Additional Agenda for 14th Consultation Meeting for Evolving Transmission Schemes in Eastern Region (CMETS-ER)

1. Implementation of Paradeep 765kV substation at Paradeep in Odisha under ISTS to meet the power requirement of upcoming industrial demand

1.1. In the 1st CMETS-ER held on 25-11-2021, implementation of 765/400/220kV Paradeep substation at Paradeep under intra-state scheme was agreed to meet the upcoming industrial demand in the area. The feed was provided to Paradeep from Angul (POWERGRID) S/s through 765kV D/c line.

1.2. Now, Principal Secretary to Government, Department of Energy, Govt. of Odisha vide letter dated 27-12-2022 addressed to Secretary (Power), Ministry of Power, Govt. of Odisha has proposed for construction of Paradeep 765kV substation under ISTS. Brief highlights of the proposal is as below:

a. New industrial demand have large quantum of power requirement is expected in Paradeep area starting from FY 2023-24.

b. Paradeep is emerging as Green Hydrogen Hub and various industries have expressed investment intentions to set up Green Hydrogen and Green Ammonia plants in Paradeep due its location advantage. There is also potential of export. Following is the list of such industries:

Sl. No.	Name of the Industry	Project details
1.	ACME Cleantech Solutions	Green Ammonia- 3300 MTPD
2.	ReNew Power	Green Hydrogen- 2x50 KPTA
3.	Canyon Consultancy Pvt. Ltd	Green Hydrogen- 5 TPD
4.	Palasah Urja hydrogen LLP	Green Hydrogen / Ammonia-20000 TPA
5.	Aditya Birla Renewable Limited	Green Hydrogen-20 KPTA Green Ammonia-300 TPD

c. To meet the demand of upcoming Green Hydrogen and Green Ammonia plants there is a requirement of ISTS corridor to supply RE power from outside Odisha i.e. from RE rich states to Paradeep.

d. A new 400kV substation is already under implementation by OPTCL for which state has already received high contract demand. To meet additional power requirement in the area, a new 765kV substation in Paradeep / Mahakalapada is required.

e. In addition to power requirement of above industries, other power intensive industries are also coming up in the area, some which are as follows:

Sl. No.	Load Centre	Load (MW)
1	Arcellor Mittal	849
2	JSW Utkal Steel	340
3	IOCL	280
4	Essar Steel	400
5	PCPIR	1800
	Total	**3669**

f. The industries shall source RE power through ISTS to comply with RPO.

g. Establishment of Paradeep / Mahakalapada has been proposed through LILO of Angul – Srikakulam 765kV D/c line.

1.3. From the above proposal it is understood that the there is heavy drawl requirement by various energy intensive and Green Hydrogen/Ammonia industries in the Paradeep area. The industries shall be sourcing power directly from ISTS and mainly RE power from RE rich states to meet the RPO. Thus, keeping in view critical nature of large industrial demand and quantum of power requirement it is essential that Paradeep substation is feed reliably from ISTS, and with high capacity lines. Nearest 765kV substation in ISTS are at Angul (about 190km) and Medinipur (about 310km). Further, nearest ISTS line is Angul – Srikakulam 765kV D/c line. In this regard, following alternatives have been explored:

Alt-1. LILO of Angul – Srikakulam 765kV D/c line at Paradeep

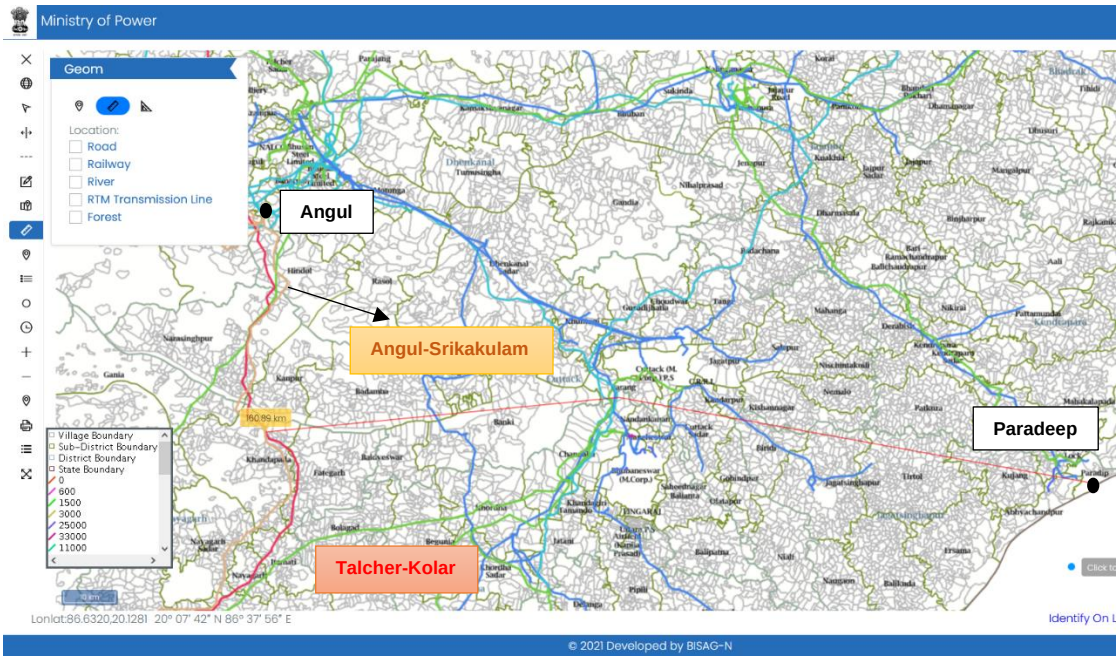
Alt-2. Angul – Paradeep – Medinipur 765kV D/c line

1.4. Assumptions and observations of load flow study results are as follows:

(a) In the minutes of meeting taken by CEA on 25-11-2022, it has been agreed that implementation time-frame of ISTS projects may generally be 24 months. Odisha has mentioned that new demand is expected to be progressively added in Paradeep area from FY 2023-24. Accordingly, studies have been carried out for two time-frames viz. 2024-25 and 2027-28 (latest PSSE files of Rolling Plan).

(b) <u>Observations on Alt-1</u> i.e. LILO of Angul – Srikakulam 765kV D/c line at Paradeep

- Snapshot of line routing of Angul-Srikakulam line (from PM Gati-Shakti portal) along with distance of Paradeep from the line is given below.



- It can been observed from above, that LILO point on Angul – Srikakulam line would be about 160-170km from Paradeep, and LILO point would be about 40-50km southwards of Angul. The original Angul – Srikakulam line is about 275km. Thus, with LILO line length of two sections viz. Angul – Paradeep and Paradeep – Srikakulam would be about 220km and 395km.
- The Paradeep – Srikakulam section would have 240MVAr line reactor at Srikakulam end (existing) and new 330MVAr line reactor can be planned. With this, the percentage line compensation would be about 55%. Further, at Paradeep end only loads are being connected and with this LILO arrangement short circuit level is observed to be about 12kA (15.6MVA).
- Voltage rise of about 60-65kV is expected during charging of Srikakulam – Paradeep section from Srikakulam end and 80-85kV on charging from Paradeep end (with Angul – Paradeep section in service). Due to comparively low short circuit MVA at Paradeep and long line, high voltage rise is being observed on line charging.
- In view of the above, it is not technically suitable to LILO Angul – Srikakulam line for establishment of Paradeep 765kV S/s.

(c) Observations on Alt-2 i.e. Angul – Paradeep – Medinipur 765kV D/c line

- The power demand at Paradeep would increase in progressive manner. Further looking at quantum of power requirement by industries, it is understood that some power requirement would also be at 220kV level, say of JSW Utkal Steel (340MW); IOCL (280MW) and Essar Steel (400MW). Accordingly, it is proposed to establish a 765/400/220kV substation at Paradeep under ISTS with two different sources viz. Angul and Medinipur in phased manner.
- The new 765/400/220kV substation under ISTS at Paradeep would be in place of earlier approved new 765kV substation at Paradeep under intra-state.
- The 765kV Paradeep (ISTS) and 400kV Paradeep (OPTCL) substations are proposed to be connected through 400kV D/c (Quad) line.
- Studies have been carried out for two scenarios viz. Scenario-1 (Aug Max Solar condition) and Scenario-2 (Aug peak demand). In Scenario-1, there is maximum import by ER due high renewable generation in RE rich regions and Scenario-2 correspnds to maximum demand scenario of ER.
- Following system has been considered in the studies considering phased power requirement at Paradeep:

  A. By 2024-25: for about 1400-1500MW load demand at Paradeep

  (i) 765/400kV/220kV, 3x1500MVA + 2x500MVA substation at Paradeep

  (ii) Angul – Paradeep 765kV D/c line

  (iii) Paradeep – Paradeep (OPTCL) 400kV D/c (Quad) line

Note: *Paradeep (OPTCL) 400/220kV, 2x500MVA substation along with Paradeep – Duburi 400kV D/c line and Paradeep – Pratapsasan 220kV D/c line is expected by 2024-25 (being implemented by OPTCL under intra-state scheme).*

B. Upto 2027-28: for about 5500-6000MW load demand at Paradeep

(i) *Installation of additional 765/400kV, 3x1500MVA ICTs and 400/220kV, 3x500MVA ICTs at Paradeep

(ii) #Angul – Paradeep 765kV D/c (2nd) line

(iii) #Paradeep – Medinipur 765kV D/c line

Note: **These ICTs would be installed in a phased manner depending on the drawl requirement of OPTCL and/or Industries.*

 # To be taken up as per system requirement.

- With establishment of Paradeep – Medinipur 765kV D/c link, Angul – Paradeep – Medinipur – Ranchi (New) – Dharamjaygarh – Sundargarh – Angul 765kV ring shall be established, which shall help in reliable transfer of RE power to various ER states during high RE scenarios. The critical loading observed on WR-ER corridors viz. 400kV and 765kV lines in 2027-28 time-frame in ISTS Rolling Plan study files also subsides with establishment of the Angul – Paradeep – Medinipur corridor as portion of RE being earlier injected on Dharamjaygarh – Ranchi (New) – Medinipur corridor is now injected into ER through Dharamjaygarh – Sundargarh – Angul – Paradeep – Medinipur corridor.
- Study results of various cases is attached at **Annexure-1** as mentioned below:

Exhibit	Case
A. 2024-25: Angul – Paradeep 765kV D/c line along with Paradeep 765kV S/s	
Exhibit-A11	Base case-Sc1 (without Paradeep)
Exhibit-A12	With Angul – Paradeep 765kV D/c line along with Paradeep 765kV S/s
Exhibit-A13	Outage of one circuit of Angul – Paradeep 765kV D/c line
Exhibit-A14	Outage of 1x1500MVA ICT at Paradeep S/s
Exhibit-A21	Base case-Sc2 (without Paradeep)
Exhibit-A22	With Angul – Paradeep 765kV D/c line along with Paradeep 765kV S/s
Exhibit-A23	Outage of one circuit of Angul – Paradeep 765kV D/c line
Exhibit-A24	Outage of 1x1500MVA ICT at Paradeep S/s
B. 2027-28: Angul – Paradeep (2nd) & Paradeep – Medinipur 765kV D/c lines	
Exhibit-B11	Base case-Sc1
Exhibit-B12	With Angul – Paradeep (2nd) & Paradeep – Medinipur 765kV D/c lines
Exhibit-B13	Outage of one circuit of Angul – Paradeep 765kV 2xD/c line
Exhibit-B14	Outage of 1x1500MVA ICT at Paradeep S/s
Exhibit-B21	Base case-Sc2
Exhibit-B22	With Angul – Paradeep (2nd) & Paradeep – Medinipur 765kV D/c lines
Exhibit-B23	Outage of one circuit of Angul – Paradeep 765kV 2xD/c line
Exhibit-B24	Outage of 1x1500MVA ICT at Paradeep S/s

- For voltage control, 2x330MVAr bus reactors at 765kV and 2x125MVAr bus reactors at 400kV are proposed at Paradeep S/s under first phase.

1.5. In view of the above following, transmission system is proposed to be implemented under ISTS under the Eastern Region Expansion Scheme-XXXIV (ERES-XXXIV) with implementation time-frame of 24 months from allocation:

(a) 765/400/220kV, 3x1500MVA + 2x500MVA substation at Paradeep

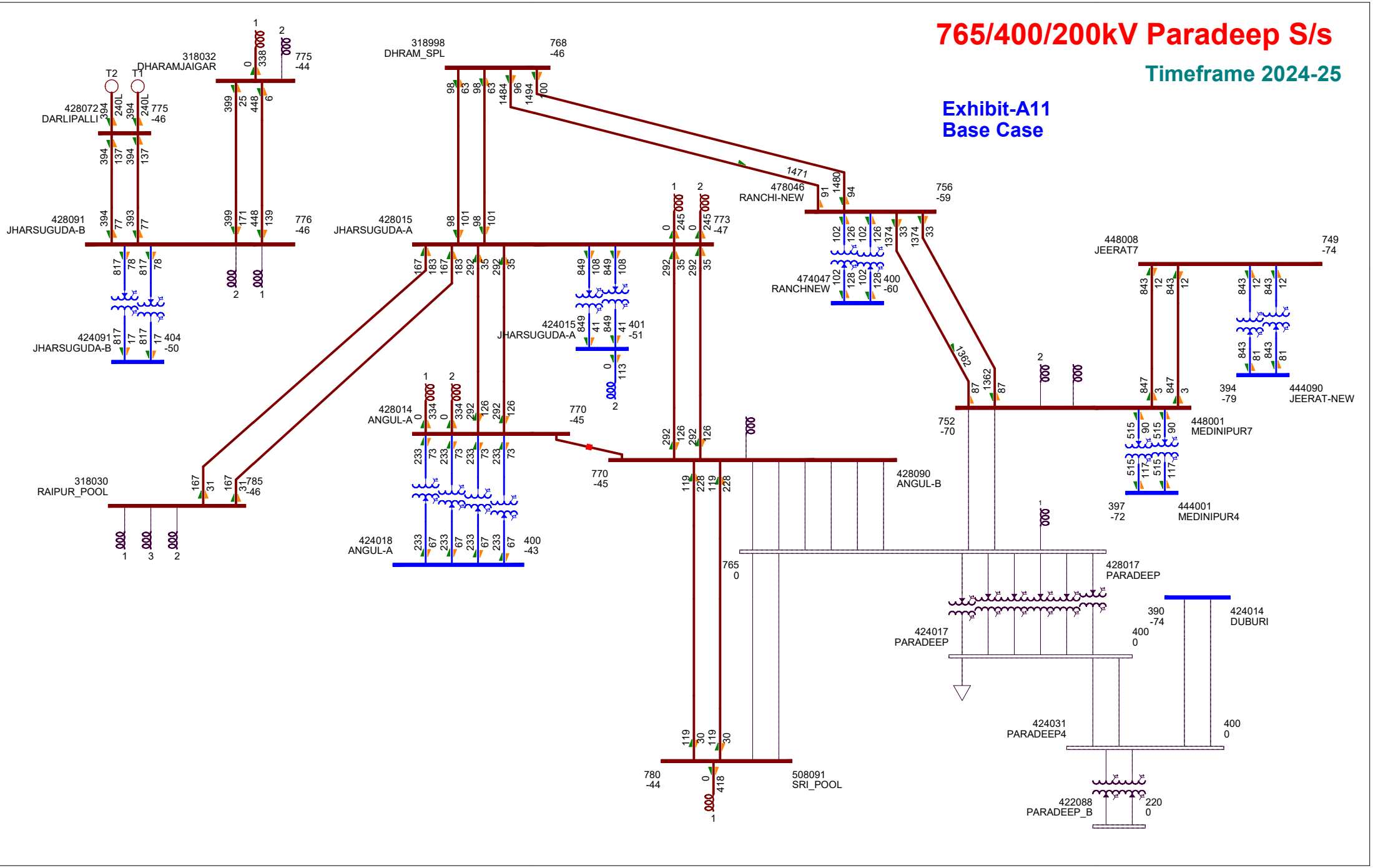
(b) Angul – Paradeep 765kV D/c line along with associated line bays at both ends

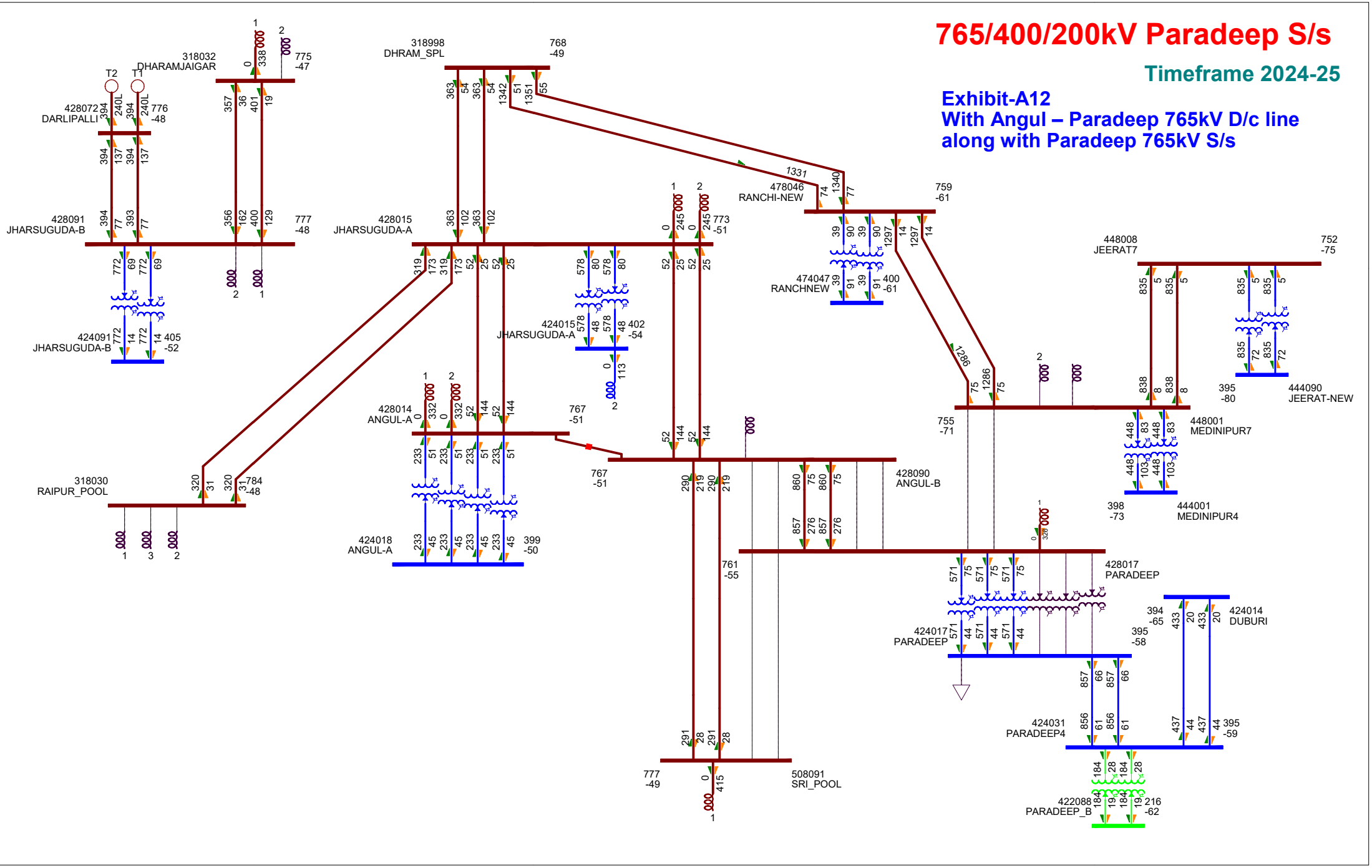
(c) 1x330MVAr switchable line reactor in each circuit of Angul – Paradeep 765kV D/c line at Paradeep end

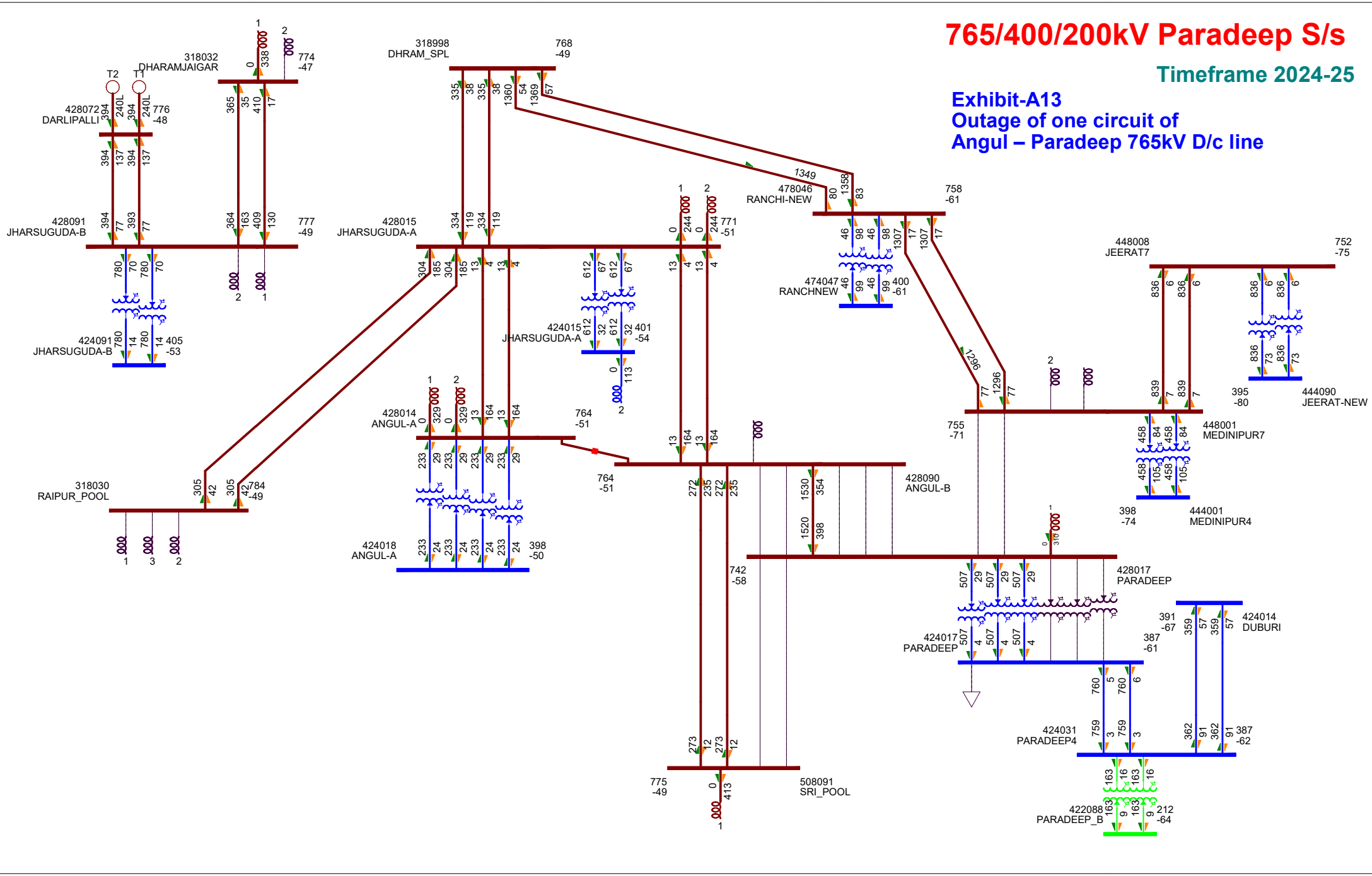
(d) Paradeep – Paradeep (OPTCL) 400kV D/c (Quad) line along with associated line bays at both ends

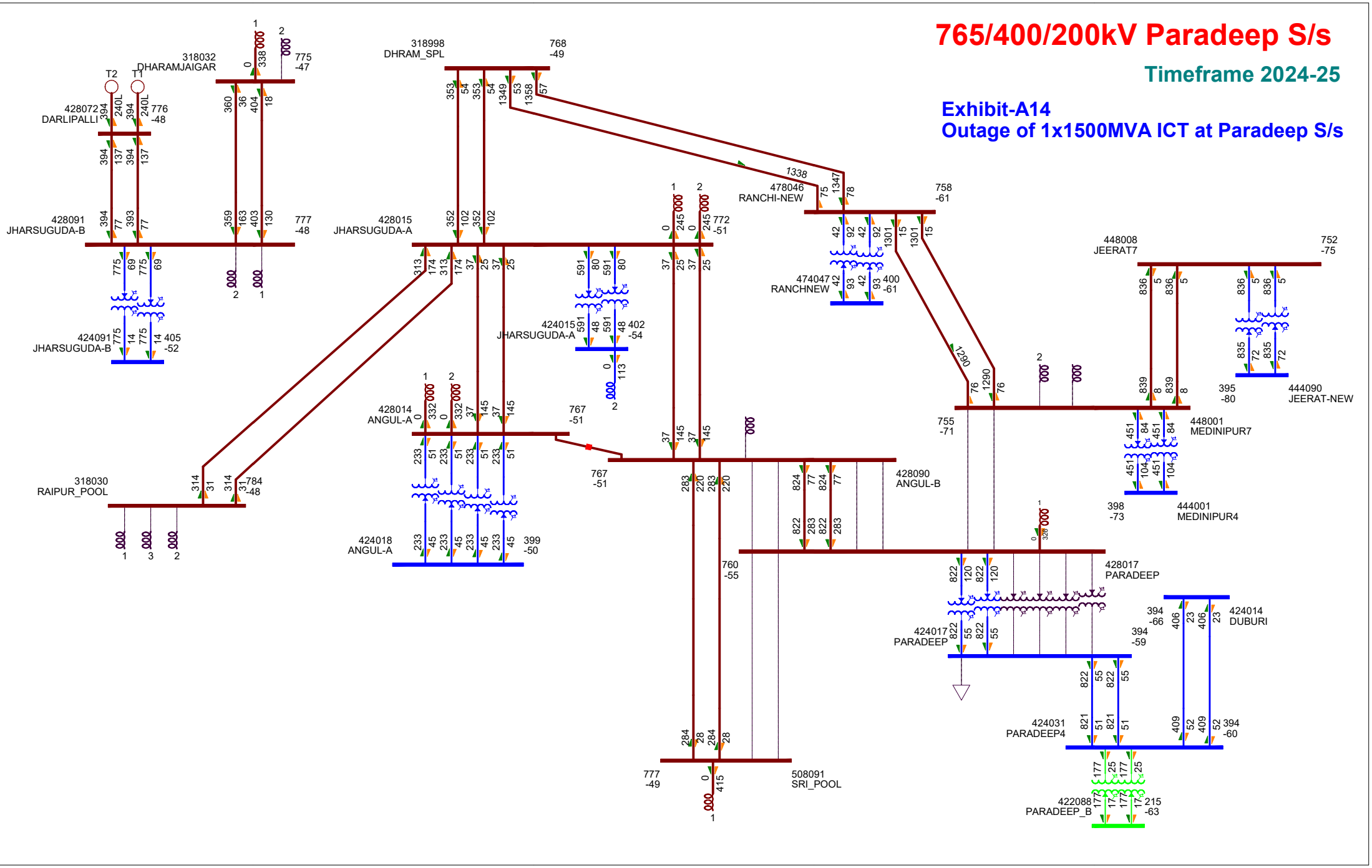
(e) 765kV, 2x330MVAr bus reactor at Paradeep along with associated bays

(f) 420kV, 2x125MVAr bus reactor at Paradeep along with associated bays


765/400/200kV Paradeep S/s
Timeframe 2024-25
Exhibit-A11
Base Case
318032
DHARAMJAIGAR
775
-44
T2
T1
428072
DARLIPALLI
775
-46
428091
JHARSUGUDA-B
776
-46
424091
JHARSUGUDA-B
404
-50
318030
RAIPUR_POOL
785
-46
318998
DHRAM_SPL
768
-46
1471
478046
RANCHI-NEW
756
-59
474047
RANCHNEW
400
-60
428015
JHARSUGUDA-A
773
-47
424015
JHARSUGUDA-A
401
-51
428014
ANGUL-A
770
-45
424018
ANGUL-A
400
-43
770
-45
428090
ANGUL-B
765
0
780
-44
508091
SRI_POOL
752
-70
448008
JEERAT7
749
-74
394
-79
444090
JEERAT-NEW
448001
MEDINIPUR7
397
-72
444001
MEDINIPUR4
428017
PARADEEP
424017
PARADEEP
390
-74
400
0
424014
DUBURI
424031
PARADEEP4
400
0
422088
PARADEEP_B
220
0


765/400/200kV Paradeep S/s
Timeframe 2024-25
Exhibit-A12
With Angul – Paradeep 765kV D/c line
along with Paradeep 765kV S/s
318032
DHARAMJAIGAR
775
-47
428072
DARLIPALLI
776
-48
428091
JHARSUGUDA-B
777
-48
424091
JHARSUGUDA-B
405
-52
318030
RAIPUR_POOL
784
-48
318998
DHRAM_SPL
768
-49
428015
JHARSUGUDA-A
773
-51
424015
JHARSUGUDA-A
402
-54
428014
ANGUL-A
767
-51
424018
ANGUL-A
399
-50
478046
RANCHI-NEW
759
-61
474047
RANCHNEW
400
-61
1331
1286
755
-71
448008
JEERAT7
752
-75
444090
JEERAT-NEW
395
-80
448001
MEDINIPUR7
444001
MEDINIPUR4
398
-73
428090
ANGUL-B
761
-55
777
-49
508091
SRI_POOL
428017
PARADEEP
424017
PARADEEP
424014
DUBURI
395
-58
394
-65
424031
PARADEEP4
395
-59
422088
PARADEEP_B
216
-62


765/400/200kV Paradeep S/s
Timeframe 2024-25
Exhibit-A13
Outage of one circuit of
Angul – Paradeep 765kV D/c line
318032
DHARAMJAIGAR
774
-47
428072
DARLIPALLI
776
-48
428091
JHARSUGUDA-B
777
-49
424091
JHARSUGUDA-B
405
-53
318030
RAIPUR_POOL
784
-49
318998
DHRAM_SPL
768
-49
428015
JHARSUGUDA-A
771
-51
424015
JHARSUGUDA-A
401
-54
428014
ANGUL-A
764
-51
424018
ANGUL-A
398
-50
764
-51
1349
478046
RANCHI-NEW
758
-61
474047
RANCHNEW
400
-61
428090
ANGUL-B
742
-58
775
-49
508091
SRI_POOL
1296
755
-71
448008
JEERAT7
752
-75
395
-80
444090
JEERAT-NEW
448001
MEDINIPUR7
398
-74
444001
MEDINIPUR4
428017
PARADEEP
424017
PARADEEP
391
-67
387
-61
424014
DUBURI
424031
PARADEEP4
387
-62
422088
PARADEEP_B
212
-64


765/400/200kV Paradeep S/s
Timeframe 2024-25
Exhibit-A14
Outage of 1x1500MVA ICT at Paradeep S/s
318032 DHARAMJAIGAR 775 -47
428072 DARLIPALLI 776 -48
428091 JHARSUGUDA-B 777 -48
424091 JHARSUGUDA-B 405 -52
318030 RAIPUR_POOL 784 -48
318998 DHRAM_SPL 768 -49
428015 JHARSUGUDA-A 772 -51
424015 JHARSUGUDA-A 402 -54
428014 ANGUL-A 767 -51
424018 ANGUL-A 399 -50
478046 RANCHI-NEW 758 -61
474047 RANCHNEW 400 -61
767 -51
428090 ANGUL-B
760 -55
777 -49
508091 SRI_POOL
755 -71
448008 JEERAT7 752 -75
395 -80
444090 JEERAT-NEW
448001 MEDINIPUR7
398 -73
444001 MEDINIPUR4
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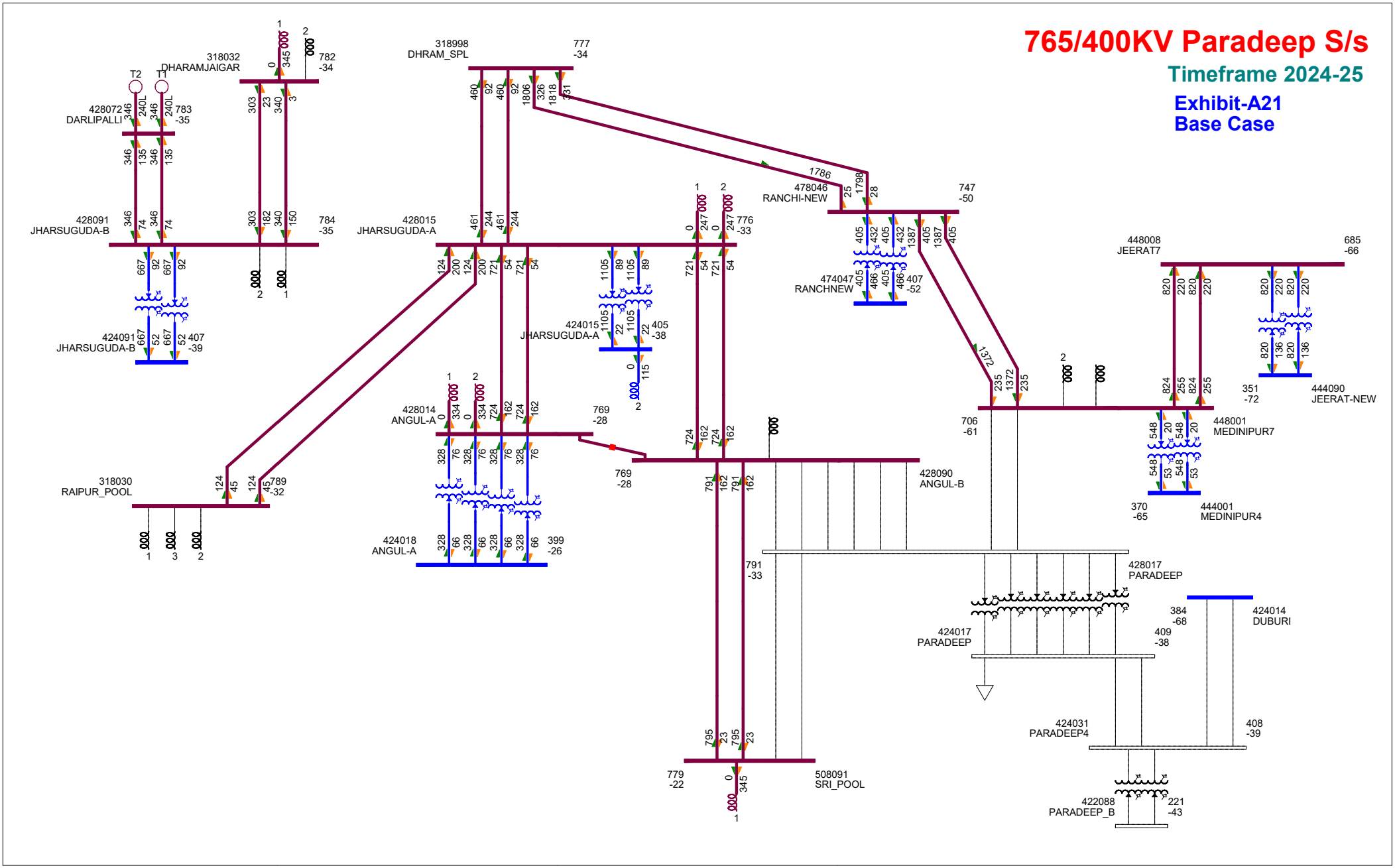
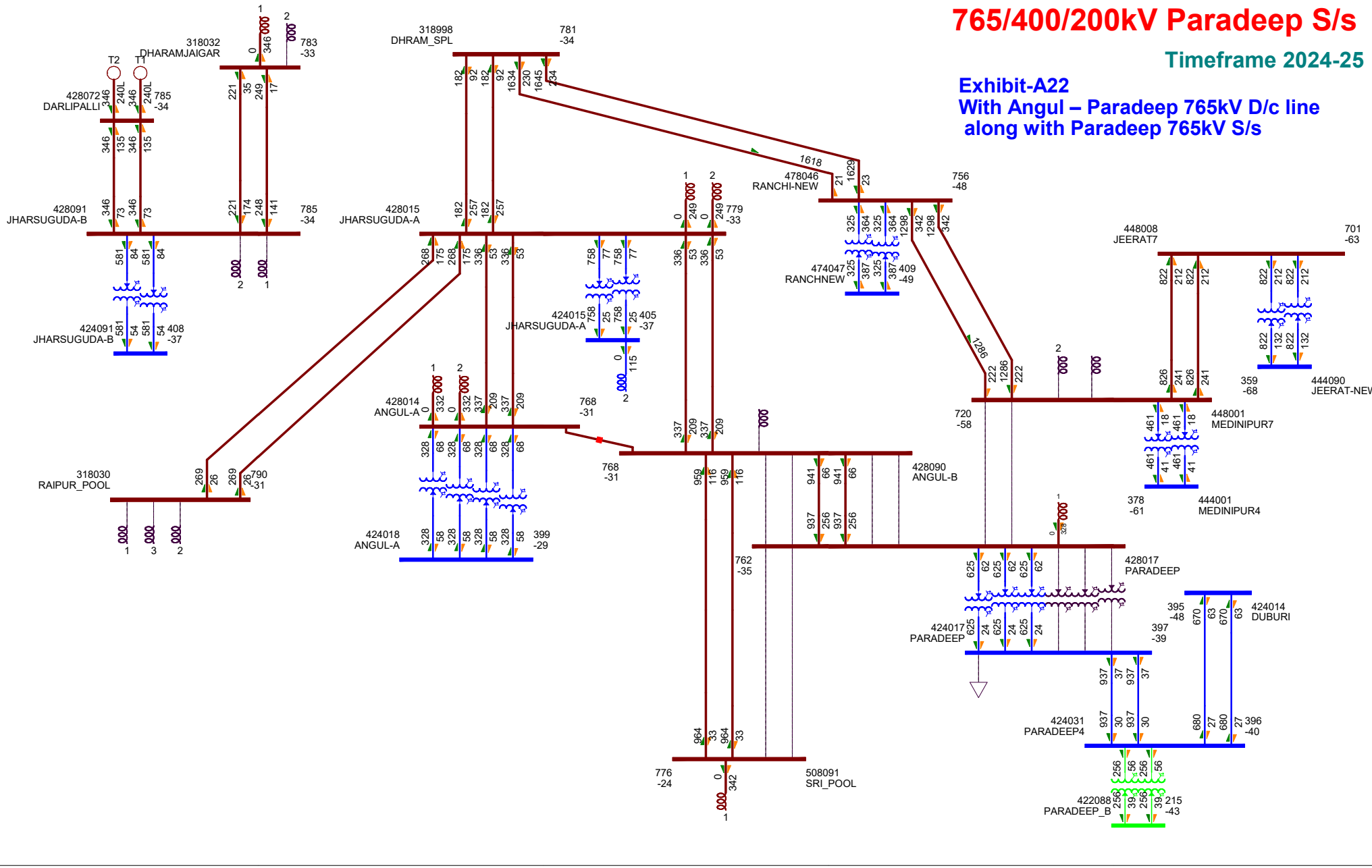
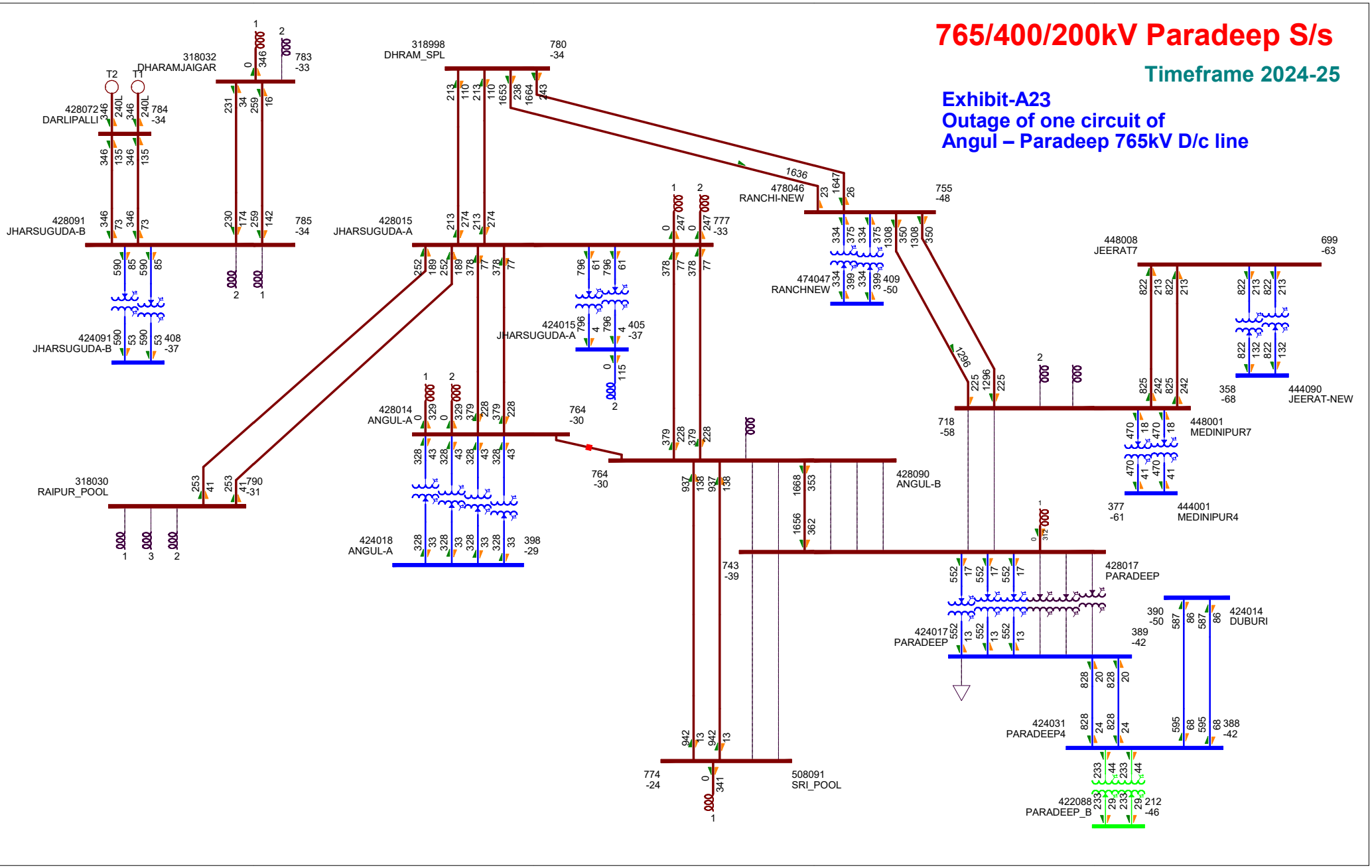
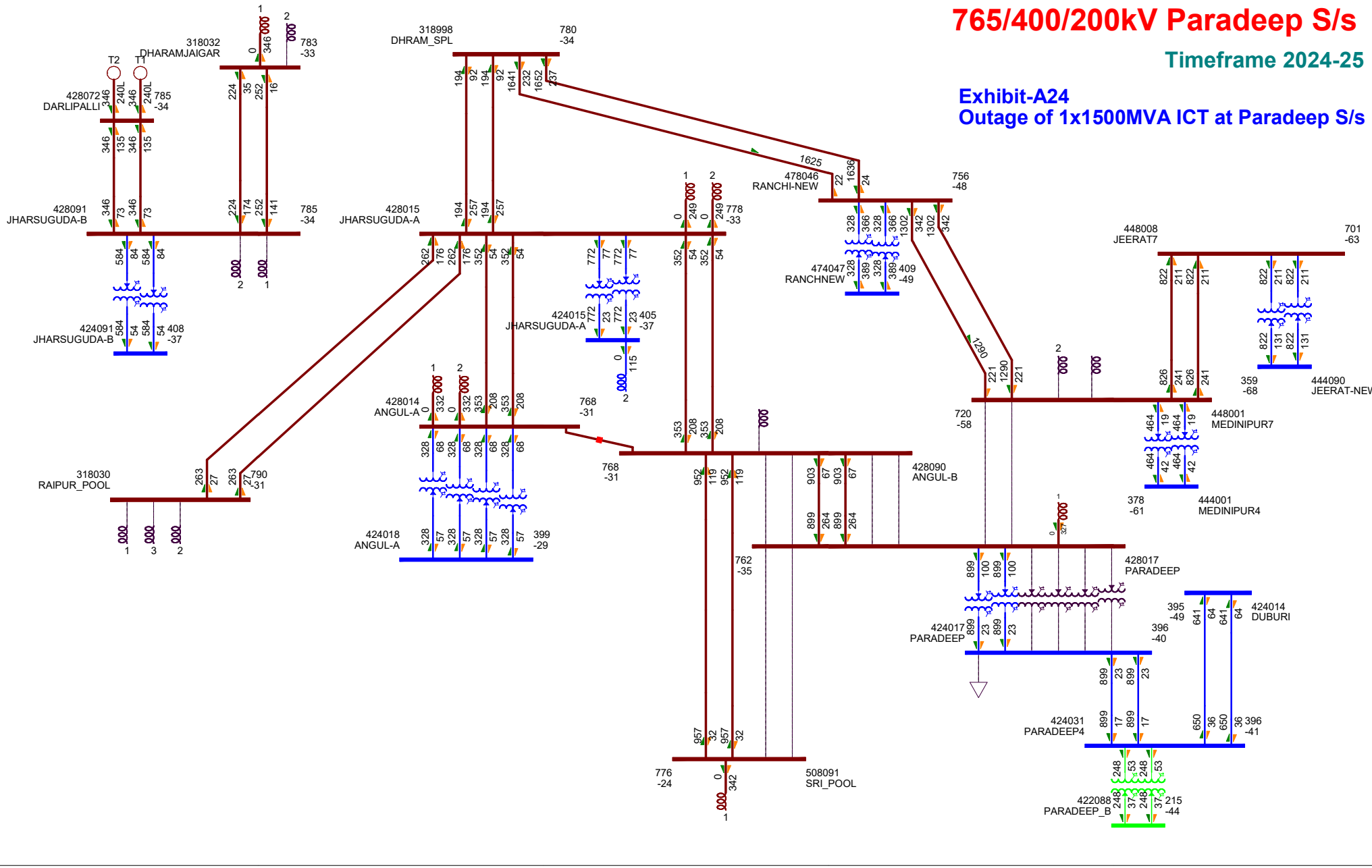
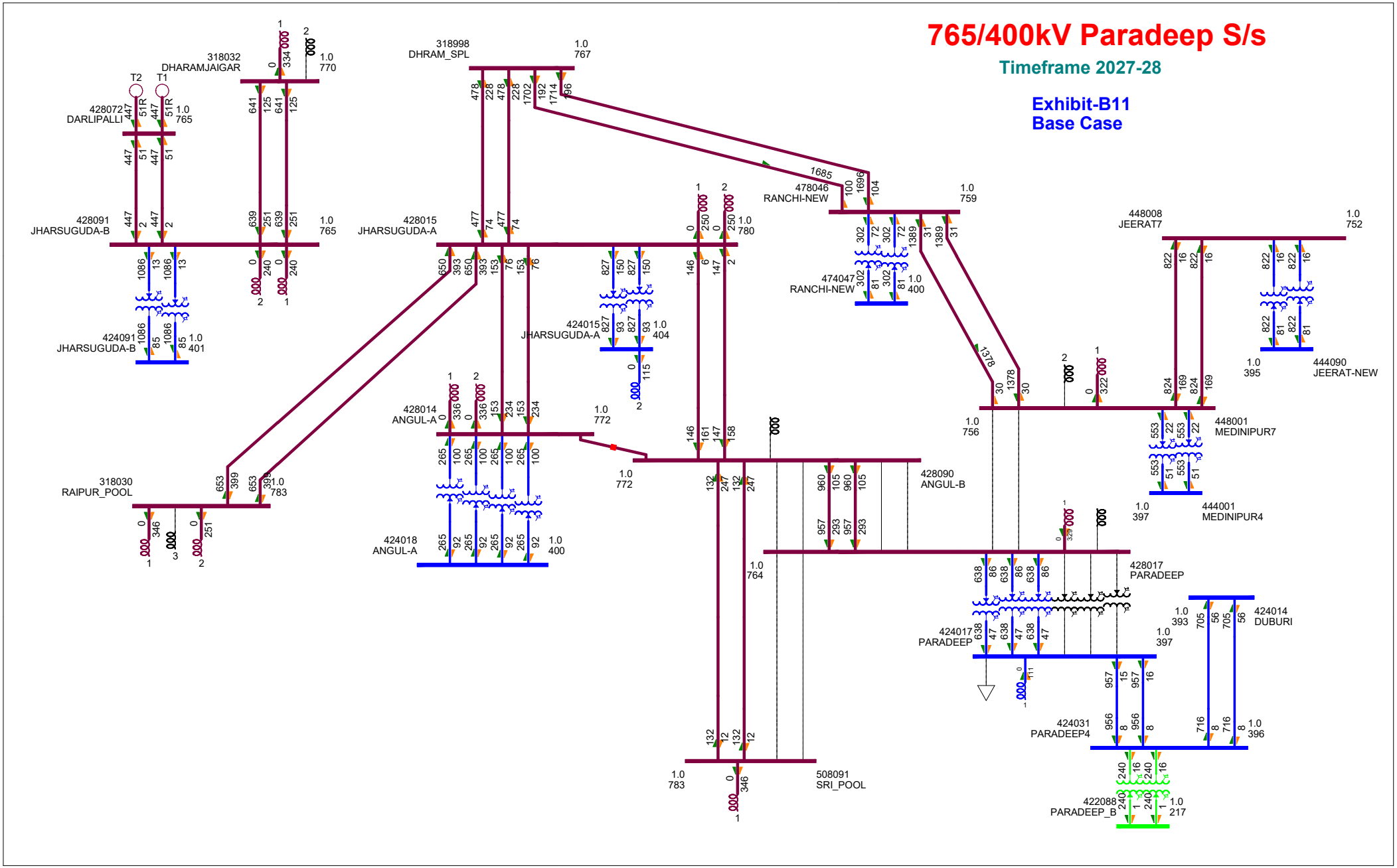
424014 DUBURI 394 -66
424031 PARADEEP4 394 -60
422088 PARADEEP_B 215 -63

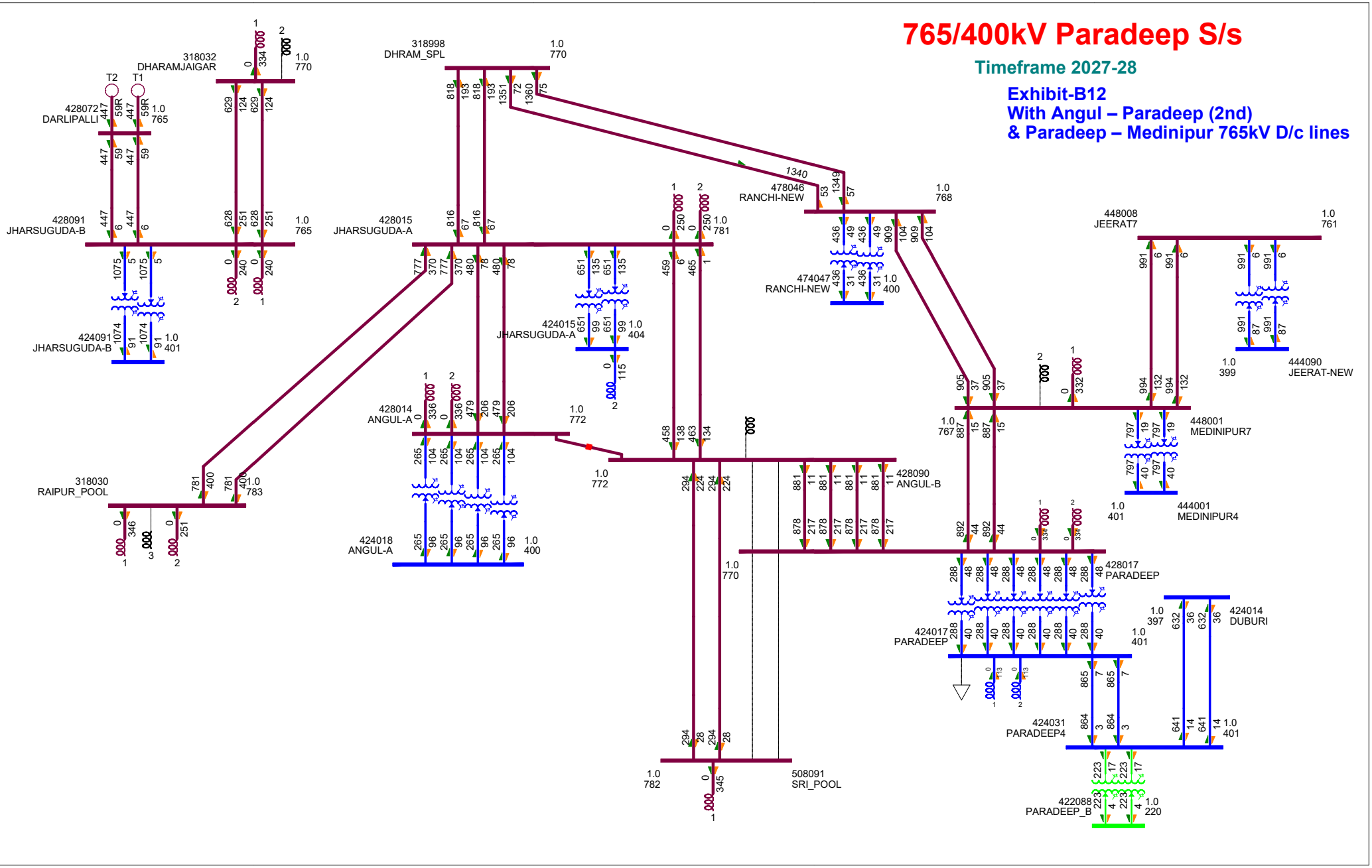

765/400KV Paradeep S/s
Timeframe 2024-25
Exhibit-A21
Base Case
318032
DHARAMJAIGAR
782
-34
T2
T1
428072
DARLIPALLI
783
-35
428091
JHARSUGUDA-B
784
-35
424091
JHARSUGUDA-B
407
-39
318030
RAIPUR_POOL
789
-32
318998
DHRAM_SPL
777
-34
428015
JHARSUGUDA-A
776
-33
424015
JHARSUGUDA-A
405
-38
428014
ANGUL-A
769
-28
424018
ANGUL-A
399
-26
769
-28
428090
ANGUL-B
791
-33
779
-22
508091
SRI_POOL
478046
RANCHI-NEW
747
-50
1786
474047
RANCHNEW
407
-52
1372
706
-61
448008
JEERAT7
685
-66
351
-72
444090
JEERAT-NEW
448001
MEDINIPUR7
370
-65
444001
MEDINIPUR4
428017
PARADEEP
424017
PARADEEP
384
-68
409
-38
424014
DUBURI
424031
PARADEEP4
408
-39
422088
PARADEEP_B
221
-43

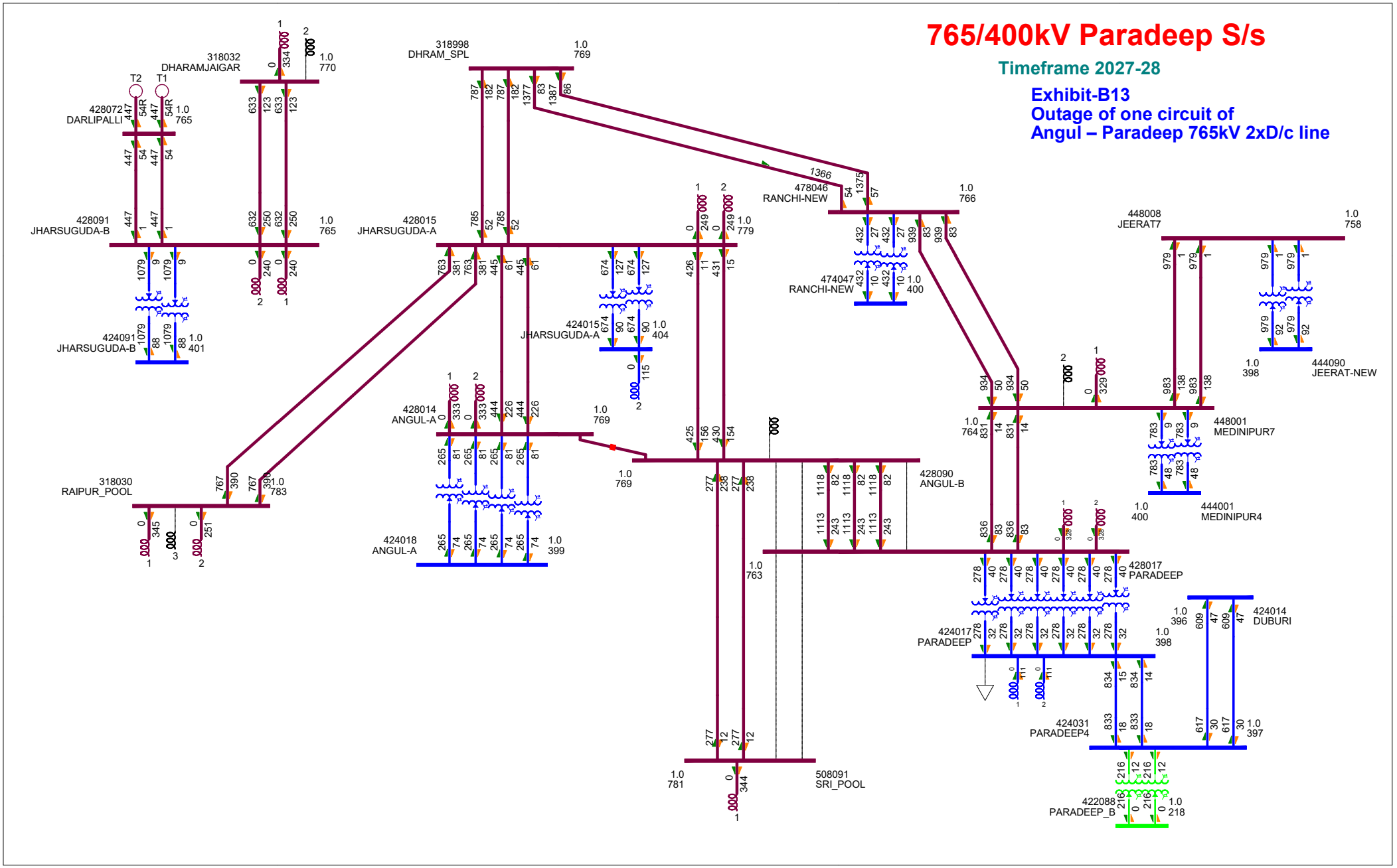

765/400/200kV Paradeep S/s
Timeframe 2024-25
Exhibit-A22
With Angul – Paradeep 765kV D/c line
along with Paradeep 765kV S/s
318032
DHARAMJAIGAR
783
-33
428072
DARLIPALLI
785
-34
428091
JHARSUGUDA-B
785
-34
424091
JHARSUGUDA-B
408
-37
318998
DHRAM_SPL
781
-34
428015
JHARSUGUDA-A
779
-33
424015
JHARSUGUDA-A
405
-37
478046
RANCHI-NEW
756
-48
474047
RANCHNEW
409
-49
448008
JEERAT7
701
-63
359
-68
444090
JEERAT-NEW
448001
MEDINIPUR7
720
-58
378
-61
444001
MEDINIPUR4
428014
ANGUL-A
768
-31
424018
ANGUL-A
399
-29
318030
RAIPUR_POOL
790
-31
428090
ANGUL-B
762
-35
776
-24
508091
SRI_POOL
428017
PARADEEP
424017
PARADEEP
395
-48
424014
DUBURI
397
-39
424031
PARADEEP4
396
-40
422088
PARADEEP_B
215
-43
1618
1286

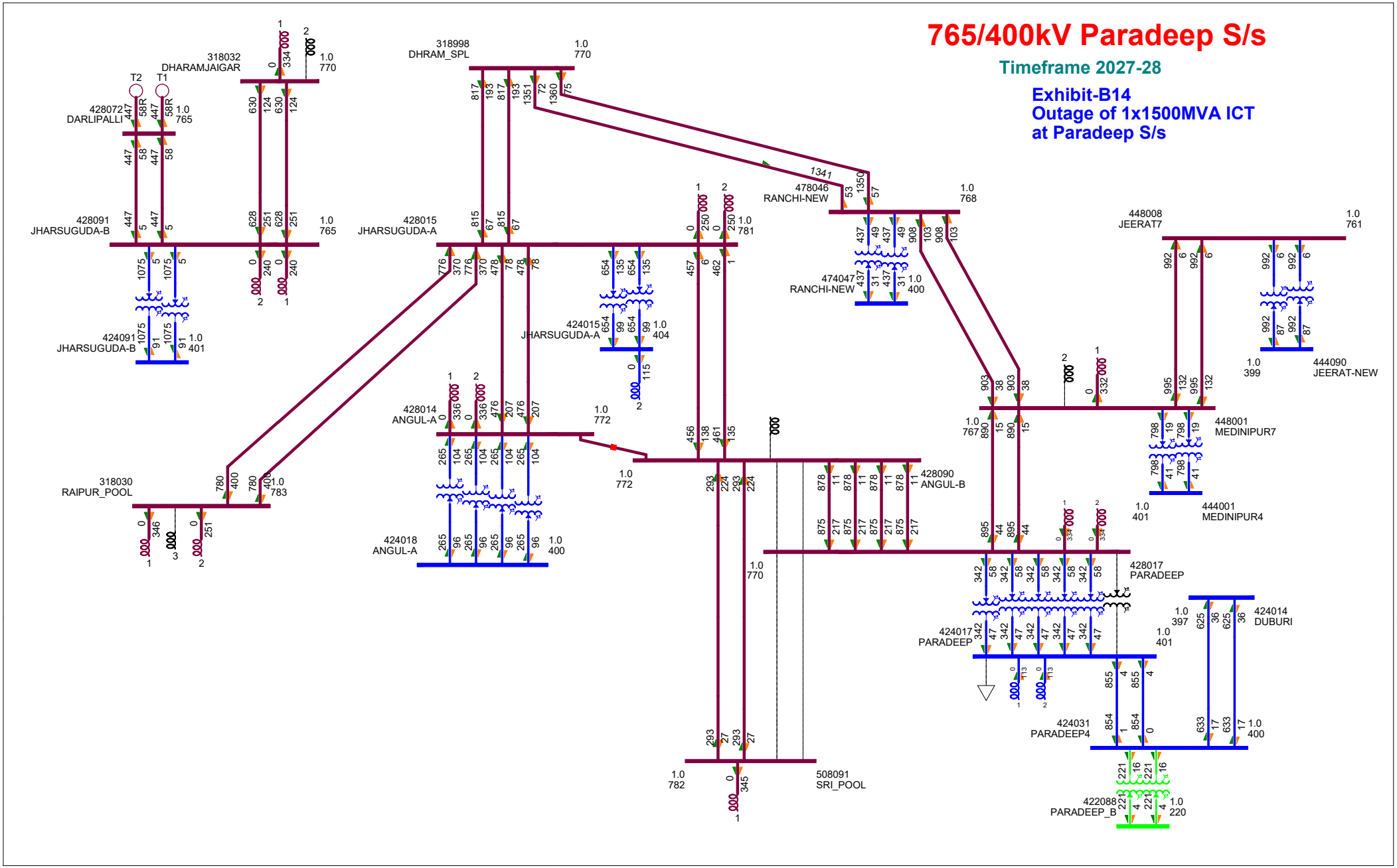

765/400/200kV Paradeep S/s
Timeframe 2024-25
Exhibit-A23
Outage of one circuit of
Angul – Paradeep 765kV D/c line
318032 DHARAMJAIGAR 783 -33
428072 DARLIPALLI 784 -34
428091 JHARSUGUDA-B 785 -34
424091 JHARSUGUDA-B 408 -37
318998 DHRAM_SPL 780 -34
428015 JHARSUGUDA-A 777 -33
424015 JHARSUGUDA-A 405 -37
428014 ANGUL-A 764 -30
424018 ANGUL-A 398 -29
318030 RAIPUR_POOL 790 -31
764 -30
428090 ANGUL-B
743 -39
774 -24
508091 SRI_POOL
478046 RANCHI-NEW 755 -48
474047 RANCHNEW 409 -50
718 -58
448008 JEERAT7 699 -63
358 -68 444090 JEERAT-NEW
448001 MEDINIPUR7
377 -61 444001 MEDINIPUR4
428017 PARADEEP
424017 PARADEEP 389 -42
390 -50 424014 DUBURI
424031 PARADEEP4 388 -42
422088 PARADEEP_B 212 -46
1636
1296

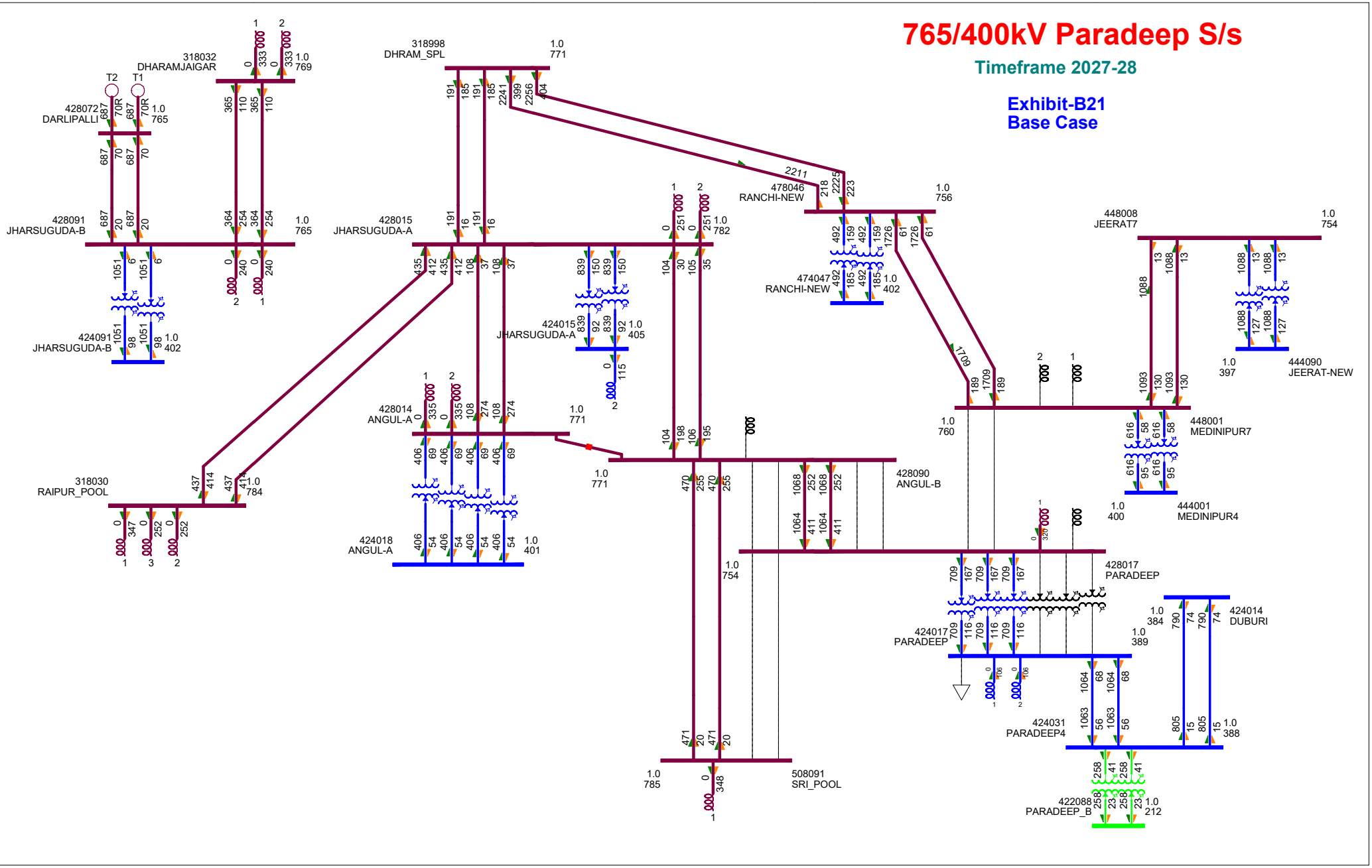

765/400/200kV Paradeep S/s
Timeframe 2024-25
Exhibit-A24
Outage of 1x1500MVA ICT at Paradeep S/s
318032 DHARAMJAIGAR 783 -33
428072 DARLIPALLI 785 -34
428091 JHARSUGUDA-B 785 -34
424091 JHARSUGUDA-B 408 -37
318998 DHRAM_SPL 780 -34
428015 JHARSUGUDA-A 778 -33
424015 JHARSUGUDA-A 405 -37
478046 RANCHI-NEW 756 -48
474047 RANCHNEW 409 -49
448008 JEERAT7 701 -63
359 -68 444090 JEERAT-NEW
448001 MEDINIPUR7
378 -61 444001 MEDINIPUR4
720 -58
428014 ANGUL-A 768 -31
424018 ANGUL-A 399 -29
318030 RAIPUR_POOL 790 -31
768 -31
428090 ANGUL-B
762 -35
776 -24 508091 SRI_POOL
428017 PARADEEP
424017 PARADEEP
424014 DUBURI 395 -49
396 -40
424031 PARADEEP4 396 -41
422088 PARADEEP_B 215 -44

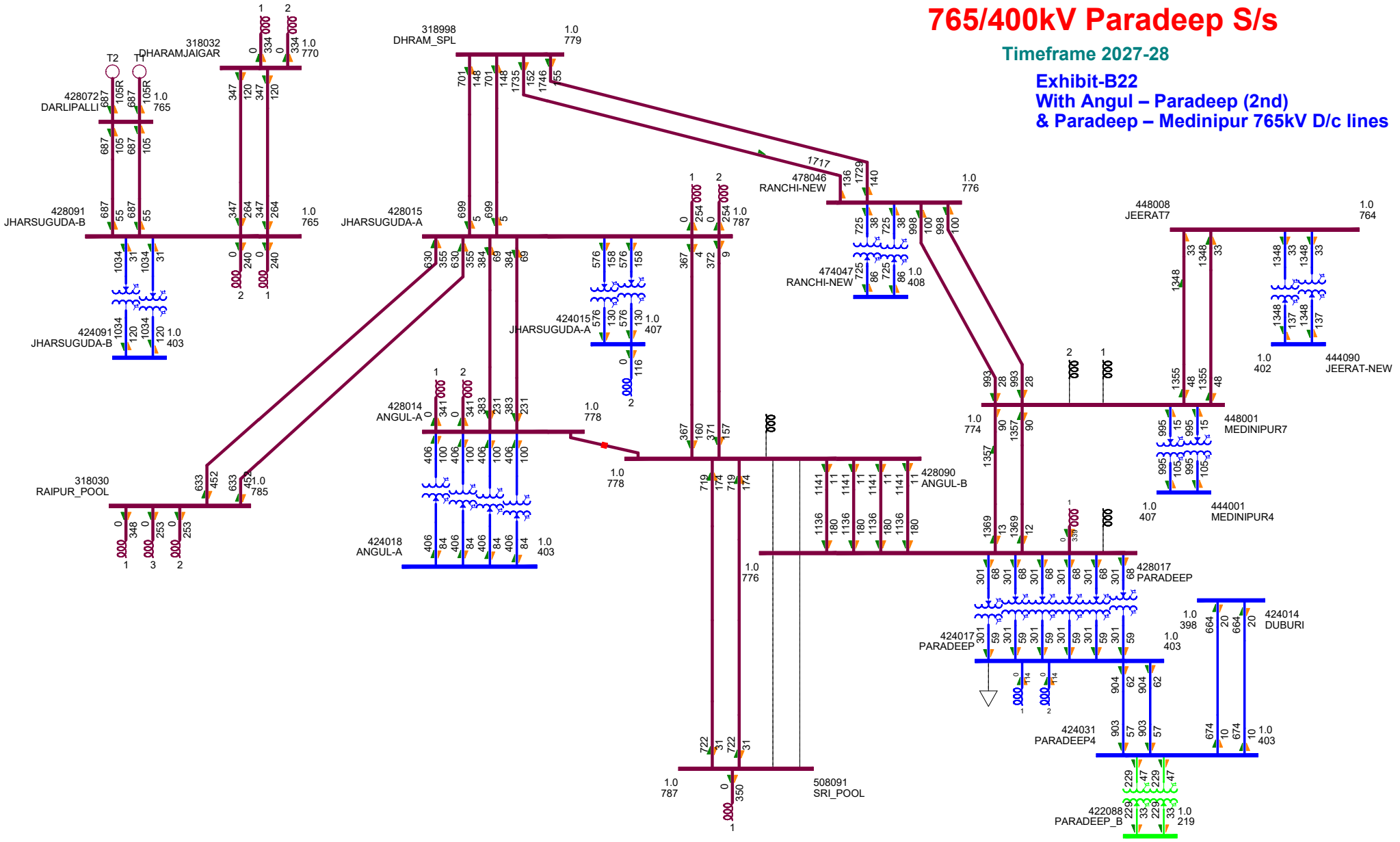

765/400kV Paradeep S/s
Timeframe 2027-28
Exhibit-B11
Base Case
318032
DHARAMJAIGAR
1.0
770
428072
DARLIPALLI
1.0
765
428091
JHARSUGUDA-B
1.0
765
424091
JHARSUGUDA-B
1.0
401
318998
DHRAM_SPL
1.0
767
428015
JHARSUGUDA-A
1.0
780
424015
JHARSUGUDA-A
1.0
404
478046
RANCHI-NEW
1.0
759
474047
RANCHI-NEW
1.0
400
448008
JEERAT7
1.0
752
444090
JEERAT-NEW
1.0
395
448001
MEDINIPUR7
1.0
756
444001
MEDINIPUR4
1.0
397
428014
ANGUL-A
1.0
772
424018
ANGUL-A
1.0
400
428090
ANGUL-B
1.0
772
318030
RAIPUR_POOL
1.0
783
1.0
764
508091
SRI_POOL
1.0
783
428017
PARADEEP
424017
PARADEEP
1.0
397
424014
DUBURI
1.0
393
424031
PARADEEP4
1.0
396
422088
PARADEEP_B
1.0
217
1685
1378

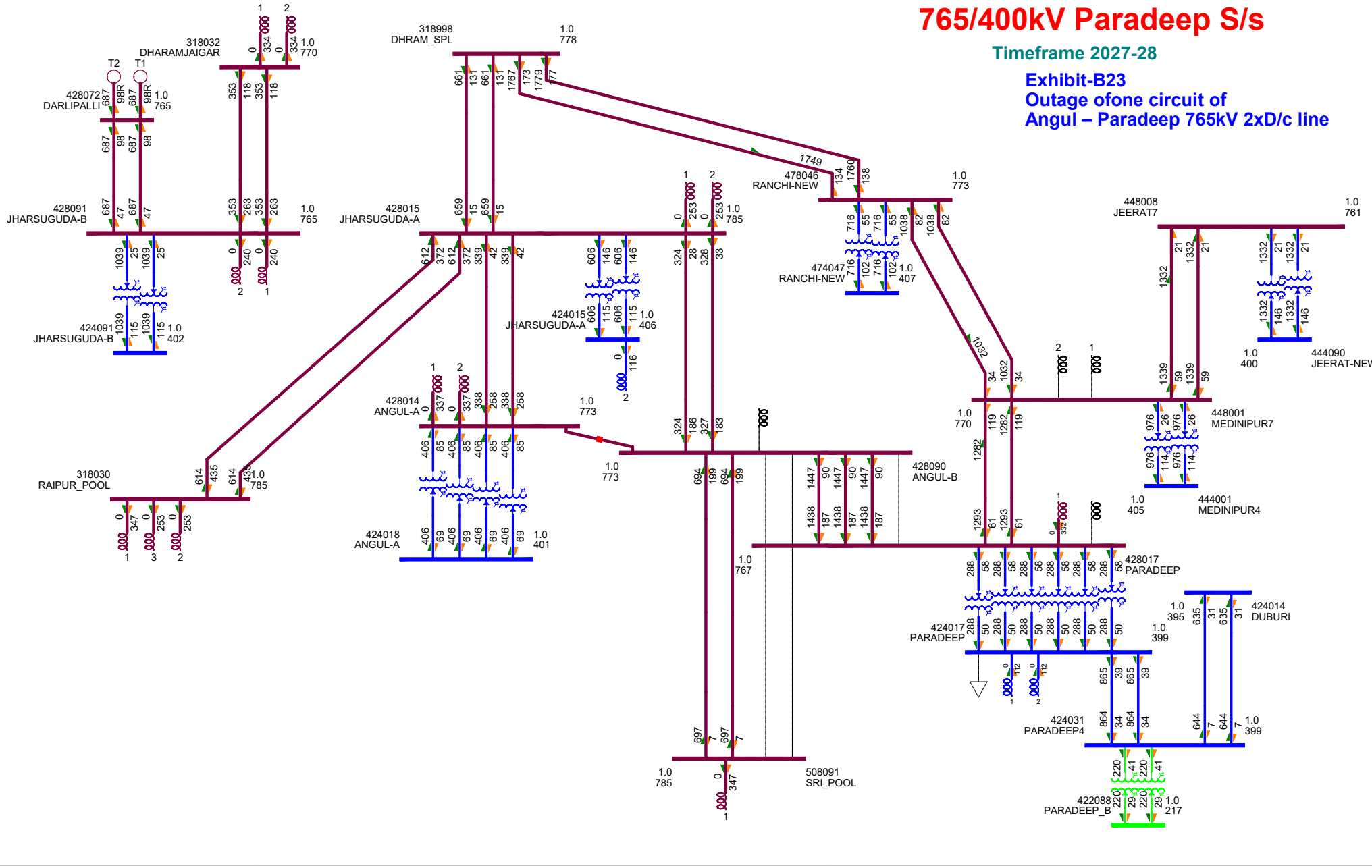

765/400kV Paradeep S/s
Timeframe 2027-28
Exhibit-B12
With Angul – Paradeep (2nd)
& Paradeep – Medinipur 765kV D/c lines
318032 DHARAMJAIGAR 1.0 770
428072 DARLIPALLI 1.0 765
428091 JHARSUGUDA-B 1.0 765
424091 JHARSUGUDA-B 1.0 401
318998 DHRAM_SPL 1.0 770
428015 JHARSUGUDA-A 1.0 781
424015 JHARSUGUDA-A 1.0 404
478046 RANCHI-NEW 1.0 768
474047 RANCHI-NEW 1.0 400
448008 JEERAT7 1.0 761
444090 JEERAT-NEW 1.0 399
448001 MEDINIPUR7
444001 MEDINIPUR4 1.0 401
428014 ANGUL-A 1.0 772
424018 ANGUL-A 1.0 400
318030 RAIPUR_POOL 1.0 783
428090 ANGUL-B 1.0 772
428017 PARADEEP 1.0 770
424017 PARADEEP 1.0 401
424014 DUBURI 1.0 397
424031 PARADEEP4 1.0 401
422088 PARADEEP_B 1.0 220
508091 SRI_POOL 1.0 782
1340

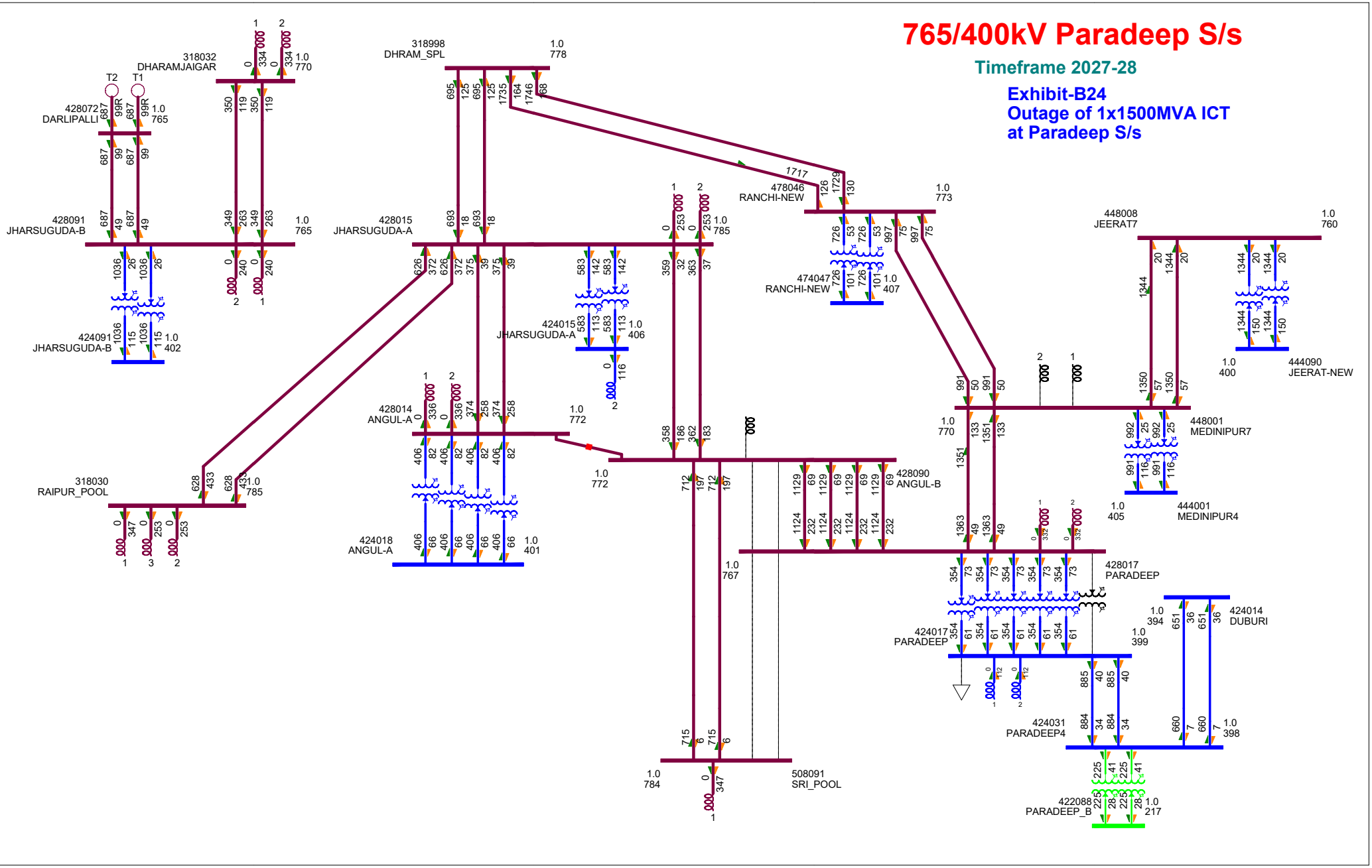

765/400kV Paradeep S/s
Timeframe 2027-28
Exhibit-B13
Outage of one circuit of
Angul – Paradeep 765kV 2xD/c line
318032
DHARAMJAIGAR
1.0
770
428072
DARLIPALLI
1.0
765
428091
JHARSUGUDA-B
1.0
765
424091
JHARSUGUDA-B
1.0
401
318998
DHRAM_SPL
1.0
769
1366
478046
RANCHI-NEW
1.0
766
474047
RANCHI-NEW
1.0
400
428015
JHARSUGUDA-A
1.0
779
424015
JHARSUGUDA-A
1.0
404
448008
JEERAT7
1.0
758
1.0
398
444090
JEERAT-NEW
428014
ANGUL-A
1.0
769
318030
RAIPUR_POOL
1.0
783
424018
ANGUL-A
1.0
399
428090
ANGUL-B
1.0
763
1.0
764
448001
MEDINIPUR7
1.0
400
444001
MEDINIPUR4
428017
PARADEEP
424017
PARADEEP
1.0
396
1.0
398
424014
DUBURI
424031
PARADEEP4
1.0
397
1.0
781
508091
SRI_POOL
422088
PARADEEP_B
1.0
218


765/400kV Paradeep S/s
Timeframe 2027-28
Exhibit-B14
Outage of 1x1500MVA ICT
at Paradeep S/s
318032
DHARAMJAIGAR
1.0
770
428072
DARLIPALLI
1.0
765
428091
JHARSUGUDA-B
1.0
765
424091
JHARSUGUDA-B
1.0
401
318998
DHRAM_SPL
1.0
770
428015
JHARSUGUDA-A
1.0
781
424015
JHARSUGUDA-A
1.0
404
478046
RANCHI-NEW
1.0
768
474047
RANCHI-NEW
1.0
400
448008
JEERAT7
1.0
761
1.0
399
444090
JEERAT-NEW
448001
MEDINIPUR7
1.0
401
444001
MEDINIPUR4
428014
ANGUL-A
1.0
772
424018
ANGUL-A
1.0
400
318030
RAIPUR_POOL
1.0
783
1.0
772
428090
ANGUL-B
1.0
770
428017
PARADEEP
424017
PARADEEP
1.0
397
1.0
401
424014
DUBURI
424031
PARADEEP4
1.0
400
422088
PARADEEP_B
1.0
220
1.0
782
508091
SRI_POOL


765/400kV Paradeep S/s
Timeframe 2027-28
Exhibit-B21
Base Case
318032
DHARAMJAIGAR
1.0
769
428072
DARLIPALLI
1.0
765
428091
JHARSUGUDA-B
1.0
765
424091
JHARSUGUDA-B
1.0
402
318998
DHRAM_SPL
1.0
771
2211
478046
RANCHI-NEW
1.0
756
474047
RANCHI-NEW
1.0
402
428015
JHARSUGUDA-A
1.0
782
424015
JHARSUGUDA-A
1.0
405
448008
JEERAT7
1.0
754
1.0
397
444090
JEERAT-NEW
1709
1.0
760
448001
MEDINIPUR7
1.0
400
444001
MEDINIPUR4
428014
ANGUL-A
1.0
771
318030
RAIPUR_POOL
1.0
784
424018
ANGUL-A
1.0
401
1.0
771
428090
ANGUL-B
1.0
754
428017
PARADEEP
424017
PARADEEP
1.0
384
1.0
389
424014
DUBURI
424031
PARADEEP4
1.0
388
422088
PARADEEP_B
1.0
212
1.0
785
508091
SRI_POOL


765/400kV Paradeep S/s
Timeframe 2027-28
Exhibit-B22
With Angul – Paradeep (2nd)
& Paradeep – Medinipur 765kV D/c lines
318032 DHARAMJAIGAR 1.0 770
428072 DARLIPALLI 1.0 765
428091 JHARSUGUDA-B 1.0 765
424091 JHARSUGUDA-B 1.0 403
318998 DHRAM_SPL 1.0 779
428015 JHARSUGUDA-A 1.0 787
424015 JHARSUGUDA-A 1.0 407
478046 RANCHI-NEW 1.0 776
474047 RANCHI-NEW 1.0 408
448008 JEERAT7 1.0 764
444090 JEERAT-NEW 1.0 402
448001 MEDINIPUR7
444001 MEDINIPUR4 1.0 407
428014 ANGUL-A 1.0 778
424018 ANGUL-A 1.0 403
318030 RAIPUR_POOL 1.0 785
428090 ANGUL-B 1.0 778
1.0 776
428017 PARADEEP
424017 PARADEEP 1.0 403
424014 DUBURI 1.0 398
424031 PARADEEP4 1.0 403
422088 PARADEEP_B 1.0 219
508091 SRI_POOL 1.0 787
1717


765/400kV Paradeep S/s
Timeframe 2027-28
Exhibit-B23
Outage ofone circuit of
Angul – Paradeep 765kV 2xD/c line
318032
DHARAMJAIGAR
1.0
770
428072
DARLIPALLI
1.0
765
428091
JHARSUGUDA-B
1.0
765
424091
JHARSUGUDA-B
1.0
402
318998
DHRAM_SPL
1.0
778
428015
JHARSUGUDA-A
1.0
785
424015
JHARSUGUDA-A
1.0
406
478046
RANCHI-NEW
1.0
773
474047
RANCHI-NEW
1.0
407
1749
1032
448008
JEERAT7
1.0
761
1.0
400
444090
JEERAT-NEW
448001
MEDINIPUR7
1.0
770
1.0
405
444001
MEDINIPUR4
428014
ANGUL-A
1.0
773
424018
ANGUL-A
1.0
401
318030
RAIPUR_POOL
1.0
785
428090
ANGUL-B
1.0
773
1.0
767
428017
PARADEEP
424017
PARADEEP
1.0
395
1.0
399
424014
DUBURI
424031
PARADEEP4
1.0
399
422088
PARADEEP_B
1.0
217
508091
SRI_POOL
1.0
785


765/400kV Paradeep S/s
Timeframe 2027-28
Exhibit-B24
Outage of 1x1500MVA ICT
at Paradeep S/s
318032
DHARAMJAIGAR
1.0
770
428072
DARLIPALLI
1.0
765
428091
JHARSUGUDA-B
1.0
765
424091
JHARSUGUDA-B
1.0
402
318998
DHRAM_SPL
1.0
778
1717
478046
RANCHI-NEW
1.0
773
474047
RANCHI-NEW
1.0
407
428015
JHARSUGUDA-A
1.0
785
424015
JHARSUGUDA-A
1.0
406
428014
ANGUL-A
1.0
772
424018
ANGUL-A
1.0
401
318030
RAIPUR_POOL
1.0
785
1.0
772
428090
ANGUL-B
1.0
767
1.0
784
508091
SRI_POOL
448008
JEERAT7
1.0
760
1.0
400
444090
JEERAT-NEW
1.0
770
448001
MEDINIPUR7
1.0
405
444001
MEDINIPUR4
428017
PARADEEP
424017
PARADEEP
1.0
394
1.0
399
424014
DUBURI
424031
PARADEEP4
1.0
398
422088
PARADEEP_B
1.0
217