeting it was agreed that studies shall be carried out for requirement of additional evacuation lines for Kudankulam 3 & 4 and meanwhile, the earlier agreed scheme may be taken up for implementation.

3.0 In this context, the following are stated,

i. The existing, under execution and planned substations of Tamil Nadu Transmission Corporation (TANTRANSCO) in the southern part of Tamil Nadu which are nearer to the Kudankulam Atomic Power Station are given below.

   a. Kayathar (existing) 400/230-110kV SS
   b. Kanarpatty (under construction) 400/230-110kV SS
   c. Pavoorchatram (Thennampatty) 400/230-110kV SS (under construction).
   d. Ottapidaram (planned) 400/230-110kV SS

ii. It is suggested that additional lines which are yet to be planned from Kudankulam units may be terminated in some of the above TANTRANSCO substations. It is assured that TANTRANSCO will construct the above evacuation lines along with bays at both ends and share of power for Tamilnadu from Kudankulam units will be drawn through the above lines.

It is requested to offer your concurrence on the above proposal.

Yours faithfully

CHAIRMAN / TANTRANSCO

Copy to

The Member/Power System,
Central Electricity Authority,
Seva Bhawan, R.K Puram,
New Delhi-110066.

The Chief Operating Officer(CTU),
Power Grid Corporation of India Ltd.,
Saudamini, Plot No. 2,
Sector-29, Gurgaon-122001,
Haryana.

Annex-Agenda 18.1

Central electricity Authority
System Planning & Project Appraisal Division
Sewa Bhawan, R.K Puram, New Delhi -110066

No: 51/4/SP&PA-2015/406-407 **Date: 14th June, 2016**

To

The Director / Projects & LI,
TSTRANSCO,
Vidyut Soudha,
Hyderabad-500082

Subject: **In principle approval of transmission evacuation scheme of Kaleshwaram Lift Irrigation Project (Dr. BR Ambedkar Pranihita – Chevella Sujala Sravanthi) & Palamuru – Rangareddy Lift Irrigation Schemes, proposed generation evacuation of 2x800MW Telangana.**

Reference: **TS Transco letter no. Dir (Proj)/ SE(PS)/ DE(SS)/ ADE-3/F. Schemes/ D.No. 329/16 dated 04.05.2016.**

Sir,

1. TSTRANSCO, vide their letter dated 04.05.2016 has requested CEA to give in-principle approval for the transmission evacuation schemes of Kaleshwaram Lift Irrigation Project (Dr. BR Ambedkar Pranihita – Chevella Sujala Sravanthi) & Palamuru – Rangareddy Lift Irrigation Schemes and proposed generation evacuation of 2x800MW Telangana STPP to facilitate the construction of transmission lines and substations. Further, TSTRANSCO vide their email dated 24.05.2016 and 08.06.2016 proposed following transmission schemes:

2. **Kaleshwaram Lift Irrigation Project (DR.B.R. Ambedkar Pranahitha Chevella Lift Irrigation Project):**

2.1 The above scheme was discussed and agreed in 37th meeting of SCPSPSR held on 31-07-2014. However, Telangana vide their email dated 24.05.2016 has now revised the above scheme and have sought for in-principle approval for the same. TSTRANSCO has also revised the total LI load and capacity of synchronous motors at various LI Substations on 08.06.2016. Following load/motor capacity have been furnished by TSTRANSCO:

SI	Name of LI substation	Capacity, MW	Simultaneous load, MW
1	Ramadugu	7x139=973	834
2	Medaram	7x124.4=871	746
3	Tippapur	4x106=424	318
4	Chandlapur	5x88.5=443	354
5	Tukkapur	8x43=344	258
6	400kV Yellampalli	---	---

SI	Name of LI substation	Capacity, MW	Simultaneous load, MW
8	Sundila	8x40=320	240
9	Yellampalli	9x40=360	280
10	Malakpet(132kV)	2x30=60	60
	Total	**4235**	**3450**

2.2 The difference of earlier approved scheme and the proposed scheme are as given below:

Sl. No.	Substations and Lines as approved in the 37th Standing Committee		Revised Proposal of TSTRANSCO
1	Erection of 400 KV SS at Ramadugu, Karimnagar Dist Pkg-8 (Load 670 MW)	1	Erection of 400 KV SS at Ramadugu, Karimnagar Dist Pkg-8
2	Erection of 400 KV SS at Choppadandi, Karimnagar Dist Pkg-7 (Load 123 MW) with 2x315 MVA ICTs		-
3	Erection of 400 KV SS at Myadarm, Karimnagar Dist Pkg-6 (Load 750 MW)	2	Erection of 400 KV SS at Medaram, Karimnagar Dist Pkg-6
4	Erection of 400 KV SS at Tippapur, Karimnagar Dist Pkg-10 (Load 336 MW)		Erection of 400 KV SS at Tippapur, Karimnagar Dist Pkg-10
5	Erection of 132 KV SS at Malakpet, Karimnagar Dist Pkg-9 (Load 30 MW)		-
		3	Erection of 400 KV SS at Tukkapur, Medak Dist Pkg-12
		4	Erection of 400 KV SS at Chandlapur, Medak Dist Pkg-11
		5	Erection of 400/220 KV SS at Yellampalli, Karimnagar Dist
		6	Erection of 220 KV SS at Yellampalli Pump House, Karimnagar Dist
		7	Erection of 220 KV SS at Sundilla Pump House, Karimnagar Dist
		8	Erection of 220 KV SS at Kaleshwaram Pump House, Karimnagar Dist
		9	Erection of 132 KV SS at Malakpet, Karimnagar Dist Pkg-9
	Erection of 400 KV Quad Moose DC line for making LILO of both the circuits of 400 KV SC	10	Erection of LILO

		20	Erection of 220 KV Twin Moose DC line from 400/220 KV Yellampalli LI SS to 220/11 KV Kaleshwaram pump house - 60 KM
			Erection of 132 KV DC line from upcoming 220 KV Sircilla SS to the proposed 132 KV Malakpet SS - 15 kM

3. **Palamur Ranga Reddy Lift Irrigation Scheme (3635 MW):**

The transmission system for this scheme was discussed in 39th meeting of SCPSPSR held on 28th and 29th December, 2015. In the meeting TSTRANSCO informed that the locations of the proposed new LI SS, has been changed. So, it was decided that TSTRANSCO will furnish new proposal and the issue will be re-discussed in the next SCPSPSR.TSTRANSCO has now revised capacity of LI Substations and the associated transmission system, which are given below:

3.1 Following load/motor capacity have been furnished by TSTRANSCO:

SI	Name of LI substation	Capacity, MW	Simultaneous load, MW
1	400 KV Narlapur	8x110=880	660
2	400 KV Yedula	9x120=1080	840
3	400 KV Vattem/ Karvena	9x107=963	749
4	400 KV Uddandapur	5x110=550	440
5	220 KV KP Laxmidevipally	3x54=162	108
	Total	**3635**	**2797**

3.2 Associated transmission system

i) 400 KV Quad Moose DC line from Veltoor to proposed 400 KV Yedula LISS -50 KM.

ii) 400 KV Quad Moose DC line from proposed 400 KV Yedula LISS to proposed 400 KV Narlapur LISS -30 KM.

iii) 400 KV Quad Moose DC line from proposed 400 KV Yedula LISS to proposed 400 KV Vattem /Karvena LISS -60 KM.

iv) 400 KV Quad Moose DC line from Maheshwaram TSTransco SS to proposed 400 KV Yedula LISS -130 KM.

v) LILO of both circuits of 400 KV Suryapet – Manikonda (Kethireddypalli) Quad Moose DC line to proposed 400 KV Uddandapur LISS – 50 KM.

7	Erection of 90 KM 400 KV Twin Moose DC line from 400 KV Dichpally SS to the proposed 400 KV Ramadugu SS.		-
8	Erection of 25 KM 400 KV Quad Moose DC line from 400 KV Ramadugu SS to 400 KV to 400 KV Myadaram SS	11	Erection of 400 KV Quad Moose DC line from 400 KV Ramadugu LI SS to 400 KV Medaram LI SS - 21 KM.
9	Erection of 25 KM 400 KV Quad Moose DC line from 400 KV Ramadugu SS to 400 KV Choppadandi SS		-
10	Erection of 40 KM 400 KV Twin Moose DC line from 400 KV Choppadandi SS to 400 KV Tippapur SS		
11	Erection of 400 KV Twin Moose DC line for making LILO of both the circuits of 400 KV KTPP-Gajwel Twin Moose DC line at the proposed 400 KV Tippapur SS (total 80 KM for two LILO DC lines)		-
12	Erection of 60 KM 400 KV Twin Moose DC line from 400 KV Dichpally SS to the upcoming 400 KV Nirmal SS		-
13	Erection of 30 KM 132 KV DC line from 220 KV Jagityal SS to the proposed 132 KV Malakpet SS.		-
		12	Erection of 400 KV Quad Moose DC line from 400 KV Ramadugu LI SS to 400 KV Tippapur LI SS - 20 KM.
		13	Erection of 400 KV Quad Moose DC line from 400 KV Tippapur LI SS to 400 KV Chandlapur LI SS - 21 KM
		14	Erection of LILO of both circuits of 400 KV Twin Moose DC line from KTPP - Gajwel at Chandlapur LI SS - 41 KM(LILO length)
		15	400 KV Twin Moose DC line from 400 KV Chandlapur LI SS to 400 KV Tukkapur LI SS - 30 KM
		16	400 KV Twin Moose DC line from 400 KV Tukkapur LI SS to 400 KV Narasapur SS - 70 KM
		17	Erection of LILO of both circuits of 400 KV Quad Moose DC line from SCCL Jaipur - Ramadugu at proposed Yellampalli SS - 8 KM (LILO length)
		18	Erection of LILO of both circuits of 400 KV Quad Moose DC line from Telangana STPP- Neddurunu SS at Yellampalli SS - 10 KM (LILO length)
		19	Erection of 220 KV DC line from 400/ 220 KV Yellampalli SS to 220/11 KV Sundilla pump house - 30 KM

vi) 400 KV Quad Moose DC line from proposed 400 KV Vattem LISS to proposed 400 KV Uddandapur LISS -50 KM.

vii) 220 KV Twin Moose DC line from 220kV Pargi SS to KP Laxmidevipally LISS – 20 KM.

4. Proposed Telangana STPP 2X800 MW Generation Evacuation Scheme (To be established by NTPC) at Ramagundam

4.1 New Substations:

A. New 400 kV SS – Nedunuru SS in Karimnagar District
B. New 400 kV SS – RCPuram SS in Rangareddy District
C. New 220 kV SS – Borampet SS in Rangareddy District

4.2 The above scheme was discussed in 39th meeting of SCPSPSR held on 28th and 29th December, 2015. The following revised proposal has been sent by TSTRANSCO:

Associated transmission system

i) 400 kV Quad Moose DC line from proposed Telangana STPP 2X800 MW to proposed 400/220/132 kV Nedunuru SS - 60 KM.

ii) LILO of both circuits of 400kV Jangoan – 400 kV Tippapur LI SS Quad Moose DC line to proposed 400 kV Nedunuru SS – 30 KM.

iii) 400 kV Quad Moose DC line from proposed Telangana STPP 2X800 MW to upcoming 400 kV Narsapur SS (Substation approved in 35th Standing Committee Meeting) - 170 KM.

iv) 400 kV Quad Moose DC line from upcoming 400 kV Narsapur SS to proposed 400 kV RCPuram SS in Rangareddy District – 60 KM.

v) LILO of 220 kV Durshed – Siddipet DC line to the proposed 400/220/132 kV Nedunuru SS – 10 KM.

vi) 220 kV UG Cable from proposed 400 kV RCPuram to existing 220 kV Gachibowli SS – 10 KM

vii) 220 kV UG Cable from proposed 400 kV RCPuram to upcoming 220 kV Raidurg SS – 20 KM

viii) 220 kV Single Moose DC line from upcoming 400 kV Narsapur to proposed 220 kV Borampet SS – 43 KM

ix) 220 kV Single Moose DC line from proposed 220 kV Borampet SS to existing 220 KV Miyapur SS– 35 KM

x) 220 kV Single Moose DC line from proposed 220 kV Borampet SS to existing 220 KV Shapurnagar SS– 35 KM

5. Earlier, Joint Studies were carried out with SR constituents and PGCIL in Banglore on 14-17 March, 2016. Further, the studies were carried out in CEA on 13th and 14th June, 2016 for evolving the transmission system for above LI schemes of Telangana and the Telangana STPP

For these studies, the total peak load of Telangana was assumed as 12000 MW by 2019-20 additional LI load of 6000 MW. The studies were carried out for three load generation scenarios:

1. 12000 Telangana Load and 6000 LI load.
2. 11000 Telangana Load and 6000 LI load
3. 11000 Telangana Load and 0 LI load.

The load generation balance scenarios are given at **Annex- I**. The list of generation to serve above load are provided by TSTRANSCO and is given at **Annex II.** The result of studies for the systems (i.e at S.No 2,3 and 4) are depicted at **Annex –III (a,b,c)**.

6. TSTRANSCO has also submitted vide their email dated 08.06.2016 (**Annexure-IV**) that the motor capacity and simultaneous loads at LI substations are tentative only and may change.

7. Considering above we convey our in-principle approval for above transmission schemes. However, these schemes would be finalized in the next meeting of SCPSPSR. Further following is also mentioned:

1- There is requirement of more outlets from SCCL Generation Project.

2- Provision of reactors to prevent high voltages in non-operational season. This requirement would be worked out by TSTRANSCO and submitted to CEA for taking up in next meeting of SCPSPSR.

3- As informed by TSTRANSCO, these machines would be synchronous motors with capability to run at least at 0.95 power factor Lag/Lead.

4- It is observed that Telangana will have to procure additional generation capacity of the order of 4000-5000 MW for the period 2019-20 to meet their load demand as considered in these studies i.e 18000 MW(including 6000 MW for Lift Irrigation)

This issues with the approval of Member (Power System), CEA.

Yours faithfully,

14/6/2016

(Pardeep Jindal)
Chief Engineer (PSPA-2)

Copy to:

COO(CTU-Plg.),
Power Grid Corp. of India Ltd.,
"Saudamini", Plot No.-2, Sector –29,
Gurgaon – 122001

Annex-I

LGB for Telangana State

	Thermal	Hydro	Total
SS	8763	2442	11205
CGS	4226	0	4226
IPP	3950	0	3950
Grand Total			19381

Scenario- 1 (12000MW load+ LI 6000 MW)

Multification factor for Thermal (MFT)	Multification factor for Hydro(MFH)		Thermal	Hydro
0.785	0.6	SS	6878.955	1465.2
		CGS	3317.41	0
		IPP	3100.75	0
		Total	13297.115	1465.2
		Generation	14762.315	
		Demand	18000	
		Surplus/Deficit	-3237.685	

Scenario-2 (11000MW load+ LI 6000 MW)

MFT	MFH		Thermal	Hydro
0.785	0	SS	6878.955	0
		CGS	3317.41	0
		IPP	3100.75	0
			13297.115	0
		Generation	13297.115	
		Demand	17000	
		Surplus/Deficit	-3702.885	

Scenario -3 (11000 MW load+Nil LI)

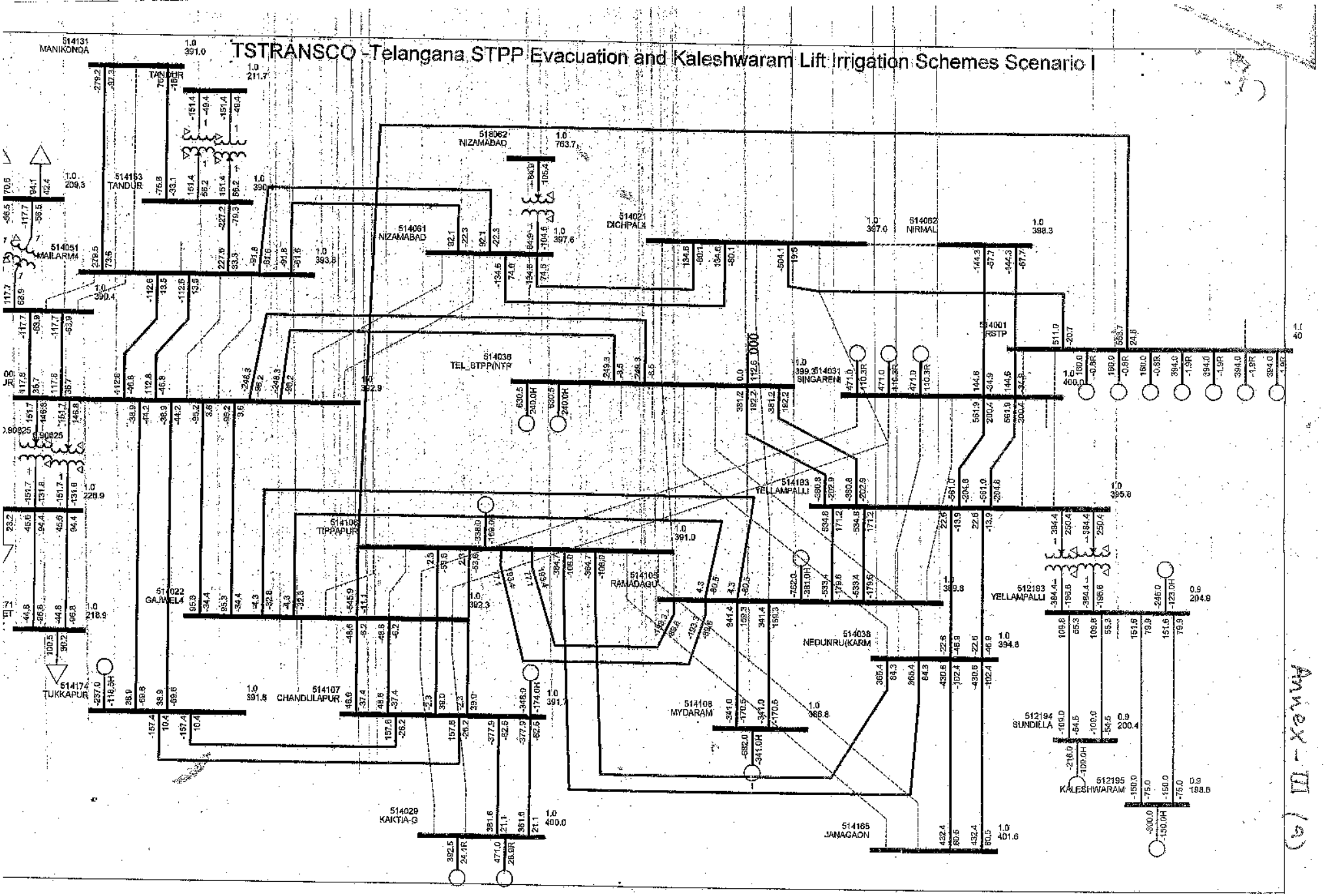
MFT	MFH		Thermal	Hydro
0.537	0.3	SS	4705.731	732.6
		CGS	2269.362	0
		IPP	2121.15	0
			9096.243	732.6
		Generation	9828.843	
		Demand	11000	
		Surplus/Deficit	-1171.157	

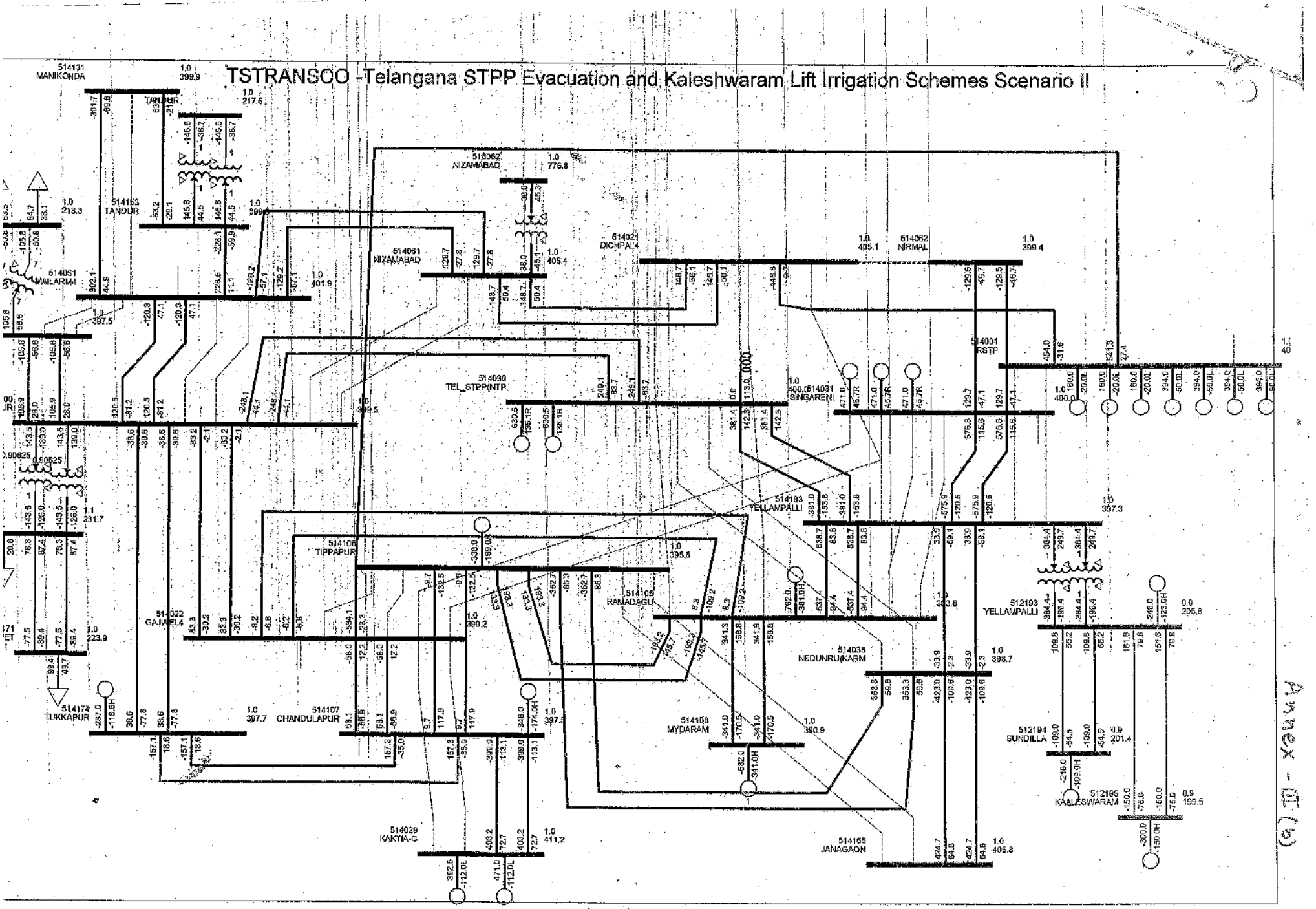
* SS- State Sector
CGS- Share from Central Generating Stations
IPP- Independent Power Producers including Chatishgarh LTA and others

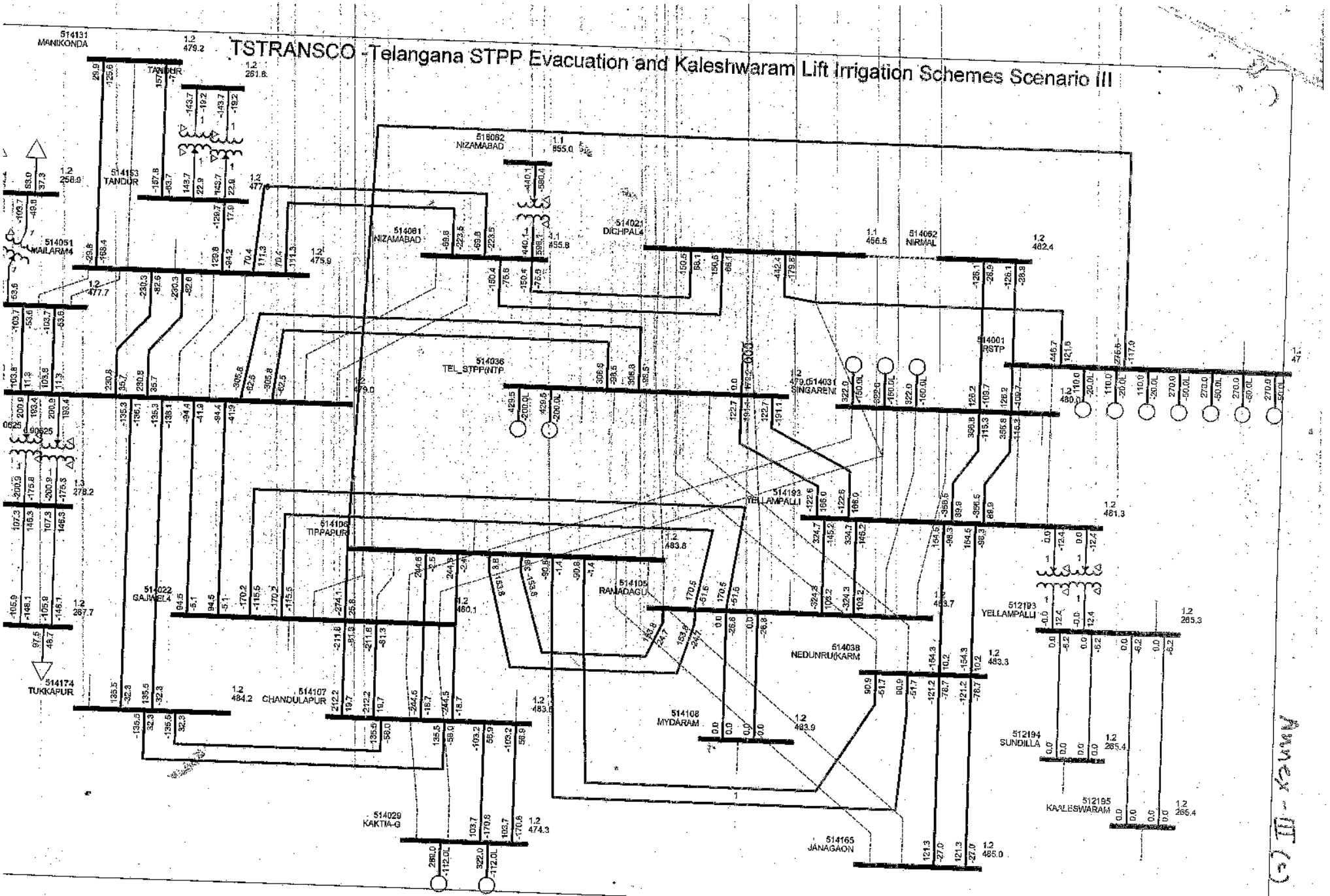
Annex-II

ESTIMATED LOAD GENERATION BALANCE (LGB)

	Name of The Plant	Installed Capacity in MW	Installed Capacity in MW
	Nagarjuna Sagar HES		815.6
	Srisailam Left Bank HES		900
	Priya darshini Jurala HES		234
	Pochampadu PH		36
	Nagarjuna Sagar Left Canal PH		60
	Nizam sagar PH		10
	Singur PH		15
	Peddapalli Mini Hydro		9.16
	Palair Mini Hydro		2
	Pulichintala HES		120
	Lower Jurala HES		240
@	**Total Hydel**		**2442**
	Kothagudem - A,B&C		720
	Kothagudem Stage- V		500
	Kothagudem Stage-VI		500
	Ramagundam TPS - B		62.5
	Kakatiya TPP Stage - I		500
	Kakatiya TPP Stage - II		600
	Kothagudem TPS Stage-VII		800
	Bhadradri TPS		1080
	Yadadri TPS		4000
	Total Thermal		**8763**
	Total Generation		**11204**
	RST I & II	2100	366
	RSTIII	500	92
	TALCHER STPS II	2000	216
	SIMHADRI STAGE I	1000	539
	SIMHADRI STAGE II	1000	260
	VALLUR TPS	1500	114
	MAPS	440	24
	KAIGA STAGE 1	440	76
	KAIGA STAGE II	440	76
	NLC STG II	630	66
	NLC STGT	840	114
	TUTICORN-CGS	2x500	138
	BHAVANI (KALPAKA)	1X500	71
	NEYVELI UNIT - I	1X500	36
	NEYVELI UNIT - II	1X500	36
	KUDIGI UNIT- I	1X800	75
	KUDIGI UNIT- II	1X800	75
	KUDIGI UNIT- III	1X800	84
	KUDIGI UNIT- IV & V	2X800	168
	Telangana STPP	2x800	1600
	TOTAL CGS		**4226**
	CHATTISGARH-LTOA	2000	2000
	SINGARENI UNIT - I & II	2x600	1200
	SINGARENI UNIT - III	1x600	600
	NAV BHARAT	1 X150	150
	OTHERS		**3950**
	GRAND TOTAL		**19380**


TSTRANSCO -Telangana STPP Evacuation and Kaleshwaram Lift Irrigation Schemes Scenario I
514131 MANIKONDA
514153 TANDUR
514051 MAILARM4
518062 NIZAMABAD
514061 NIZAMABAD
514021 DICHPALI4
514062 NIRMAL
514001 RSTP
514036 TEL_STPP(NTP
514031 SINGARENI
514193 YELLAMPALLI
514106 TIPPAPUR
514022 GAJWEL4
514107 CHANDULAPUR
514108 RAMADAGU
514038 NEDUNRU(KARM
514108 MYDARAM
514174 TUKKAPUR
514029 KAKTIA-G
514165 JANAGAON
512193 YELLAMPALLI
512194 SUNDILLA
512195 KALESHWARAM


TSTRANSCO -Telangana STPP Evacuation and Kaleshwaram Lift Irrigation Schemes Scenario II
514131 MANIKONDA
514153 TANDUR
514051 WAILARM4
514061 NIZAMABAD
518062 NIZAMABAD
514021 DICHPAL4
514062 NIRMAL
514001 RSTP
514036 TEL_STPP(NTP
514031 SINGARENI
514193 YELLAMPALLI
514106 TIPPAPUR
514022 GAJWEL4
514105 RAMADAGU
514038 NEDUNURUKARM
514108 MYDARAM
514165 JANAGAON
514174 TUKKAPUR
514107 CHANDULAPUR
514029 KAKTIA-G
512193 YELLAMPALLI
512194 SUNDILLA
512195 KAALESWARAM


TSTRANSCO -Telangana STPP Evacuation and Kaleshwaram Lift Irrigation Schemes Scenario III
514131 MANIKONDA
TANDUR
514151 TANDUR
514051 MAILARM4
518062 NIZAMABAD
514061 NIZAMABAD
514021 DICHPAL4
514062 NIRMAL
514001 RSTP
514036 TEL_STPP(NTP
514031 SINGARENI
514193 YELLAMPALLI
514106 TIPPAPUR
514022 GAJWEL4
514105 RAMADAGU
512193 YELLAMPALLI
514038 NEDUNRU(KARM
514174 TUKKAPUR
514107 CHANDULAPUR
514108 MYDARAM
512194 SUNDILLA
512195 KAALESWARAM
514029 KAKTIA-G
514165 JANAGAON

Annexure - IV

Gmail

Shivani Sharma <shivani0004@gmail.com>

Telangana Lift Irrigation schemes particulars - Reg.

se_ps_transco <se_ps_transco@telangana.gov.in> Wed, Jun 8, 2016 at 3:48 PM
To: Shivani Sharma <shivani0004@gmail.com>, "pjindal@cea.nic.in" <pjindal@cea.nic.in>, "jindal_pardeep@yahoo.co.in" <jindal_pardeep@yahoo.co.in>

Sir,
The Lift Irrigation scheme wise capacities and simultaneous loads are herewith attached.
Some of the Substations names are renamed and are mentioned in brackets.

Regards,
Superintending Engineer,
Power Systems,
TSTransco,
Vidyut Soudha,
Hyderabad.

From: Shivani Sharma <shivani0004@gmail.com>
Sent: Tuesday, June 7, 2016 5:19 PM
To: se_ps_transco
Subject: Re: Telangana Lift Irrigation schemes particulars - Reg.

[Quoted text hidden]

CEA pdf
522K

Amrit - Agenda - 18.2

Energy Saved is Energy Produced

TRANSMISSION CORPORATION OF TELANGANA LIMITED

From
The Director/Projects & LI,
TSTRANSCO,
Vidyut Soudha,
Hyderabad.

To
The Chief Engineer/PS P&A -II,
Central Electricity Authority(CEA),
RK Puram, Sewa Bhavan,
New Delhi-110066

Lr.No. Dir(Proj)/SE(PS)/DE(SS)/ADE-3/F.Schemes/D.No. 329 /16, Dt:04/05/2016

Sir,

Sub: - TSTransco - Revised Study for the Kaleshwaram Lift Irrigation Project (Dr. BR Ambedkar Pranihita - Chevella Sujala Sravanthi) & Palamuru-Rangareddy Lift Irrigation Schemes, Proposed 400 kV Tandur SS and others- Load flow studies - Requested - Reg.

Ref:- 1) Minutes of the 37th Standing Committee Meeting dtd:31-07-2014.
2) Lr.No. SE (PS)/DE(SS&LTSS)/ADE3/F.REVISED LI/D.No. 220/15, Dt:30/11/2015
3) Lr.No. SE (PS)/DE(SS&LTSS)/ADE3/F.REVISED LI/D.No. 253/15, Dt:01/02/2016
4) Lr.No. Dir(Proj)/SE(PS)/DE(SS)/ADE3/F.39th SCPSPSR Minutes/ D.No.278/15,Dt.27-02-2016
5) Lr.No. Dir(Proj)/ADE-T/F.TSTPP REVISED/d.No.197/16, Dt.27-04-2016

* * * * *

1) We are thankful for arranging the joint studies at your esteemed office as per telephonic discussion on dtd.30-04-2016 regarding the study for the revised proposal for Kaleshwaram Lift Irrigation Project (Dr. BR Ambedkar Pranihita - Chevella Sujala Sravanthi Lift Irrigation Scheme) and Palamuru-Rangareddy Lift Irrigation Scheme on dtd: 05-05-2016 and 06-05-2016.

2) In this regard, it is to submit that, earlier Kaleshwaram Lift Irrigation Project (Dr. BR Ambedkar Pranihita - Chevella Sujala Sravanthi Lift Irrigation Scheme (1992 MW)) was approved in the Minutes of the 37th Standing Committee Meeting dtd:31-07-2014. Now the scheme is revised and Chief Minister has laid the foundation stone on 02-05-2016 at Kaleshwaram, Karimnagar District.The details and the block diagram of the scheme are enclosed as Annexure.

3) The details of Palamuru-Rangareddy the other Lift Irrigation Scheme (3630 MW) is also proposed and communicated vide reference (2).Copy enclosed for ready reference.

4) It is to submit that, the studies for Proposed Generation Evacuation of 2 x 800 MW Telangana STPP, to be established by M/s NTPC at Ramagundam, are carried out along with POWERGRID at Bengaluru during 14-17 March 2016 and the same was accepted.

5) Further, it is proposed for a new 400 kV SS at Tandur, Rangareddy District under system strengthening scheme to meet the industrial load coming up in that area. The detailed connectivity is enclosed herewith.

6) In view of the above, it is requested to arrange for the study of revised Kaleshwaram Lift Irrigation Project (Dr. BR Ambedkar Pranihita - Chevella Sujala Sravanthi) & Palamuru-Rangareddy Lift Irrigation Schemes, Proposed Generation Evacuation of 2 x 800 MW Telangana STPP to be established by NTPC and proposed 400 kV Tandur SS and communicate the approval/**in principle** approval at the earliest for taking up the works.

Encl: As above

4/5/16

Director/Projects & LI

Copy to

Mrs.Seema Gupta, COO/CTU,CORPORATE CENTRE, Power Grid Corporation of India (PGCIL), Sector - 29, Near IFFCO Chowk, Gurgoan, Haryana - 122001.

ANNEXURE

I) DR.B.R.AMBEDKAR PRANAHITHA CHEVELLA LIFT IRRAGATION PROJECT

New 400 KV Substations :

1. *400 KV Medaram 7x160 MVA 1120 - With a load of 730 MW 875
2. *400 KV Ramadugu 7x160 MVA 1120 - With a load of 850 MW 977
3. *400 KV Tippapur 4x120 MVA 480 - With a load of 380 MW 434
4. 400 KV Chandlapur 5x100 MVA 500 - With a load of 400 MW 496
5. 400 KV Tukkapur 4x50 MVA 200 - With a load of 350 MW 304
6. *132 KV Malakpet LI SS - With a load of 50 MW

New 400 KV Lines :

1. *400 KV Quad Moose DC line from 400 KV Ramadugu LI SS to 400 KV Medaram LI SS - 21 KM
2. *LILO of 400 KV Quad Moose DC line from SCCL Jaipur - Gajwel to Ramadugu SS - 18 KM
3. 400 KV Quad Moose DC line from 400 KV Ramadugu LI SS to 400 KV Tippapur LI SS - 20 KM
4. 400 KV Quad Moose DC line from 400 KV Tippapur LI SS to 400 KV Chandulapur LI SS - 21 KM
5. LILO of 400 KV twin Moose DC line from KTPP - Gajwel to 400 KV Chandlapur LI SS - 2x41 KM
6. 400 KV Quad Moose DC line from 400 KV Chandulapur LI SS to 400 KV Tukkapur LI SS - 30 KM.
7. 400 KV Quad Moose DC line from 400 KV Tukkapur LI SS to 400 KV Narasapur SS - 70 KM
8. 132 KV DC Line from upcoming 220/132 KV Sircilla SS to 132 kV Malakpet LI SS - 15 KM

* Are approved under 37th Standing Committee Meeting on Power System of Southern Region. However there is change in Load.

ANNEXURE

II) PALAMUR RANGA REDDY LI SHCEME (3630 MW)

New 400 KV Substations :

1.	400 KV Narlapur in Mahabubnagar District	-	880 MW
2.	400 KV Yedula in Mahabubnagar District	-	1080 MW
3.	400 KV Vattem in Mahabubnagar District	-	960 MW
4.	400 KV Uddandapur in Mahabubnagar District	-	550 MW
5.	220 KV KP Laxmidevipally in Ranga Reddy District	-	160 MW

New 400 KV Lines :

1. 400 KV Quad Moose DC line from Veltoor to proposed 400 KV Yedula LISS -50 KM.
2. 400 KV Quad Moose DC line from proposed 400 KV Yedula LISS to proposed 400 KV Narlapur LISS -30 KM.
3. 400 KV Quad Moose DC line from proposed 400 KV Yedula LISS to proposed 400 KV Vattem LISS -60 KM.
4. 400 KV Quad Moose DC line from Maheshwaram TSTransco SS to proposed 400 KV Yedula LISS -130 KM.
5. LILO of both circuits of Suryapet - Shankarpally 400 KV Quad Moose DC line to proposed 400 KV Vattem LISS - 70 KM.
6. 400 KV Quad Moose DC line from proposed 400 KV Vattem LISS to proposed 400 KV Uddandapur LISS -50 KM.
7. 220 KV Twin Moose DC line from Pargi to KP Laxmidevipally LISS - 20 KM.

ANNEXURE

III) PROPOSED TELANGANA STPP 2X800 MW GENERATION EVACUATION SCHEME (TO BE ESTABLISHED BY NTPC) AT RAMAGUNDAM

New 400 KV SS - Nedunuru SS in Karimnagar District
New 400 KV SS - RCPuram SS in Rangareddy District
New 220 KV SS - Bowrampet SS in Rangareddy District

1. 400 KV Quad Moose DC line from proposed Telangana STPP 2X800 MW to proposed 400/220/132 KV Nedunuru SS - 60 KM.

2. LILO of both circuits of Jangoan - Tippapur 400 KV Quad Moose DC line to proposed 400 KV Nedunuru SS - 30 KM.

3. 400 KV Quad Moose DC line from proposed Telangana STPP 2X800 MW to upcoming 400 KV Narsapur SS(Substation approved in 35th Standing Committee Meeting) - 170 KM.

4. 400 KV Quad Moose DC line from upcoming 400 kV Narsapur SS to proposed 400 kV RCPuram SS in Rangareddy District - 60 KM.

5. LILO of 220 KV Durshed - Siddipet DC line to the proposed 400/220/132 KV Nedunuru SS - 10 KM.

6. 220 KV UG Cable from proposed 400 kV RCPuram to existing 220 kV Gachibowli SS - 10 KM

7. 220 KV UG Cable from proposed 400 kV RCPuram to upcoming 220 kV Raidurg SS - 20 KM
8. 220 KV Moose DC line from upcoming 400 kV Narsapur to proposed 220 kV Borampet SS - 43 KM

9. 220 KV Moose DC line from proposed 220 kV Borampet SS to existing 220 KV Miyapur SS- 35 KM

10. 220 KV Moose DC line from proposed 220 kV Borampet SS to existing 220 KV Shapurnagar SS- 35 KM

ANNEXURE

IV) PROPOSED 400 KV TANDUR SS IN RANGAREDDY DISTRICT

NEW 400 KV SS - TANDUR SS IN RANGAREDDY District

1. LILO of one circuit of 400 kV QMDC line from Mailaram (Shankarpally) - Manikonda (Kethireddypalli) SS to proposed 400 KV Tandur SS - 70 KM.

2. 220 KV Moose DC line from proposed 400 kV Tandur SS to existing 220 KV Tandur SS- 10 KM

3. 220 KV Moose DC line from proposed 400 kV Tandur SS to upcoming 220 KV Parigi SS- 45 KM

Shankarpally — Suryapeta
V
Manikonda

23323 16

ANNEXURE

S.No.	Name of the Substation	Power Transformer Capacity in MVA	MD reached during 2015-16 in MW
1	220KV Tandur SS	3x100	170
2	220KV Parigi SS (upcoming)	2x100	Idle
3	220KV Kosgi SS (upcoming)		
4	132KV Tandur SS	3x50	115
5	132KV CCI line-I & II		31
6	132Kv Penna line		16
7	132KV VCH line		35
8	132KV Tandur Railway line		9
9	132KV Parigi SS	3x50	52.8
10	132KV Vikarabad SS	1x10/16	Idle
11	132KV Vikarabad Railway SS	1x10/16	24
12	132KV Dharmasagar SS	3x315	42
13	Expected Load on 220KV Tandur SS after Charging the 220KV Parigi SS and 220KV Kosigi SS		150

Line Lengths in KM:

1.400KV Shankarpally SS to Proposed 400KV Tandur SS - 75 Km

2.400KV Tandur SS to Proposed 400KV Kethireddypalli (Manikonda)SS - 70 Km

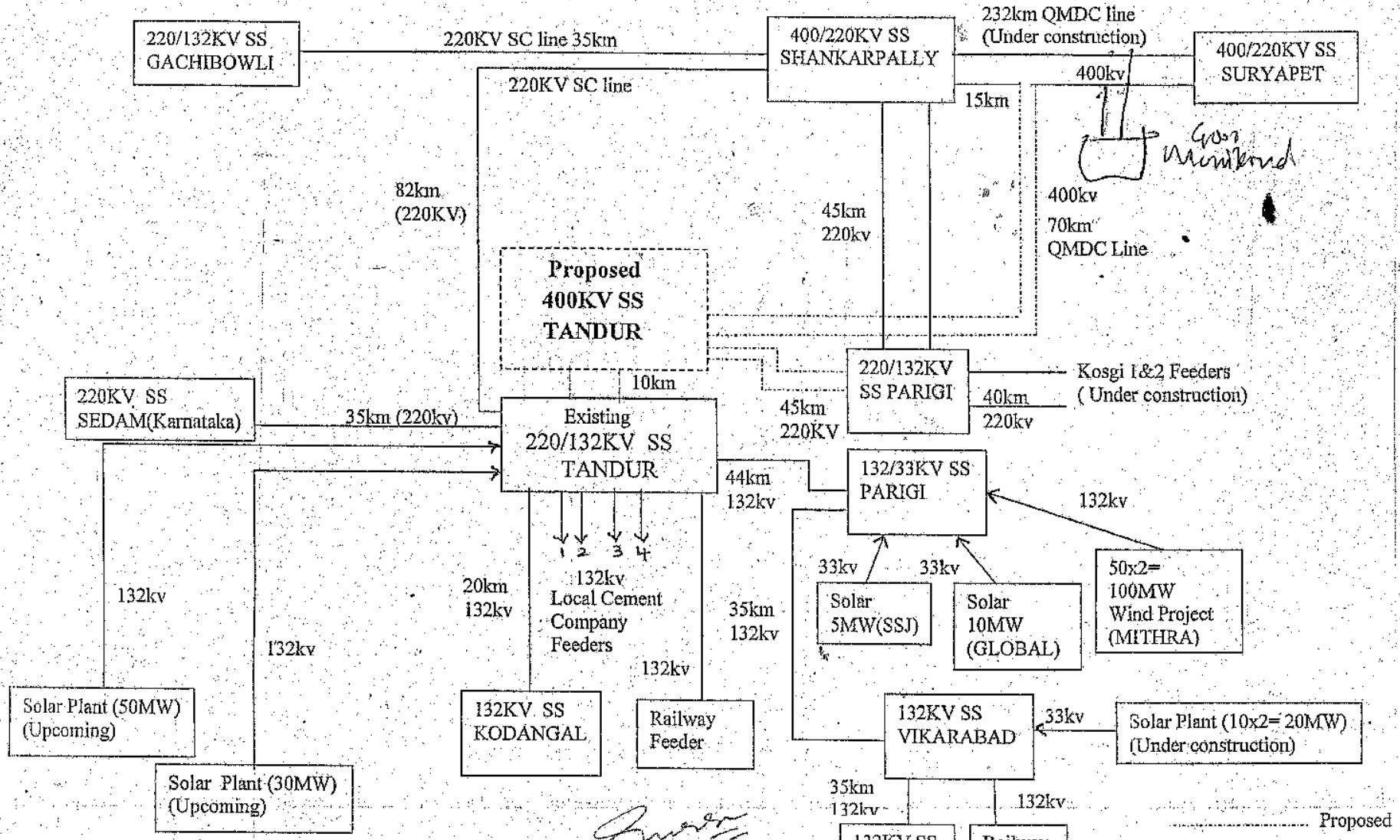
3.Proposed 400KV Kethireddypalli (Manikonda)SS to Upcoming 400KV Suryapet SS – 200 Km

220KV Connectivities

Superintending Engineer,
400KV/Constn/Metro/Erg/Hyd

SE POWER SYSTEMS
TSTRANSCO
Inward No. SE 8
- 4 MAY 2016
DE/System Studies
DE/System Protection
SE/Power Systems

Schematic Diagram showing the details of all existing feeder arrangement for the proposed LILO of 400KV QMDC line Suryapet to Shankarpally to the proposed 400KV SS TANDUR

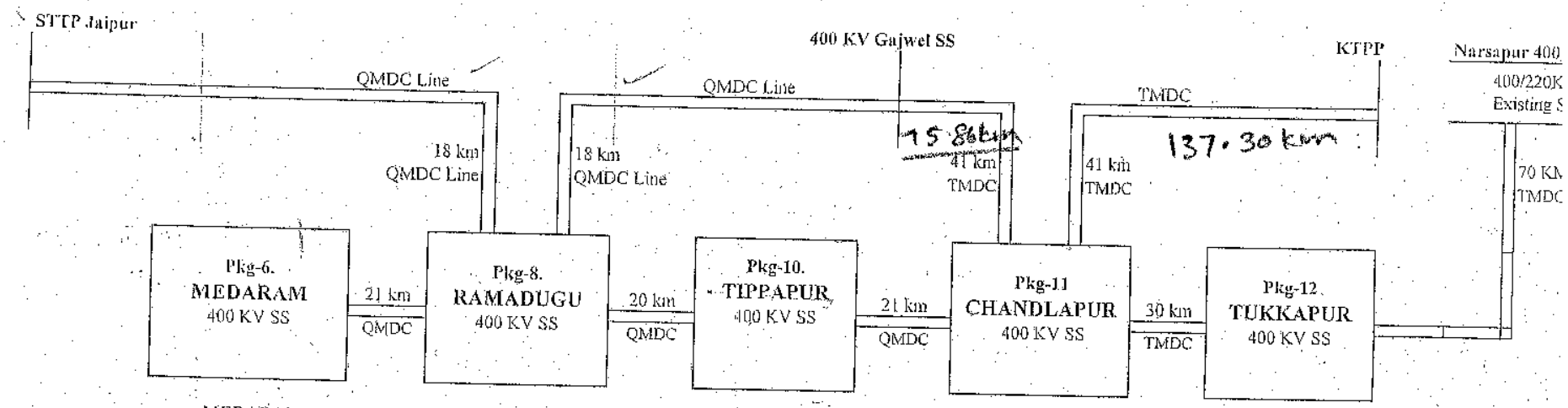


Executive Engineer
400KV/Constn-I/TSTRANSCO
Metro/Erragadda/Hyderabad-45.

Asst. Executive Engineer
400KV/SD- /Constn-I/TSTRANSCO
Metro/Erragadda/Hyderabad-45.

SUPERINTENDING ENGINEER
400KV/CONSTR TSTRANSCO METRO CIRCLE/TSTRANSCO
ERRAGADDA HYDERABAD-500 045

KALESHWARAM (Pranahitha - Chevella) LIFT IRRIGATION SCHEME FOR PACKAGE Nos. 6,8,10,11 AND 12



		MEDARAM	RAMADUGU	TIPPAPUR	CHANDLAPUR	TUKKAPUR
1	Rating of Motor	124.40 MW	139.00 MW	106 MW	88.5 MW	43 MW
2	No. of Pumps	7 Nos X 103.64 MW	7 Nos X 120.46 MW	4 Nos X 92.22 MW	5 Nos X 78.64 MW	8 Nos X 43 MW
3	Total input Power required	=730 MW	=850 MW	=380 MW	=400MW	=350 MW
4	No.of PTRs.	7 X 160 MVA	7 X 160 MVA	4 X 120 MVA	5 X 100 MVA	4 X 50 MVA

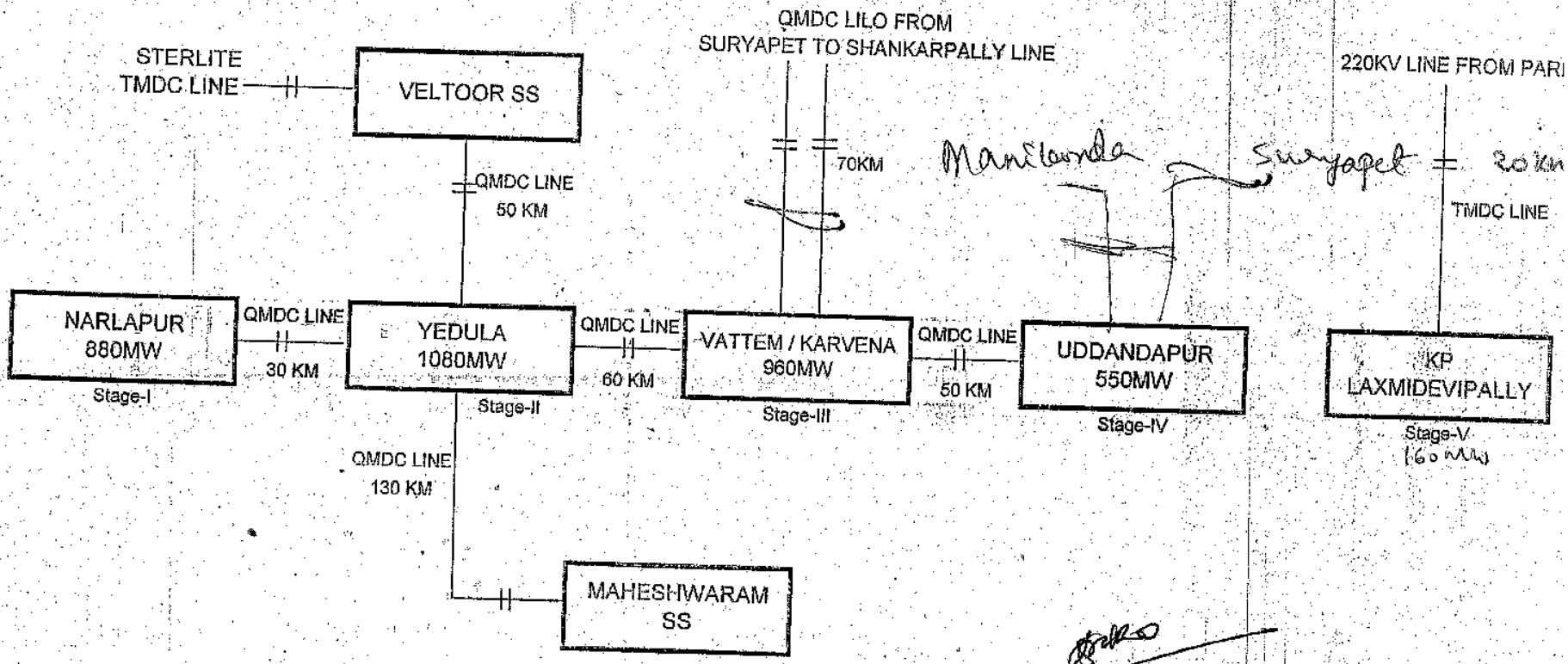
QMDC

Sl.No	Name of the line	Length in km
1	400 kV QMDC LILO line to Ramadugu from Jaipur to Gajwel 400KV QMDC line 18+18 km)	36
2	400 kV QMDC line from Ramadugu to Medaram	21
3	400 kV QMDC line from Ramadugu to Tippapur	20
4	400 kV QMDC line from Tippapur to Chandlapur	21
	TOTAL LENGTH OF QMDC LINE	98

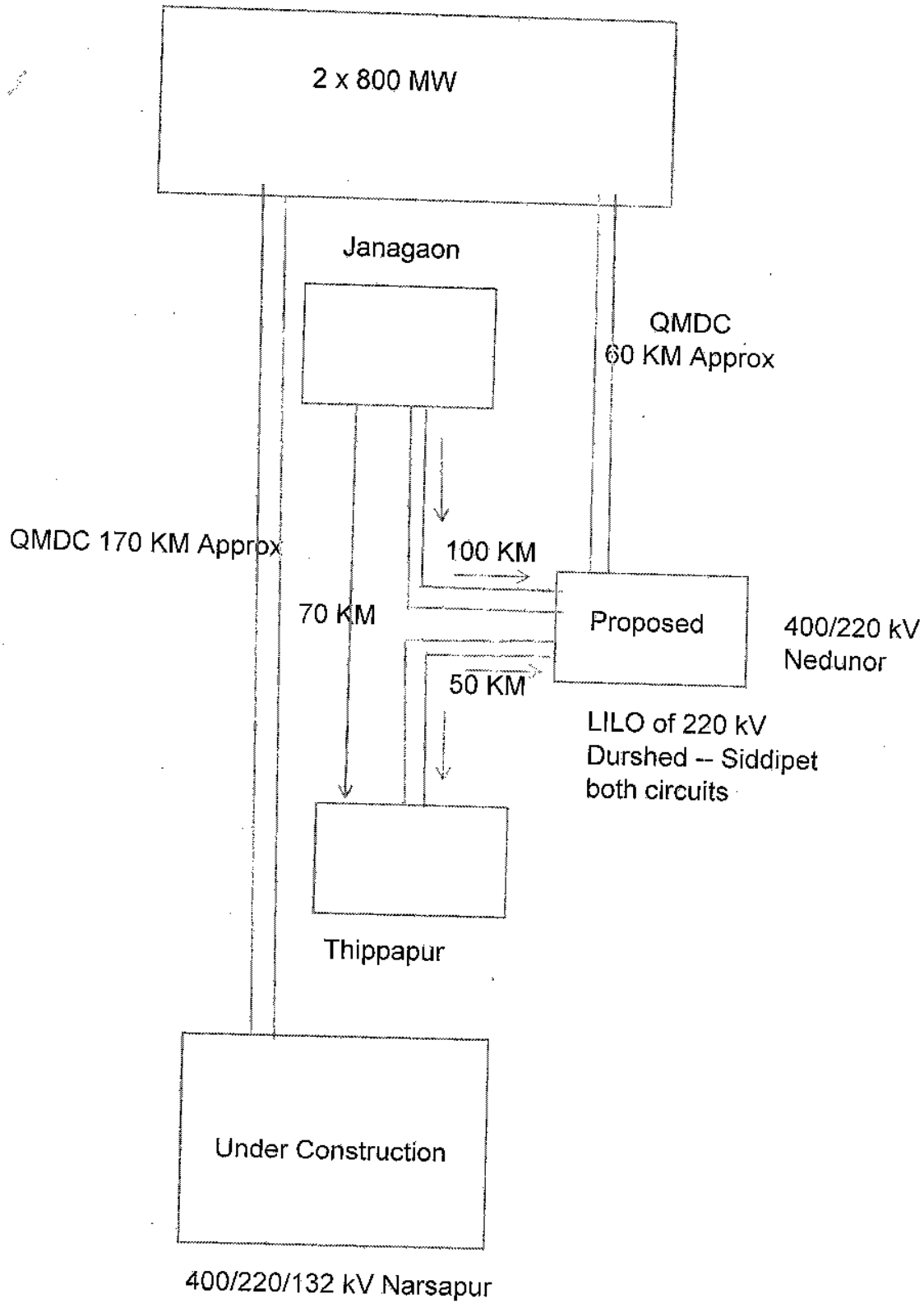
TMDC

Sl.No	Name of the line	Length i
1	400 kV TMDC LILO line to Chandlapur from KTPP - Gajwel TMDC Line (41+41 km)	82
2	400 kV TMDC line from Chandlapur to Tukkapur	30
3	400 kV TMDC line from Tukkapur to Narsapur	70
	TOTAL LENGTH OF TMDC LINE	182

PALAMOOR-RANGAREDDY LIFT IRRIGATION SCHEME



NTPC, RAMAGUNDAM



* Quad Moose lines proposed in view of future expansion of generation

Annex- Agenda- 18.3

Gmail

Shivani Sharma <shivani0004@gmail.com>

NTPC,Kaleshwaram and Palamur Rangreddy LI Scheme - SAV Files with 6000 MW LI Load

se_ps_transco <se_ps_transco@telangana.gov.in> Tue, May 24, 2016 at 12:16 PM
To: "jindal_pardeep@yahoo.co.in" <jindal_pardeep@yahoo.co.in>, "shivani0004@gmail.com" <shivani0004@gmail.com>
Cc: "desststransco@gmail.com" <desststransco@gmail.com>

Sir/Madam

As per the telephonic discussions had with our Director(Projects&LI), the draft study results along with SAV files(3 Nos.), Single Line diagram and connectivity details are herewith attached for further advice.

It is requested to arrange to communicate in principle approval for the attached schemes at the earliest.

With regards
Superintending Engineer
Power Systems

Delhi 230516.rar
3275K

Minutes of the meeting to discuss re-routing of existing 400 kV line emanating from Ramagundam STPP in view of Telangana STPP 2x800 MW in the Ramagundam generation complex

1. A meeting was held on 3rd November, 2016 in the office of Chief Engineer (PSPA-II) CEA, to discuss re-routing of existing 400 kV lines emanating from Ramagundam STPP in view of Telangana STPP (2x800 MW), in the Ramagundam generation complex. The meeting was participated by officials from CEA, NTPC, CTU and POWERGRID field office. The list of participants is enclosed at Annex-I.

2. POWERGRID informed that there are four numbers of 400 kV circuits emanating from Ramagundam switchyard towards Hyderabad, two number of circuits towards Chadrapur ,one circuit towards Warangal, two circuits towards Nagarjuna Sagar and one circuit towards Dichpalli. Out of the 4 circuits towards Hyderabad, two circuits i.e. circuit no. 3 and 4 are on double circuit towers and are directly going to Ghanapur (Hyderabad). The circuit number 1 and 2 from Ramagundam to Hyderabad are on single circuit tower and circuit number 1 is LILOed at Gajwel and circuit number 2 is LILOed at Malkaranam.

3. NTPC informed that Telangana Stage I (2x 800 MW) is being set up in the available land inside existing Merry-Go-Round unloading Bulb area near existing Ramagundam Super Thermal Power Project (RSTPP) in District Karimnagar of Telangana. Existing 400kV DC lines of PGCIL namely Hyderabad 3 &4 and Chandrapur 1& 2 are crossing the proposed site identified for Telangana Stage I BOP facilities like railaway siding and coal stock pile area.

4. NTPC informed that in view of above re-routing of existing 400 kV Chandrapur-1&2, Warangal and Hyderabad 3&4 lines is required to start enabling work in this area. Considering the limited available corridor and the large number of transmission lines to be routed in close vicinity, available corridor of approx. 200 m inside the plant boundary has been identified for re-routing of above lines and proposed evacuation system Telangana STPP Stage I as well. To accommodate all these lines in available 200 m corridor, Multi-circuit tower has been proposed to be used.

5. They also informed that for this purpose, the Ramagundam-Hyderabad circuit number 3 and 4 and Chandrapur circuit number 1 and 2 will be built in one corridor for about one and a half kilometer length using eight number of multi-circuit towers. Similarly, on the other side of the railway siding, the outgoing circuit of Ramagundam-Chandrapur 1 and 2 and Warangal will be built using another set of ten numbers of multi-circuit tower for the length of about 3 kilometers. Thus, there will be a total requirement of 18 numbers of multi-circuit towers.

6. NTPC stated that they will be paying for all expenses related to re-routing of these lines with use of multi-circuit towers. The same was agreed by POWERGRID. They both informed that they are carrying out a MoU on mutually agreed terms for implementing the same.

7. NTPC also requested CEA and CTU to consider and recommend for providing necessary shut down for implementing this re-routing arrangement. It was discussed that as carrying out this work is essential in nature, in view of establishment of 1600 MW Telangana STPP project and its evacuation system. Therefore, this shutdown may be allowed by SRLDC/POSOCO considering system conditions. For this, NTPC and POWERGGRID would coordinate with SRLDC and SRPC. On query from CEA, POWERGRID officials also informed that this shut down may be needed for a period of about 4 days.

8. Accordingly, in the meeting, it was in-principally decided to allow NTPC and PGCIL to carry out the above re-routing arrangements. However, as the matter pertains to ISTS networks it was felt that the same should also be discussed and formalized in the forthcoming meeting of the SCPSPSR scheduled to be held on 19th November. 2016. The schematic diagram of Ramagundam switchyard/relevant part of Ramagundam generation complex are enclosed at Annex (a), (b) and (c).

Energy Saved is Energy Produced

Annex Agenda - 19.1

TRANSMISSION CORPORATION OF TELANGANA LIMITED

From
The Director/Projects and Grid Operation,
TSTRANSCO,
Vidyut Soudha,
Hyderabad.

To
The Member/Power Systems,
Central Electricity Authority(CEA),
RK Puram, Sewa Bhavan,
New Delhi-110066

Lr.No.Dir(Proj)/CE(SLDC)/SE(PS)/DE(SS)/ADE(SS)/F.Reactor LI/D.No.428/16,Dt:03/09/2016

Sir,

Sub: - TSTransco - In principle approval of transmission evacuation scheme of Kaleshwaram Lift Irrigation Project (Dr.BR Ambedkar Pranihita Chevella - Sujala Sravanthi) & Palamuru - Rangareddy Lift Irrigation Schemes, Proposed Generation Evacuation of 2x800 MW Telangana STPP - Provision of Reactors Reg.

Ref:- CEA lr.No.51/4SP&PA-2015/406-407,dt.14-06-2016

* * * * *

1) We are thankful for conveying in-principle approval of transmission evacuation scheme of Kaleshwaram Lift Irrigation Project (Dr.BR Ambedkar Pranihita Chevella - Sujala Sravanthi) & Palamuru - Rangareddy Lift Irrigation Schemes, Proposed Generation Evacuation of 2x800 MW Telangana STPP vide reference cited above.

2) In the above approval, with regard to provision of reactors to prevent high voltages during non operation of lift irrigation loads, it was mentioned that the requirement of provision for reactors would be worked out by TSTransco and would be submitted to CEA.

3) As per the above directive, studies are carried out for arriving the requirement of reactors to prevent high voltages during non operation of lift irrigation loads. Accordingly, the reactors are proposed at the following locations.

i) Chadulapur LI SS(under Kaleshwaram LI Scheme) - 125 MVAR Bus Reactor
ii) Narlapur LI SS(under Palamuru Rangareddy LI Scheme) - 125 MVAR Bus Reactor
iii) Yedula LI SS(under Palamuru Rangareddy LI Scheme) - 125 MVAR Bus Reactor
iv) Vattem LI SS(under Palamuru Rangareddy LI Scheme) - 125 MVAR Bus Reactor
v) Uddandapur LI SS(under Palamuru Rangareddy LI Scheme) - 125 MVAR Bus Reactor
vi) Upcoming Telangana STPP(2 x800 MW), Ramagundam - 125 MVAR Bus Reactor

Contd..2..

4) The single line diagrams along with the voltage limit check reports are herewith enclosed for your examination and concurrence.

5) It is requested to examine the above and suggest modifications if any, and communicate approval to the bus reactors at the above mentioned locations to prevent high voltages in operational season.

Encl: As above

Director/ Projects and Grid Operation

Copy to

Sri Pardeep Jindal,Chief Engineer(PSPA-2), Central Electricity Authority(CEA),
RK Puram, Sewa Bhavan, New Delhi-110066.

WITHOUT REACTORS

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, SEP 01 2016 16:19

BUSES WITH VOLTAGE GREATER THAN THEIR NORMAL HIGH LIMIT:

BUS#	X-- NAME	--X BASKV	V(PU)	VLIMIT
511089	MALAKPET LI	132.00	1.1115	1.1000
514029	KAKTIA-G	400.00	1.0536	1.0500
514078	WARANGAL NEW	400.00	1.0629	1.0500
514131	MANIKONDA	400.00	1.0507	1.0500
514164	VATTEM	400.00	1.0617	1.0500
514172	NARLAPUR	400.00	1.0588	1.0500
518079	WARN800	765.00	1.0818	1.0500
511196	SIRCILLA	132.00	1.1093	1.1000
514060	SURYPET4	400.00	1.0681	1.0500
514079	WARN4	400.00	1.0594	1.0500
514135	ASUPAKA	400.00	1.0580	1.0500
514171	YEDULA	400.00	1.0570	1.0500
514173	UDDANDAPUR	400.00	1.0642	1.0500

BUSES WITH VOLTAGE LESS THAN THEIR NORMAL LOW LIMIT:

BUS#	X-- NAME	--X BASKV	V(PU)	VLIMIT
511069	SHPRN1	132.00	0.8930	0.9000
511184	AYYAGARPALLI	132.00	0.8923	0.9000
511182	JADCHERLA	132.00	0.8725	0.9000

WITH REACTORS

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E THU, SEP 01 2016 16:30

BUSES WITH VOLTAGE GREATER THAN THEIR NORMAL HIGH LIMIT:

BUS#	X-- NAME	--X BASKV	V(PU)	VLIMIT
514060	SURYPET4	400.00	1.0505	1.0500
518079	WARN800	765.00	1.0718	1.0500

BUSES WITH VOLTAGE LESS THAN THEIR NORMAL LOW LIMIT:

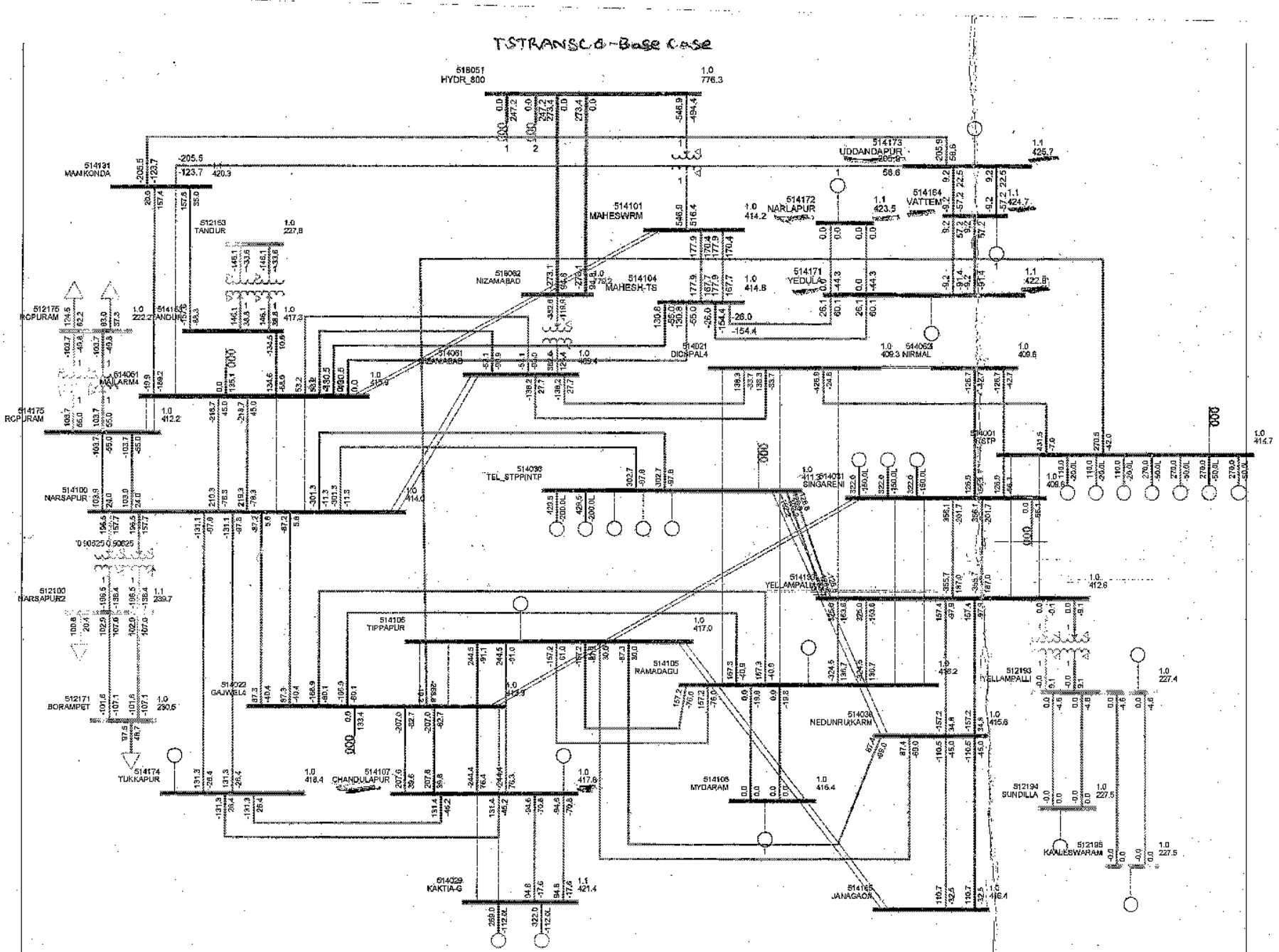
BUS#	X-- NAME	--X BASKV	V(PU)	VLIMIT
511069	SHPRN1	132.00	0.8695	0.9000
511184	AYYAGARPALLI	132.00	0.8779	0.9000
511182	JADCHERLA	132.00	0.8610	0.9000
512180	RENZAL	220.00	0.8976	0.9000

Fixed shunt data for base case

	Bus Numb	Bus Name	Id	Area Num	Area Name	Zone Num	Zone Name	Code	In Service	G-Shunt (MW)	B-Shunt (Mvar)	G-Zero (MW)	B-Zero (Mvar)	Remarks
	511079	WRNG 132.00	1	5	SOUTH	51	TELANGANA	1	0	0	83.55	0	0	
	512022	GAJWEL2 220.00	1	5	SOUTH	51	TELANGANA	1	0	0	55.7	0	0	
	512023	MEHBOBNG 220.00	1	5	SOUTH	51	TELANGANA	1	0	0	222.79	0	0	
	512055	MOULALI 220.00	1	5	SOUTH	51	TELANGANA	1	0	0	374.29	0	0	
	512102	BHOOTPUR 220.00	1	5	SOUTH	51	TELANGANA	1	0	0	28.52	0	0	
	512106	WANPRTHY 220.00	1	5	SOUTH	51	TELANGANA	1	0	0	55.7	0	0	
1	514001	RSTP 400.00	1	5	SOUTH	51	TELANGANA	-2	0	0	-57	0	0	
2	514002	HYDR 400.00	1	5	SOUTH	51	TELANGANA	1	0	0	-57	0	0	
3	514002	HYDR 400.00	2	5	SOUTH	51	TELANGANA	1	0	0	-57	0	0	
4	514003	NSAG 400.00	1	5	SOUTH	51	TELANGANA	1	1	0	-113	0	0	
5	514003	NSAG 400.00	2	5	SOUTH	51	TELANGANA	1	0	0	-45	0	0	
6	514004	KHAM 400.00	1	5	SOUTH	51	TELANGANA	1	0	0	-113	0	0	
7	514004	KHAM 400.00	2	5	SOUTH	51	TELANGANA	1	0	0	-45	0	0	
8	514009	CHAND-SR 400.00	1	5	SOUTH	51	TELANGANA	1	1	0	-125	0	0	36 th SCM
9	514011	SSLBPH4 400.00	1	5	SOUTH	51	TELANGANA	1	1	0	331.51	0	0	
10	514012	HYDR-TS4 400.00	1	5	SOUTH	51	TELANGANA	-2	1	0	-125	0	0	36 th SCM
11	514022	GAJWEL4 400.00	1	5	SOUTH	51	TELANGANA	1	1	0	-125	0	0	39 th SCM
12	514023	MAHABUB4 400.00	1	5	SOUTH	51	TELANGANA	1	1	0	-125	0	0	36 th SCM
13	514031	SINGARENI 400.00	1	5	SOUTH	51	TELANGANA	1	1	0	-125	0	0	36 th SCM
14	514051	MAILARM4 400.00	1	5	SOUTH	51	TELANGANA	-2	1	0	-63	0	0	Commsioned
15	514052	MALKARM4 400.00	2	5	SOUTH	51	TELANGANA	1	1	0	-125	0	0	36 th SCM
16	514080	KOTH-VII 400.00	1	5	SOUTH	51	TELANGANA	1	1	0	-125	0	0	36 th SCM
17	514134	MANUGURU 400.00	1	5	SOUTH	51	TELANGANA	-2	1	0	-125	0	0	39 th SCM
18	514169	DAMARCHARLA 400.00	1	5	SOUTH	51	TELANGANA	-2	1	0	-125	0	0	39 th SCM
19	518004	KHAM_800 765.00	1	5	SOUTH	51	TELANGANA	-2	1	0	-250	0	0	39 th SCM
20	518051	HYDR_800 765.00	1	5	SOUTH	51	TELANGANA	4	0	0	-660	0	0	
21	518051	HYDR_800 765.00	2	5	SOUTH	51	TELANGANA	1	1	0	-240	0	0	37 th SCM
22	518062	NIZAMABAD 765.00	1	5	SOUTH	51	TELANGANA	1	1	0	-240	0	0	37 th SCM

FIXED SHUNT DATA WITH PROPOSED REACTORS

Bus Number	Bus Name	Id	Area Num	Area Name	Zone Num	Zone Name	Code	In Service	G-Shunt (MW)	B-Shunt (Mvar)	G-Zero (MW)	B-Zero (Mvar)	Remarks
511079	WRNG 132.00	1	5	SOUTH	51	TELANGANA	1	0	0	83.55	0	0	
512022	GAJWEL2 220.00	1	5	SOUTH	51	TELANGANA	1	0	0	55.7	0	0	
512023	MEHBOBNG 220.00	1	5	SOUTH	51	TELANGANA	1	0	0	222.79	0	0	
512055	MOULALI 220.00	1	5	SOUTH	51	TELANGANA	1	0	0	374.29	0	0	
512102	BHOOTPUR 220.00	1	5	SOUTH	51	TELANGANA	1	0	0	28.52	0	0	
512106	WANPRTHY 220.00	1	5	SOUTH	51	TELANGANA	1	0	0	55.7	0	0	
514001	RSTP 400.00	1	5	SOUTH	51	TELANGANA	-2	0	0	-57	0	0	
514002	HYDR 400.00	1	5	SOUTH	51	TELANGANA	1	0	0	-57	0	0	
514002	HYDR 400.00	2	5	SOUTH	51	TELANGANA	1	1	0	-113	0	0	
514003	NSAG 400.00	1	5	SOUTH	51	TELANGANA	1	0	0	-45	0	0	
514003	NSAG 400.00	2	5	SOUTH	51	TELANGANA	1	0	0	-113	0	0	
514004	KHAM 400.00	1	5	SOUTH	51	TELANGANA	1	0	0	-45	0	0	
514004	KHAM 400.00	2	5	SOUTH	51	TELANGANA	1	1	0	-125	0	0	
514009	CHAND-SR 400.00	1	5	SOUTH	51	TELANGANA	1	1	0	331.51	0	0	
514011	SSLBPH4 400.00	1	5	SOUTH	51	TELANGANA	-2	1	0	-125	0	0	
514012	HYDR-TS4 400.00	1	5	SOUTH	51	TELANGANA	1	1	0	-125	0	0	
514022	GAJWEL4 400.00	1	5	SOUTH	51	TELANGANA	1	1	0	-125	0	0	
514023	MAHABUB4 400.00	1	5	SOUTH	51	TELANGANA	1	1	0	-125	0	0	
514031	SINGARENI 400.00	1	5	SOUTH	51	TELANGANA	2	1	0	-63	0	0	
514036	TEL_STPP(NTP400.00	1	5	SOUTH	51	TELANGANA	-2	1	0	-125	0	0	Now proposed with 125MVAR
514051	MAILARM4 400.00	1	5	SOUTH	51	TELANGANA	1	1	0	-125	0	0	
514052	MALKARM4 400.00	2	5	SOUTH	51	TELANGANA	1	1	0	-125	0	0	
514080	KOTH-VII 400.00	1	5	SOUTH	51	TELANGANA	-2	1	0	-125	0	0	
514107	CHANDULAPUR 400.00	1	5	SOUTH	58	TEL-LOAD	-2	1	0	-125	0	0	Now proposed with 125MVAR
514134	MANUGURU 400.00	1	5	SOUTH	51	TELANGANA	-2	1	0	-125	0	0	
514164	VATTEM 400.00	1	5	SOUTH	58	TEL-LOAD	-2	1	0	-125	0	0	Now proposed with 125MVAR
514169	DAMARCHARLA 400.00	1	5	SOUTH	51	TELANGANA	2	1	0	-250	0	0	
514171	YEDULA 400.00	1	5	SOUTH	58	TEL-LOAD	-2	1	0	-125	0	0	Now proposed with 125MVAR
514172	NARLAPUR 400.00	1	5	SOUTH	58	TEL-LOAD	-2	1	0	-125	0	0	Now proposed with 125MVAR
514173	UDDANDAPUR 400.00	1	5	SOUTH	51	TELANGANA	4	0	0	-660	0	0	
518004	KHAM_800 765.00	1	5	SOUTH	51	TELANGANA	1	1	0	-240	0	0	
518051	HYDR_800 765.00	1	5	SOUTH	51	TELANGANA	1	1	0	-240	0	0	
518051	HYDR_800 765.00	2	5	SOUTH	51	TELANGANA							


TSTRANSCO-Base Case
518051
HYDR_800
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MANKONDA
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NARLAPUR
514164
VATTEM
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MAHESWRM
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TANDUR
518062
NIZAMABAD
514104
MAHESH-TS
514171
YEDULA
512175
RCPURAM
514161
TANDUR
514061
MALKARM4
514021
DICHPAL4
514063
NIRMAL
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RCPURAM
514001
NTPC
514098
TEL_STPP(NTP
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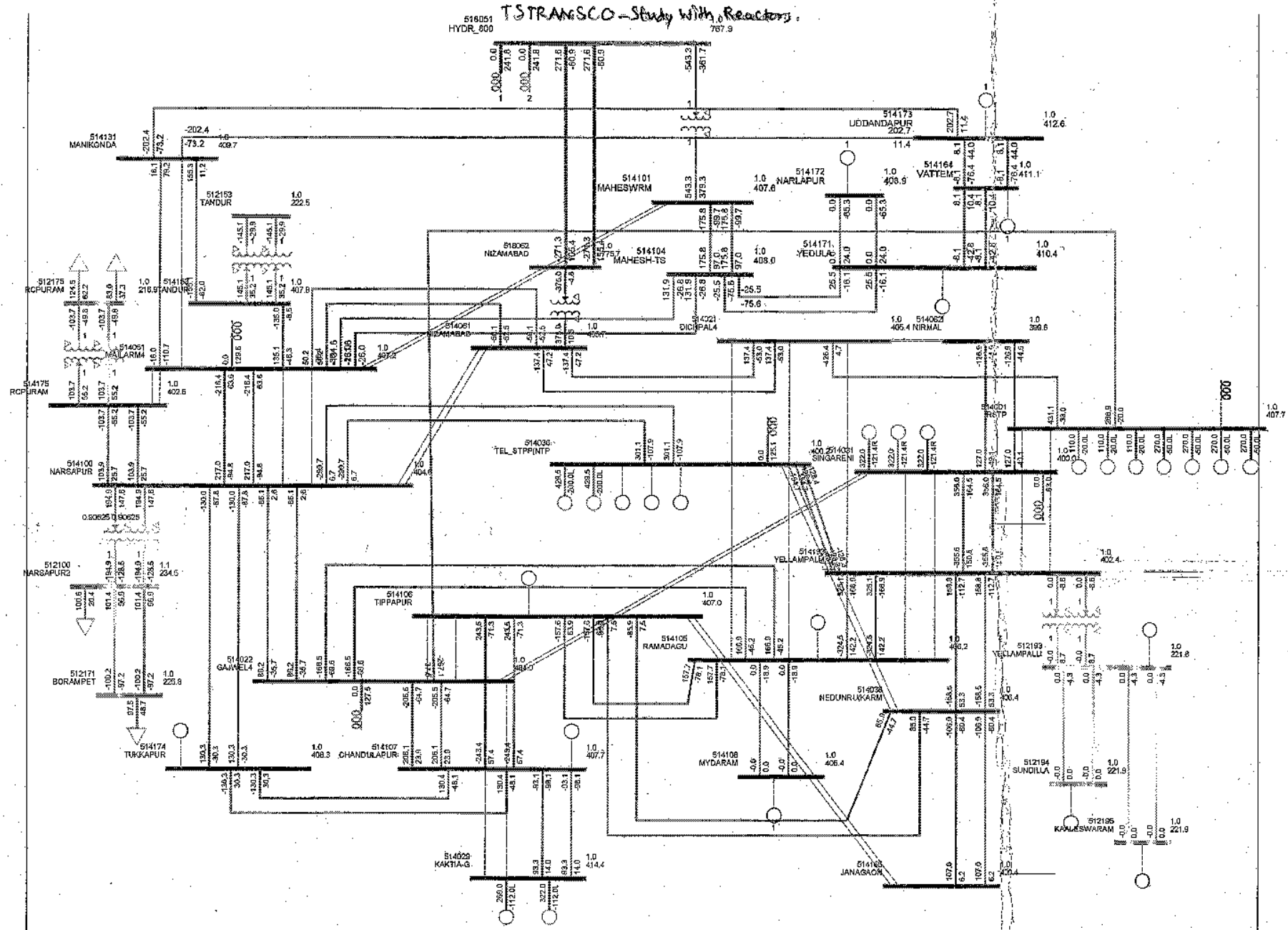
SINGARENI
514100
NARSAPUR
514130
YELLAMPALLI
512100
NARSAPUR2
514106
TIPPAPUR
514105
RAMADAGU
512193
YELLAMPALLI
514022
GAJWEL4
514038
NEDUNRUKARM
512171
BORAMPET
514174
YUKKAPUR
514107
CHANDULAPUR
514108
MYDARAM
512194
SUNDILLA
512195
KALESWARAM
514029
KAKTIA-6
514165
JANAGAON


TSTRANSCO - Study With 0 Reactors :
516051
HYDR_600
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MANIKONDA
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UDDANDAPUR
514164
VATTEM
514101
MAHESWRM
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NARLAPUR
512153
TANDUR
518062
NIZAMABAD
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MAHESH-TS
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YEDULA
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RCPURAM
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TANDUR
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TIPPAPUR
514105
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512193
YELLAMPALLI
512171
BORAMPET
514022
GAJWEL4
514038
NEDUNRUKARM
514174
TUKKAPUR
514107
CHANDULAPUR
514108
MYDARAM
512194
SUNDILLA
512195
KALLESWARAM
514029
KAKTIA-G
514165
JANAGAON

Annex Agenda - 21.1

From
The Director/Projects & LI,
TSTRANSCO,
Vidyut Soudha,
Hyderabad.

To
The Chief Engineer/PS P&A -II,
Central Electricity Authority(CEA),
RK Puram, Sewa Bhavan,
New Delhi-110066

Lr.No. Dir(Proj)/SE(PS)/DE(SS)/ADE-3/F.39th SCM /D.No.350 /16, Dt:28/05/2016

Sir,

Sub: - TSTransco - Minutes of 39th Standing Committee on Power System Planning of Southern Region,Dated 18-Feb-2016 - Proposal for augmentation of Power Transformers at 400 kV Gajwel SS with 1 No. additional 315 MVA(4th PTR) and LILO of 400 kV Nagarjunasagar(Tallapalli) - Kurnool line to the Upcoming 400 kV Dindi SS as accepted in the meeting- Requested - Reg.

Ref:- 1) Minutes of the 39th Standing Committee Meeting dtd:18-02-2016.
2) Lr.No. Dir(Proj)/SE(PS)/DE(SS)/ADE3/F.39th SCPSPSR Minutes/ D.No.278/15,Dt.27-02-2016
3) Lr.No. Dir(Proj)/ADE-T/F.TSTPP REVISED/d.No.197/16, Dt.27-04-2016

* * * * *

1) We are thankful for arranging the joint studies at your esteemed office as per telephonic discussion on dtd.30-04-2016 regarding the study for the revised proposal for Kaleshwaram and Palamuru-Rangareddy Lift Irrigation Schemes on dtd:05-05-2016 and 06-05-2016.

2) In the references cited, it was requested to arrange approval for the augmentation of Power Transformers at 400 kV Gajwel SS with 1 No. additional 315 MVA Power Transformer (4th MVA PTR) and LILO of 400 kV Nagarjunasagar(Tallapalli) - Kurnool line to the Upcoming 400 kV Dindi SS.

3) The augmentation of the power transformers at 400 kV Gajwel SS with 1 No. additional 315 MVA Power Transformer (4th 315 MVA PTR) is essential in view of the COD of Singareni Collieries Company Limited Generation Unit -I(1x600 MW) in the month of June 2016.

4) In view of the above, it is requested to arrange for the approval of augmentation of Power Transformers at 400 kV Gajwel SS with 1 No. additional 315 MVA (4th 315 MVA PTR) and LILO of 400 kV Nagarjunasagar(Tallapalli) - Kurnool line to the Upcoming 400 kV Dindi SS and communicate the approval at the earliest for taking up the works.

Encl: As above

28/5/16
Director/Projects & LI

Copy to

Mrs.Seema Gupta, COO/CTU,CORPORATE CENTRE, Power Grid Corporation of India (PGCIL), Sector - 29, Near IFFCO Chowk, Gurgoan, Haryana - 122001.
Chief Engineer/Projects-I & Chief Engineer/Projects-II/Vidyutsoudha/TSTRANSCO

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Annex - Agenda - 22.1

TRANSMISSION CORPORATION OF TELANGANA LIMITED
VIDYUT SOUDHA::HYDERABAD

From
The Director/Transmission,
TSTransco,
Vidyut Soudha,
Hyderabad

To
The Chief Engineer,
PSPA-II Division,
Central Electricity Authority,
Ministry of Power, Sewa Bhawan,
RK Puram, New Delhi - 110066.

Lr.No.SE(PS)/DE(SS)/ADE/D.No. 283 /16,dt. 08-03-2016

Sir,

Sub:- Integration of Solar Power Project in Telangana, Arunachal Pradesh and Nagaland - Submission of proposals - Reg.

Ref:- Lr.No.200/13/PSPA-II-2016/73-81,dt.02-02-2016

****

I am directed to inform that, it is convenient to evacuate 500 MW solar power at Gattu as follows:

i) Gattu Solar Park to 400/220 kV Veltoor SS by 220 kV D/C line of TSTransco which is about 70 KM.

ii) Gattu Solar Park to upcoming 220 kV Thimmajipet Switching Station by 220 kV D/C line of TSTransco which is about 90 KM.

The above proposals are submitted for evacuation of 500 MW solar power at Gattu as sought.

Yours faithfully,
DIRECTOR/TRANSMISSION
(Draft approved) (1/7)

Copy submitted to
The VC & Managing Director/NREDCAP/TNERDCL/5-8-207/2, Pisgah Complex,
Nampally/Hyderabad

Copy to
The Chief Engineer/Plg., Comml.&Co-Ordn./TSTransco/VS/Hyderabad
The Chief Engineer/Project-II/TSTransco/VS/Hyderabad
The Chief Engineer/Transmission/TSTransco/VS/Hyderabad

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Annex - Agenda-28.1

TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED

From:
The Chief Engineer(IPC&Power Systems),
APTRANSCO,
Vidyut Soudha,
Hyderabad – 500 082

To
The Chief Engineer (PSPA-II),
Central Electricity Authority,
Seva Bhavan,
R.K.Puram,
NEW DELHI – 110 066

Lr. No. CE(IPC&PS)/SE(PS)/DE(SS&LTSS)/F. SCM/ D.No. 125 /16 Dt. 14-07-2016

Sir,

Sub: APTRANSCO – Inclusion of 2 Nos items in the agenda discussion, in the forthcoming 40th Standing Committee Meeting – Requested - Regarding.

***

APTRANSCO proposed the following 2Nos items and is requested to include these proposals as an agenda items for discussion in the forthcoming 40th Standing Committee Meeting.

Item -1 : Joint System Studies were conducted by APTRANSCO with CEA &PGCIL on 25th & 26th May 2016 at New Delhi for evacuation of 6745 MW power from Wind Generators and 4000 MW power from solar power projects coming up in Andhra Pradesh with various wind & solar dispatch scenarios. These studies were conducted duly considering the wind & solar power evacuation schemes which were approved in 35th & 38th Standing Committee Meetings and the same is enclosed in ANNEXURE-1.

Item - 2 : Scheme for evacuation of 231 MW power from M/s TPCIL at 220kV level in Nellore district and the same is enclosed in ANNEXURE-2.

Hence, it is requested to arrange to conduct special Standing Committee Meeting for approval of above agenda items.

Encl : As above

Yours faithfully,

Chief Engineer (IPC&Power Systems)

Copy to:

The Director (SP&PA),
Central Electricity Authority,
Seva Bhavan, R.K.Puram,
NEW DELHI – 110 066

Ms. Saroori 19/7/16

331 C.E. PSPA-II 19/7/16

ANNEXURE -1

Item No :1

Joint System Studies were conducted by APTRANSCO with CEA on 25th & 26th May 2016 at New Delhi for evacuation of 6745 MW power from Wind Generators and 4000 MW power from solar power projects coming up in Andhra Pradesh with various wind & solar dispatch scenarios and instructed APTRANSCO to communicate the load flow studies for proposed scheme for inclusion of agenda item for discussion in the forthcoming 40th Standing Committee Meeting.

The APTRANSCO proposed comprehensive wind power evacuation scheme for evacuation of power from wind projects of about 3150 MW mainly coming up in Ananthapur, Kurnool and Kadapa districts of Andhra Pradesh i.e., at Uravakonda area (1361 MW), Kondapuram area (1109 MW) and Hindupur area (680 MW) based on the location of wind power projects. The scheme was approved in the 35th Standing Committee Meeting on Power system planning of Southern Region held on 04th January 2013 and this is under implementation by APTRANSCO. Later the transmission scheme for evacuation of 1000 MW wind power projects coming up at Aspiri in Kurnool district was approved in the 38th Standing Committee Meeting on Power system planning of Southern Region held on 23rd March 2015.

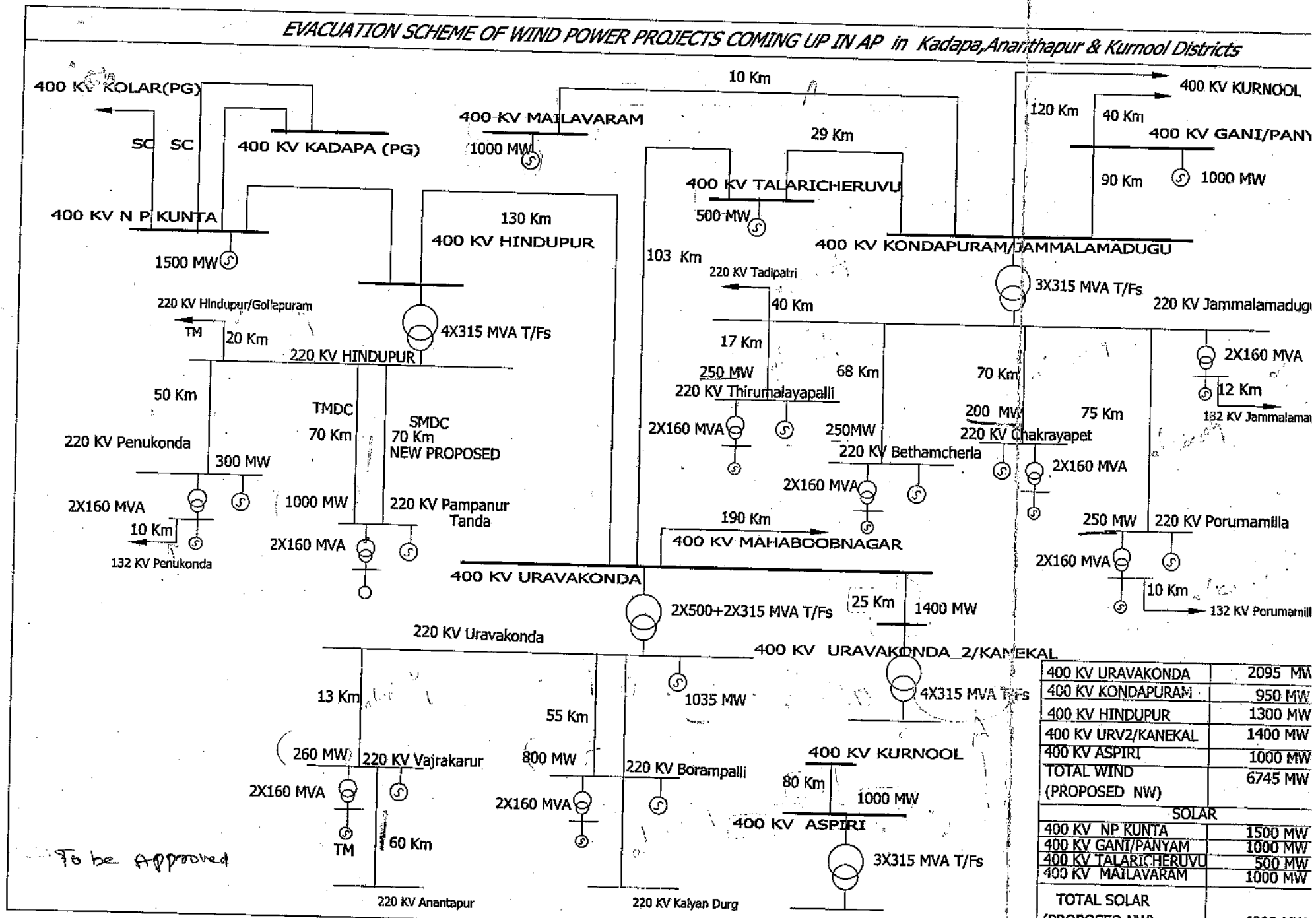
In this context, the APTRANSCO carried out system studies and the load flow results along with scheme details are herewith enclosed. The same is sent through mail also.

Details of wind & solar power projects

	Name	Location	Type	Installed Capacity (MW)	Developer
1	NP. Kunta	Anantapur	Solar	1000	NTPC
2.	Galiveedu	Cuddapah	Solar	500	APSPCL
3.	Panayam	Kurnool	Solar	1000	NVVNL
4	Talaricheruvu	Anantapur	Solar	500	APGENCO
5	Mylavaram	Kadapa	Solar	1000	APSPCL
	Sub-total		**Solar**	**4000**	
6	Uravakonda	Anantapur	Wind	2095	Pvt developers
7.	Kondapur	Cuddapah	Wind	950	Pvt developers
8	Hindupur	Anantapur	Wind	1300 4345	Pvt developers
9	Uravakonda -2	Anantapur	Wind	1400	Pvt developers
10	Aspiri	Kurnool	Wind	1000	Pvt developers
	Sub-total		**Wind**	**6745**	
	Total			**10745**	

4345 - 3150 = 1195

EVACUATION SCHEME OF WIND POWER PROJECTS COMING UP IN AP in Kadapa,Anarithapur & Kurnool Districts



To be approved

400 KV URAVAKONDA	2095 MW
400 KV KONDAPURAM	950 MW
400 KV HINDUPUR	1300 MW
400 KV URV2/KANEKAL	1400 MW
400 KV ASPIRI	1000 MW
TOTAL WIND (PROPOSED NW)	6745 MW
SOLAR	
400 KV NP KUNTA	1500 MW
400 KV GANI/PANYAM	1000 MW
400 KV TALARICHERUVU	500 MW
400 KV MAILAVARAM	1000 MW
TOTAL SOLAR (PROPOSED NW)	4000 MW

Scheme details			
Connectivity Approved			
Sl No	**Name of the Element**	Length in KM	Status
1	400kV Quad Moose DC line from 400kV Uravakonda SS to 400kV MahaboobNagar SS	190	Under construction
2	400kV Quad Moose DC line from 400kV Uravakonda SS to 400kV Kondapuram SS	128	Commissioned
3	400kV Quad Moose DC line from 400kV Uravakonda SS to 400kV Hindupur SS	130	Under construction
4	400kV Quad Moose DC line from 400kV Kondapuram SS to 400kV Kurnool SS	120	Commissioned
5	400kV Quad Moose DC line from 400kV Hindupur SS to 400kV NPKunta SS	110	to be executed by PGCIL
6	400kV Quad Moose DC line from 400kV Kadapa SS to 400kV NPKunta SS	60	to be executed by PGCIL
7	220kV Twin Moose DC line from 400/220kV Uravakonda SS to 220kV Vajrakarur SS	13	Under construction
8	220kV Twin Moose DC line from 400/220kV Uravakonda SS to 220kV Borampalli SS	55	Under construction
9	220kV Single Moose DC line from 400/220kV Uravakonda SS to 220kV Borampalli SS	55	Under construction
10	220kV Single Moose DC line from 220kV Borampalli SS to 220kV Kalyandurg SS	15	Under construction
11	220kV Single Moose DC line from 400/220kV Kondapuram SS to 220kV Thirumalayapalli SS	17	Under construction
12	220kV Single Moose DC line from 400/220kV Kondapuram SS to 220kV Bethamcherla SS	68	Proposed
13	220kV Single Moose DC line from 400/220kV Kondapuram SS to 220kV Chakrayapet SS	70	Under construction
14	220kV Single Moose DC line from 400/220kV Kondapuram SS to 220kV Porumamilla SS	75	Under construction
15	220kV Single Moose DC line from 400/220kV Kondapuram SS to 220kV Tadipatri SS	40	Proposed
16	220kV Single Moose DC line from 400/220kV Kondapuram SS to 220kV Jammalamadugu SS	10	Under construction
17	220kV Twin Moose DC line from 400/220kV Hindupur SS to 220kV Pampanur Tanda SS	70	Proposed
18	220kV Single Moose DC line from 400/220kV Hindupur SS to 220kV Penukonda SS	50	Proposed
19	220kV Single Moose DC line from 400/220kV Hindupur SS to 220kV Hindupur/Gollapuram SS	20	Proposed
20	1x 80 MVAR Bus reactor at 400/220kV Uravakonda SS		Under construction
21	1x 80 MVAR Bus reactor at 400/220kV Kondapuram SS		Under construction
22	1x 80 MVAR Bus reactor at 400/220kV Hindupur SS		
23	132kV DC line from 220/132kV Jammalamadugu to 132kV Jammalamadugu	10	Under construction
24	132kV DC line from 220/132kV Porumamilla to 132kV Porumamilla	10	Under construction
25	132kV DC line from 220/132kV penukonda to 132kV Penukonda	10	
Connectivity to be approved			
1	Making LILO of both circuits of 400kV Quad Moose DC line from 400kV Uravakonda SS to 400kV Kondapuram SS at proposed 400kV Talaricheruvu SS	2	
2	400kV Quad Moose DC line from 400kV Kondapuram SS to 400kV Mylavaram SS	10	
3	400kV Quad Moose DC line from 400kV Aspiri SS to 400kV Kurnool SS	80	
4	400kV Quad Moose DC line from 400kV Uravakonda SS to 400kV Uravakonda-2 SS	25	
6	220kV Single Moose DC line from 400/220kV Hindupur SS to 220kV Pampanur Tanda SS	70	
7	220kV Twin Moose DC line from 220kV Vajrakarur SS to 220kV Anantapur SS	60	
8	1x125 MVAR Bus reactor at 400/220kV Uravakonda-2 SS		
9	1x125 MVAR Bus reactor at 400/220kV Talaricheruvu SS		
10	1x125 MVAR Bus reactor at 400/220kV Mylavaram SS		
11	1x125 MVAR Bus reactor at 400/220kV Aspiri SS		
	Modification		
1	Already approved 220kV Single Moose DC line from 400/220kV Hindupur SS to 220kV Hindupur/Gollapuram SS to be modified as 220kV Twin Moose DC line from 400/220kV Hindupur SS to 220kV Hindupur/Gollapuram SS	20	
2	Already approved 220kV Single Moose DC line from 220kV Borampalli SS to 220kV Kalyandurg SS to be modified as 220kV Twin Moose DC line from 220kV Borampalli SS to 220kV Kalyandurg SS	15	

Wind Power Projects

SL No	Name of 400kV Substation	Name of the Substation	Proposed Wind Power Generation Installed Capacity (MW)	Project Status
1	400kV Uravakonda SS, Ananthapur Dt. (2x315+2x 500 MVA)	LV Bus of 400kV SS	1035	Under construction
		220kV Borampalli SS (2x160 MVA)	800	
		220kV VajraKarur SS (2x160 MVA)	260	
2	400/220/132kV Kondapuram SS, Kadapa Dt.(3x315 MVA+ 2x 160 MVA) Jammmalamadugu)	220kV Tirumalayapalli SS (2x160 MVA)	250	Under construction
		220kV Bethamcherla SS (2x160 MVA)	250	
		220kV Chakrayapet SS (2x160 MVA)	200	
		220kV Porumamilla SS(2x160 MVA)	250	
3	400kV Hindupur SS, Ananthapur Dt. (4x315 MVA)	220kV Penukonda SS (2x160 MVA)	300	Under construction
		220kV PampanurThanda SS (2x160 MVA)	1000	
4	400kV Uravakonda-2 SS (4x315 MVA)	LV Bus of 400kV SS	1400	Proposed
5	400kV Aspiri SS (3x315 MVA)	LV Bus of 400kV SS	1000	Proposed
TOTAL			**6745**	

Solar Power Projects

SL No	Name of 400kV Substation	Name of the Substation	Proposedsolar Power Generation Installed Capacity (MW)	Project Status
1	400kV Talaraicheruvu SS, Ananthapur Dt. (3x315 MVA)	LV Bus of 400kV SS	500	Proposed
2	400kV Mylavaram SS, Kadapa Dt.(3x315 MVA)	LV Bus of 400kV SS	1000	Proposed
TOTAL			**1500**	

Sl No	Name of the SS	PTR Capacity (MVA)
1	400kV Uravakonda	2 x315+ 2 x500
2	400kV Kondapuram	3 X 315
3	400kV Uravakonda -2	4 X 315
4	400kV Hindupur	4 x 315
5	400kV Talaricheruvu	3 X 315
6	400kV Aspiri	3 x 315
6	400kV Mylavaram	3 X 315
7	220kV Borampalli	2 x 160
8	220kV Vajrakarur	2 x 160
9	220kV Thirumalayapalli	2 x 160
10	220kV Bethamcherla	2 x 160
11	220kV Porumamilla	2 x 160
12	220kV Chakrayapet	2 x 160
13	220kV Jammalamadugu	2 x 160
14	220kV Penukonda	2 x 160
15	220kV PanpanurTanda	2 x 160

Bus_Name	Id	In Service	PGen (MW)	PMax (MW)	Type	Column1
ASPIRI 220.00	W1	1	750	1000	Wind	IPP
BETUMCHARLA 220.00	W1	1	187.5	250	Wind	IPP
BORUMPALLI 220.00	W1	1	600	800	Wind	IPP
CHAKRAYPET 220.00	W1	1	150	200	Wind	IPP
GAMESH 132.00	W1	1	5.25	7	Wind	IPP
JAMMALAMADUG220.00	W1	1	90	120	Wind	IPP
KLDG 132.00	W1	1	1.5	2	Wind	IPP
KOMA 132.00	W1	1	18.75	25	Wind	IPP
PAMPUNOORU220.00	W1	1	750	1000	Wind	IPP
PENUKONDA 220.00	W1	1	225	300	Wind	IPP
PORUMAMILLA 220.00	W1	1	187.5	250	Wind	IPP
RAYALA-WIND 220.00	W1	1	5.25	7	Wind	IPP
RCHANATAPUR220.00	W1	1	52.5	70	Wind	IPP
SHAPURAM 220.00	W1	1	63	84	Wind	IPP
SUZLON 132.00	W1	1	40.5	54	Wind	IPP
SUZLON 220.00	W1	1	45	60	Wind	IPP
TIRUMALAYAPA220.00	W1	1	187.5	250	Wind	IPP
URAVAKONDA 220.00	W1	1	776.25	1035	Wind	IPP
URVKND2 220 220.00	W1	1	1050	1400	Wind	IPP
VAJRAKORUR 220.00	W1	1	195	260	Wind	IPP

peak demand 11500 MW

I/C, MW

Column1	Thermal	Hydro	Gas	Wind	Solar	total-Con	total-RE	Total
State	5010	1882	0	0	2500	6892	2500	9392
IPP	1040	0	2536	7174	1550	3576	8724	12300
CS & CS IPPs	3125	0	0	0	0	3125	0	3125
Total	9175	1882	2536	7174	4050	13593	11224	24817

Case 1 : Full Wind & Full Solar (1300 Hr. in May/June -Max case)

							demand factor
State	0.1	0.2	0.3	0.75	0.75		95%
IPP	0.1	0.6	0.3	0.75	0.75		
CS	0.6	0.6	0.3	0.75	0.75		

Column1	Thermal	Hydro	Gas	Wind	Solar	total-Con	total-RE	Total-Disp	Demand	
State	501	376	0	0	1875	877	1875	2752		
IPP	164	0	761	5381	1163	925	6142	7067		Diff.
CS	1563	0	0	0	0	1563	0	1563		
total	2168	376	761	5381	3038	3365	8017	11382	10925	397

Case 2 : Less Wind & full Solar (1300 Hr. in May/June)

							demand factor
State	0.4	0.1	0	0.6	0.75		95%
IPP	0.5	0.1	0	0.6	0.75		
CS	0.8	0.1	0	0.6	0.75		

Column1	Thermal	Hydro	Gas	Wind	Solar	total-Con	total-RE	Total-Disp	Demand	
State	2004	188	0	0	1875	2192	1875	4067		
IPP	520	0	0	3587	1163	520	4750	5270		Diff.
CS	2500	0	0	0	0	2500	0	2500		
total	5024	188	0	3587	3038	5212	6625	11837	11700	137

Case 3 : Full Wind & Less Solar (July Noon time)

							demand factor
State	0.4	0.3	0.6	0.6	0.5		95%
IPP	0.5	0.6	0.2	0.6	0.5		
CS	0.6	0.6	0.3	0.6	0.5		

Column1	Thermal	Hydro	Gas	Wind	Solar	total-Con	total-RE	Total-Disp	Demand	
State	2004	565	0	0	1250	2569	1250	3819		
IPP	520	0	507	4304	775	1027	4811	5838		Diff.
CS	1875	0	0	0	0	1875	0	1875		
total	4399	565	507	4304	2025	5471	6061	11532	11700	-168

Case 4 : No Wind & Full Solar (Noon time December)

							demand factor
State	0.65	0.6	0.3	0	0.75		95%
IPP	0.7	0.6	0.3	0	0.75		
CS	0.8	0.6	0.3	0	0.75		

Column1	Thermal	Hydro	Gas	Wind	Solar	total-Con	total-RE	Total-Disp	Demand	
State	3257	1129	0	0	1875	4386	1875	6261		
IPP	728	0	761	0	1163	1489	761	2250		Diff.
CS	2500	0	0	0	0	2500	0	2500		
total	6485	1129	761	0	3038	8375	2636	11011	11700	-689

Case 5 : Full Wind & No Solar (Evening Peak in June)

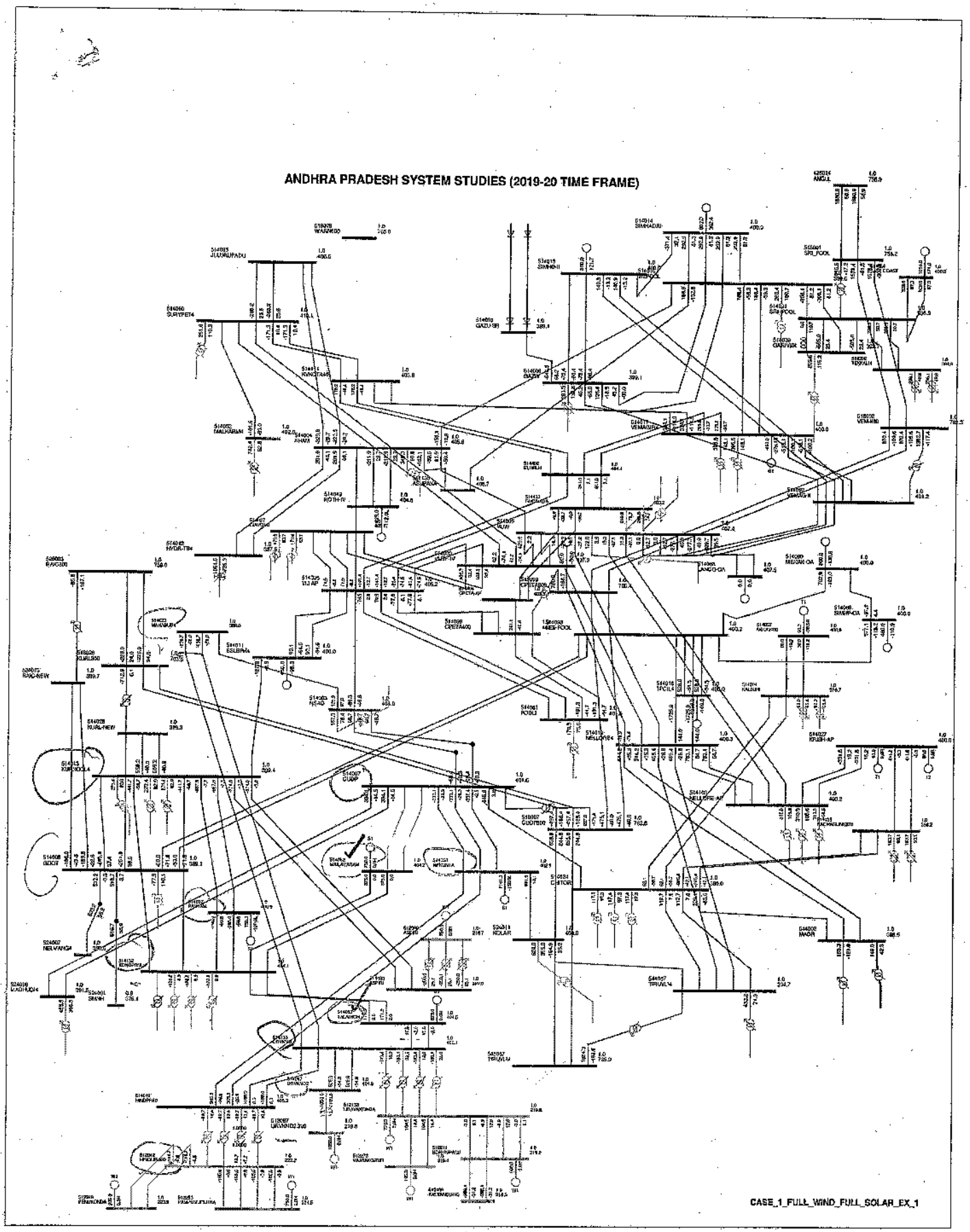
							demand factor
State	0.65	0.2	0.3	0.0	0		97%
IPP	0.7	0.6	0.2	0.0	0		
CS	0.8	0.6	0.3	0.75	0		

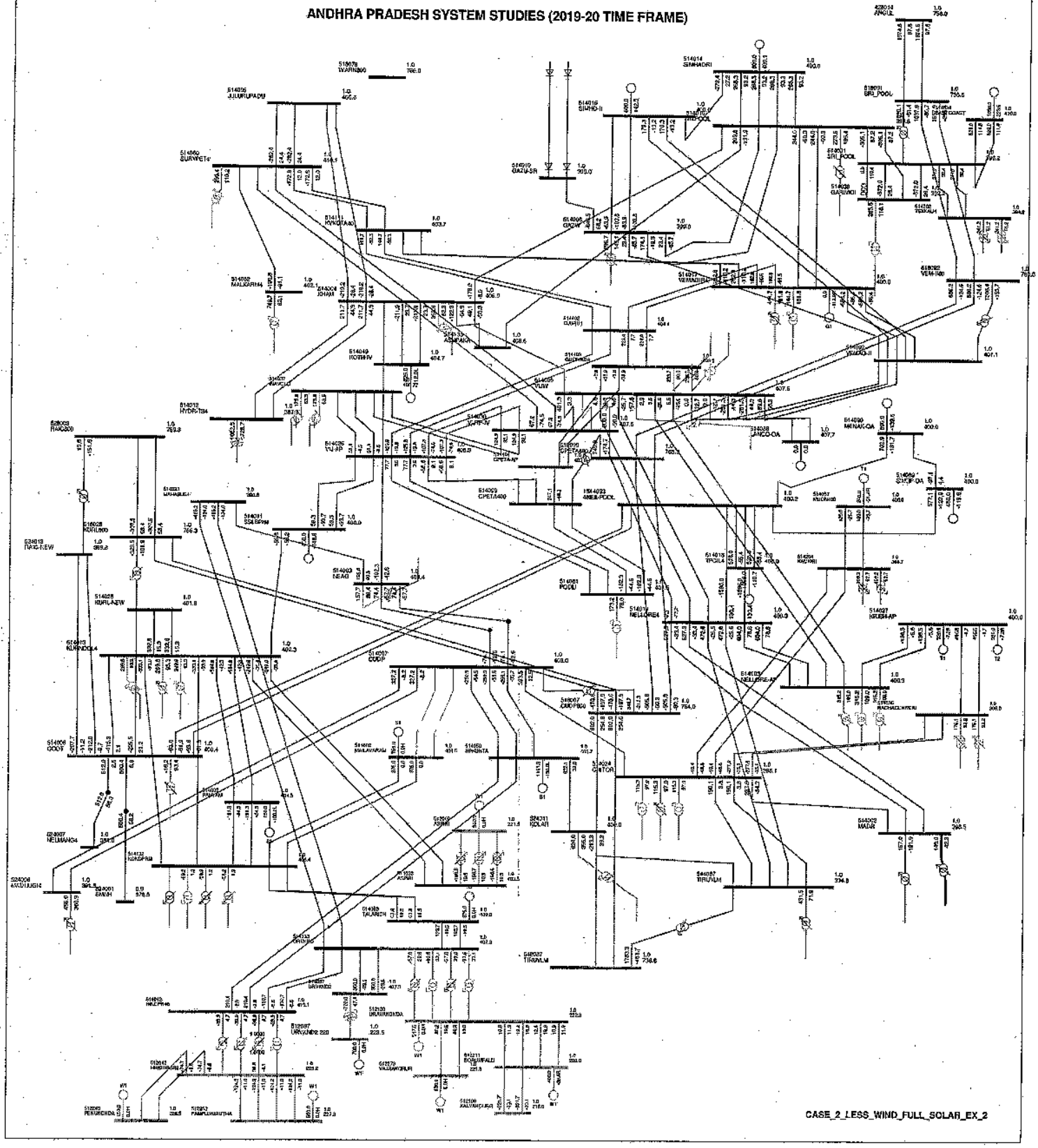
Column1	Thermal	Hydro	Gas	Wind	Solar	total-Con	total-RE	Total-Disp	Demand	
State	3256.5	376.4	0	0	0	3632.9	0	3632.9		
IPP	728	0	507.2	4304.4	0	235.2	4811.6	6046.8		Diff.
CS	2500	0	0	0	0	2500	0	2500		
total	6484.5	376.4	507.2	4304.4	0	7368.1	4811.6	12179.7	11155	1024.7

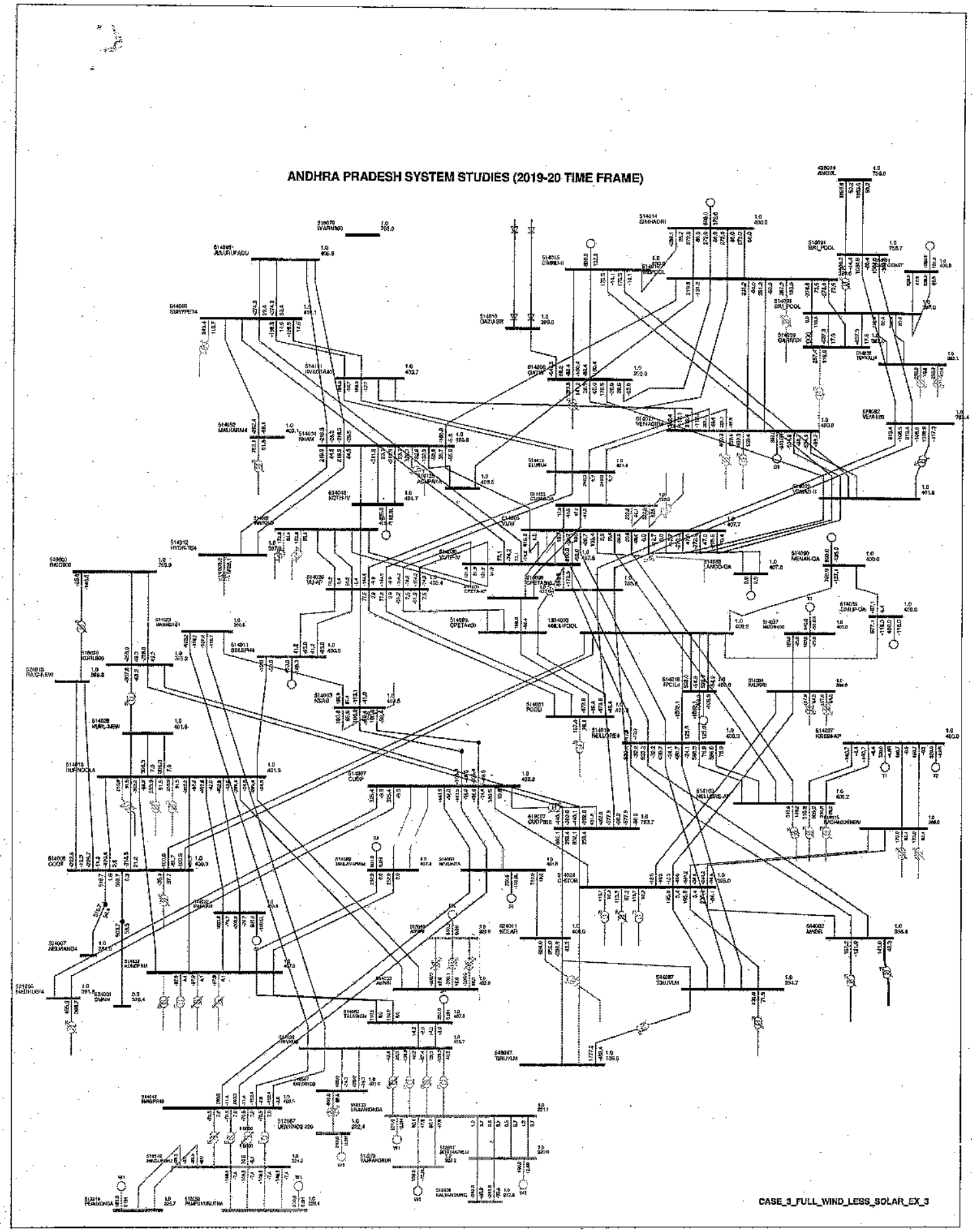
Case 6 : No Wind & No Solar (Evening peak in March)

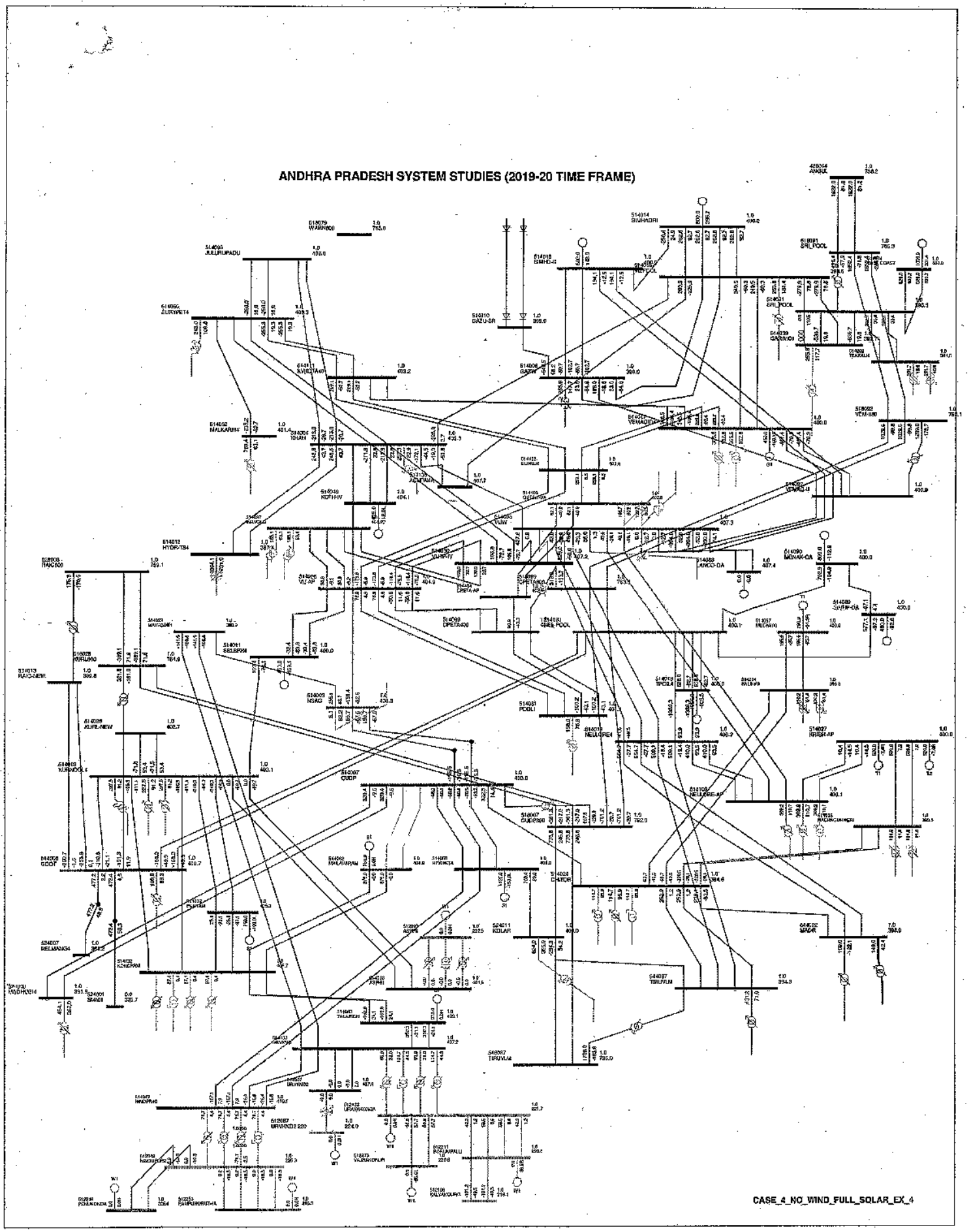
							demand factor
State	0.9	0.7	0.3	0	0		95%
IPP	0.9	0.6	0.3	0	0		
CS	0.9	0.6	0.6	0	0		

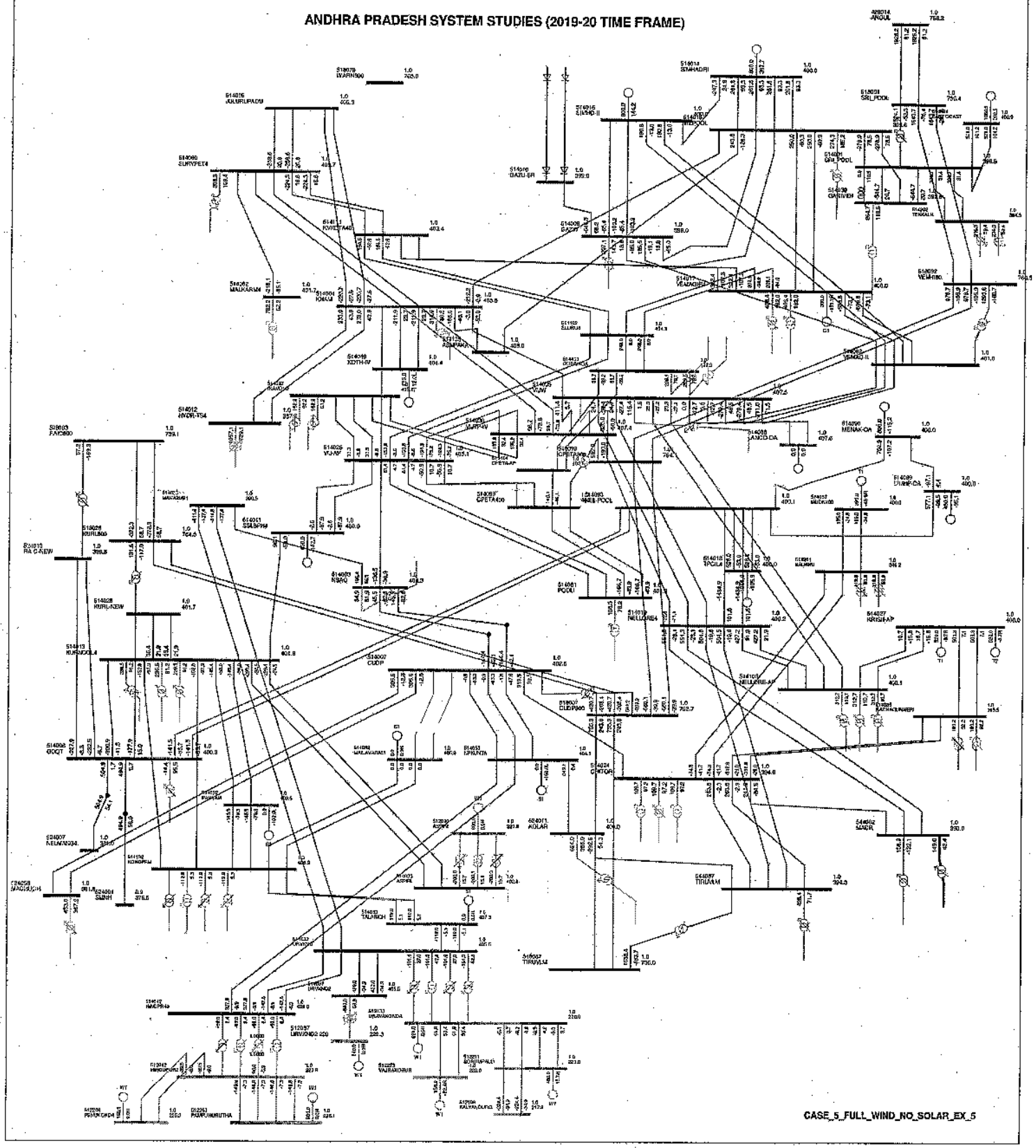
Column1	Thermal	Hydro	Gas	Wind	Solar	total-Con	total-RE	Total-Disp	Demand	
State	4509	1317.4	0	0	0	5826.4	0	5826.4		
IPP	936	0	2028.8	0	0	2964.8	0	2964.8		Diff.
CS	2812.5	0	0	0	0	2812.5	0	2812.5		
total	8257.5	1317.4	2028.8	0	0	11603.7	0	11603.7	11500	103.7

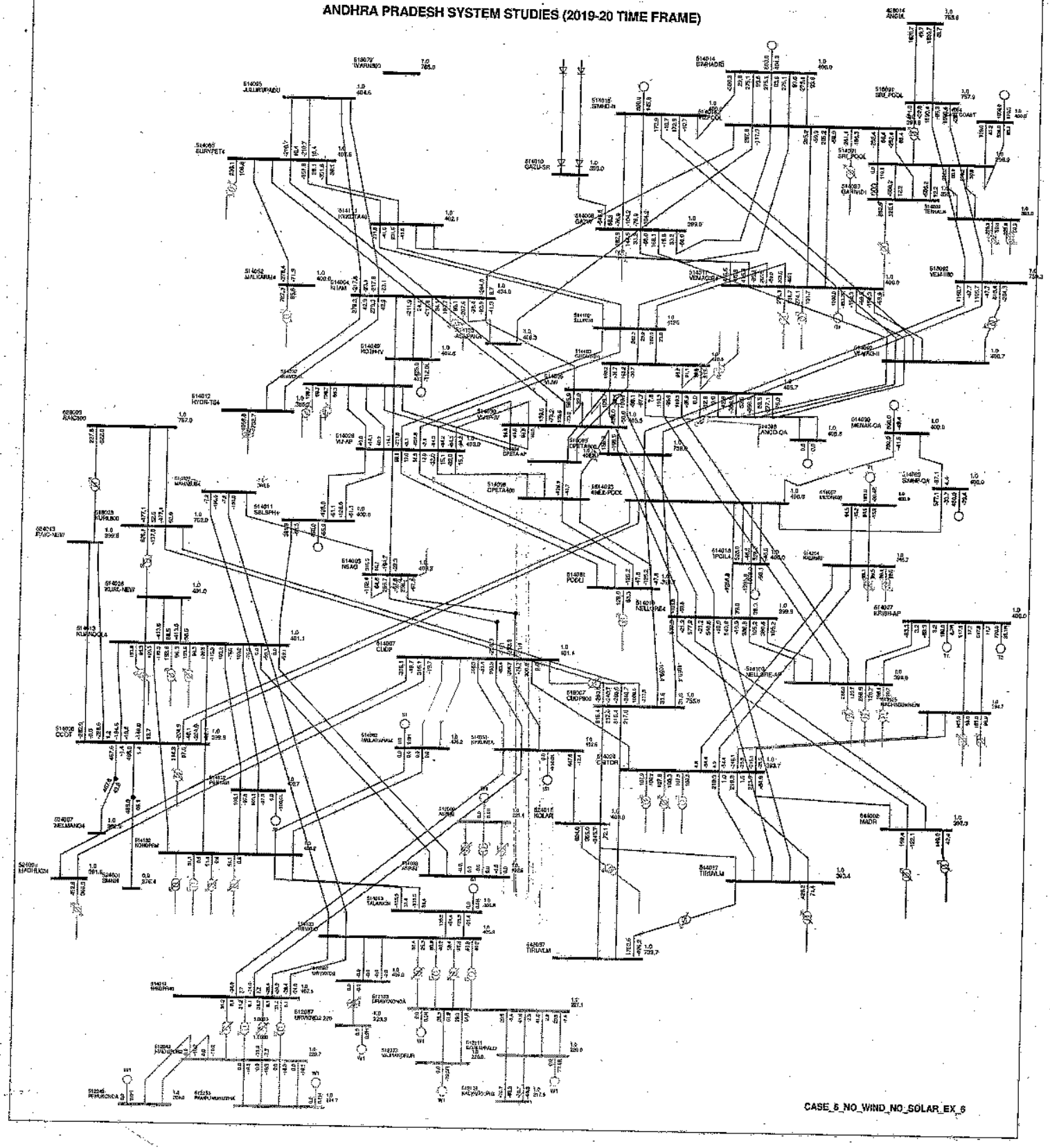

ANDHRA PRADESH SYSTEM STUDIES (2019-20 TIME FRAME)
CASE_1_FULL_WIND_FULL_SOLAR_EX_1


ANDHRA PRADESH SYSTEM STUDIES (2019-20 TIME FRAME)
CASE_2_LESS_WIND_FULL_SOLAR_EX_2


ANDHRA PRADESH SYSTEM STUDIES (2019-20 TIME FRAME)
CASE_3_FULL_WIND_LESS_SOLAR_EX_3


ANDHRA PRADESH SYSTEM STUDIES (2019-20 TIME FRAME)
CASE_4_NO_WIND_FULL_SOLAR_EX_4


ANDHRA PRADESH SYSTEM STUDIES (2019-20 TIME FRAME)
CASE_5_FULL_WIND_NO_SOLAR_EX_5


ANDHRA PRADESH SYSTEM STUDIES (2019-20 TIME FRAME)
CASE_5_NO_WIND_NO_SOLAR_EX_6

ANNEXURE – II

Item - II

APTRANSCO proposed the following dedicated scheme for Evacuation of 231 MW power from M/s Thermal Powertech Corporation India Ltd. at 220 kV level in Nellore District.

a) 220 kV Twin Moose DC line (40 KM) from M/s TPCIL to 400/220 kV Manubolu SS.

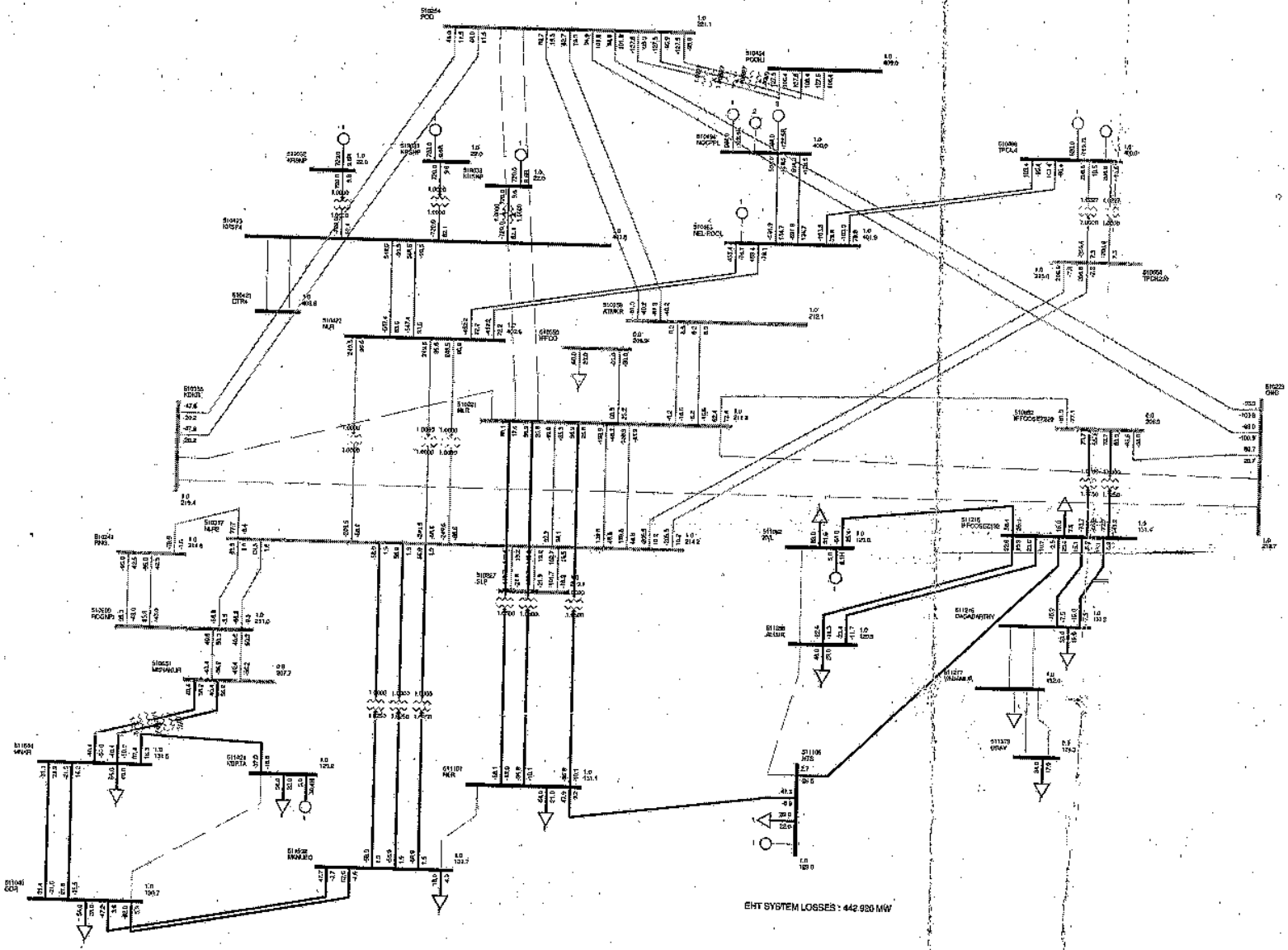
b) 2 x 315 MVA 400/220 kV ICT at M/s TPCIL.

The Load flow results are herewith enclosed. The same is sent through e-mail also.

LINE FLOWS WITH AND WITHOUT EVACUATION OF TPCIL AT 220KV LEVEL.			
Sl.No.	Description	Existing System	220KV TWIN MOOSE DC LINE FROM 220KV MANUBOLU SS TO M/S TPCIL
		MW	MW
1	400/220KV ICT Loadings at Manubolu	3 x 343.9	3 X 249.5
2	400 kV Manubolu - Nunna	2 x -49.7 + 1 x -59.4	2 x -79.5 + 1 x -95
3	400 kV Manubolu - VTPS-IV	-36.7	-68.4
4	400 kV Manubolu - Krishnapatnam	2 x -504.8	2 x -547.4
5	400 kV Manubolu - Nellore Pool	2 x -764.4	2 x -452.2
6	400 kV Manubolu - Tiruvelam	2 x 460.6	2 x 424.8
7	400 kV Manubolu - Almatti	2 x 390.5	2 x 361.8
8	220/132KV PTR Loadings at Manubolu	3 x 54.2	3 x 56.9
9	220KV Manubolu - Sullurpet	2 x 133.7 + 1 x 92.4	2 x 148.5 + 1 x 102.7
10	220KV Manubolu - Nellore	2 x 128.8 + 1 x 85.4	2 X 139.8 +1 X 92.7
11	220KV Manubolu - Rachagunneri	2 x 52.4	2 x 69.5
12	220KV Manubolu - Renigunta	61.3	77.7
13	220KV Manubolu - TPCIL	-	2 X -205.5
14	220/132KV PTR Loadings at Nellore	2 x 96.4 + 1 x 65.8	2 x 96.9 + 1 x 66.1
15	220KV Nellore - Atmakur	2 x -15.3	2 x -6.2
16	220KV Nellore - IFFCO SEZ	53.1	62.4
17	220KV IFFCO SEZ - Ongole	-96	-85.5
18	220/132KV PTR Loadings at Podili	1 x 39.6 + 1 x 38.7	1 x 39.6 + 1 x 38.7
19	220KV Podili - Atmakur	2 x 92.2	2 x 82.7
20	220KV Podili - Kandukur	2 x 48.0	2 x 48.0
21	ICT Loadings at 400/220KV Podili SS	3 x 130.6	3 x 127.5
22	400 kV Podili - Sattenapalli	2 x -150.4	2 x -143.3
23	400 kV Podili - Chilakaluripet	2 x -45.6	2 x -47.9
24	ICT Loadings at 400/220KV TPCIL SS	-	2 x 206.4
25	400 kV TPCIL - Nellore Pool	2 x 620.00	2 x 103.4
	EHT System Losses	**449.540**	**442.920**

EHT SYSTEM LOSSES : 49.540 MW
WITHOUT TECL EVACUATION

WITH TPCIL EVACUATION AT 220KV LEVEL



EHT SYSTEM LOSSES : 442.920 MW