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**Lampiran 1** Data Tegangan dan Arus Saluran Transmisi Sistem Sulbagsel

| N0 | RUTE TRANSMISI                      | CC | TEG (KV) | PANJANG |       | KONDUKTOR         |          |
|----|-------------------------------------|----|----------|---------|-------|-------------------|----------|
|    |                                     |    |          | (kms)   | (km)  | JENIS             | KHA (kA) |
| 1  | Tello - Tello lama                  | 2  | 150      | 12.8    | 6.4   | TACSR 330         | 1,129    |
| 2  | Tello – Sungguminasa                | 2  | 150      | 21.86   | 10.93 | ACSR 2x435        | 1,636    |
| 3  | Sungguminasa-Tallasa                | 2  | 150      | 52.86   | 26.43 | ACSR 2x435        | 1,636    |
| 4  | Tello – Panakukang                  | 2  | 150      | 8.4     | 4.2   | BRUSSLES 415      | 1,152    |
| 5  | Sungguminasa - Tanjung Bunga        | 2  | 150      | 23.8    | 11.9  | ACSR 2x435        | 1,836    |
| 6  | Sungguminasa-Bollangi               | 2  | 150      | 10.7    | 5.35  | ACSR 2x435        | 1,836    |
| 7  | Sungguminasa-Lanna                  | 2  | 150      | 45.26   | 22.63 | ACSR 2x250        | 1,200    |
| 8  | Tello Lama - GIS Bontoala (SKTT)    | 2  | 150      | 9       | 4.5   | XLPE/Cu 400       | 0,600    |
| 9  | Tanjung Bunga - GIS Bontoala (SKTT) | 2  | 150      | 22      | 11    | N2XCK2Y 1x1000    | 1,023    |
| 10 | Tello – Borongloe                   | 1  | 70       | 12.4    | 6.2   | ACSR 120          | 0,428    |
| 11 | Tello Lama - Bontoala (SKTT)        | 2  | 70       | 8.4     | 4.2   | XLPE/Cu 325       | 0,553    |
| 12 | Pangkep - Bosowa                    | 1  | 150      | 20.9    | 10.45 | ACSR 240          | 0,638    |
| 13 | Pangkep - Kima                      | 1  | 150      | 36.6    | 18.3  | ACSR 240          | 0,638    |
| 14 | Kima – Tello                        | 1  | 150      | 7.65    | 3.825 | ACSR 240          | 0,638    |
| 15 | Tello – Bosowa                      | 1  | 150      | 20.9    | 10.45 | ACSR 240          | 0,638    |
| 16 | Pangkep - Tonasa III                | 2  | 70       | 7.4     | 3.7   | ACSR 120          | 0,428    |
| 17 | Pangkep – Mandai                    | 2  | 70       | 79.4    | 39.7  | ACCC HELSINKI 160 | 0,792    |

## Lanjutan Lampiran 1

| N0 | RUTE TRANSMISI          | CC | TEG (KV) | PANJANG |        | KONDUKTOR               |          |
|----|-------------------------|----|----------|---------|--------|-------------------------|----------|
|    |                         |    |          | (kms)   | (km)   | JENIS                   | KHA (kA) |
| 18 | Mandai – Daya           | 1  | 70       | 5       | 2.5    | ACCC<br>HELSINKI<br>160 | 0,792    |
| 19 | Daya – Tello            | 1  | 70       | 14.6    | 7.3    | ACCC<br>HELSINKI<br>160 | 0,792    |
| 20 | Tello – Mandai          | 1  | 70       | 14      | 7      | ACCC<br>HELSINKI<br>160 | 0,792    |
| 21 | Pangkep - Barru         | 2  | 150      | 20      | 10     | ACSR 240                | 0,638    |
| 22 | Kima - Daya Baru        | 2  | 150      | 32.62   | 16.31  | UGC, XPLE<br>1000       | 0,800    |
| 23 | Daya Baru – Bollangi    | 2  | 150      | 7.38    | 3.69   | ACSR 450                | 1,836    |
| 24 | Daya Baru – Maros       | 2  | 150      | 7.38    | 3.69   | ACSR 450                | 1,836    |
| 25 | Bakaru – Pinrang        | 1  | 150      | 58.65   | 29.325 | ACSR 240                | 0,638    |
| 26 | Bakaru – Polmas         | 1  | 150      | 50.02   | 25.01  | ACSR 240                | 0,638    |
| 27 | Pare Pare – Polmas      | 1  | 150      | 91.1    | 45.55  | ACSR 240                | 0,638    |
| 28 | Pinrang - Pare Pare     | 1  | 150      | 26.06   | 13.03  | ACSR 240                | 0,638    |
| 29 | Pare Pare - Suppa       | 2  | 150      | 15      | 7.5    | ACSR 240                | 0,638    |
| 30 | Pare Pare – Ballusu     | 2  | 150      | 89.68   | 44.84  | ACSR 240                | 0,638    |
| 31 | Ballusu – Pangkep       | 2  | 150      | 89.68   | 44.84  | ACSR 240                | 0,638    |
| 32 | Barru EXT - PLTB Sidrap | 2  | 150      | 75      | 37.675 | ACSR 240                | 0,638    |
| 33 | Barru EXT – Maros       | 2  | 150      | 237.98  | 118.99 | ACSR 240                | 0,638    |
| 34 | Pare Pare – Sidrap      | 2  | 150      | 35      | 17.5   | ACSR 240                | 0,638    |
| 35 | Sidrap – Soppeng        | 2  | 150      | 106.16  | 53.08  | ACSR 240                | 0,638    |

## Lanjutan Lampiran 1

| N0 | RUTE<br>TRANSMISI                    | CC | TEG<br>(KV) | PANJANG |        | KONDUKTOR     |             |
|----|--------------------------------------|----|-------------|---------|--------|---------------|-------------|
|    |                                      |    |             | (kms)   | (km)   | JENIS         | KHA<br>(kA) |
| 36 | Soppeng –<br>Sengkang                | 2  | 150         | 71.16   | 35.58  | ACSR 400      | 0,840       |
| 37 | Siwa-Sengkang                        | 2  | 150         | 132.17  | 66.085 | HAWK<br>2x240 | 1,200       |
| 38 | Sidrap - Makale                      | 1  | 150         | 105.5   | 52.75  | ACSR 433      | 0,918       |
| 39 | Makale –<br>Enrekang                 | 1  | 150         | 53.44   | 26.72  | ACSR 433      | 0,918       |
| 40 | Sidrap –<br>Enrekang                 | 1  | 150         | 51.52   | 25.76  | ACSR 433      | 0,918       |
| 41 | Sengkang –<br>Sidrap                 | 2  | 150         | 124.66  | 62.33  | ACSR 2x435    | 1,836       |
| 42 | Sidrap - PLTB<br>Sidrap              | 2  | 150         | 23.6    | 11.8   | ACSR 2x435    | 1,836       |
| 43 | Makale - Malea                       | 2  | 150         | -       | -      | ACSR 433      | 0,918       |
| 44 | Makale –<br>Rantepao                 | 2  | 150         | -       | -      | -             | -           |
| 45 | Bone –<br>Bulukumba                  | 1  | 150         | 137.2   | 68.6   | ACSR 240      | 0,638       |
| 46 | Bulukumba -<br>Bantaeng<br>Switching | 2  | 150         | 7.3     | 3.65   | ACSR 240      | 0,638       |
| 47 | Jeneponto -<br>Bantaeng New          | 1  | 150         | 23.4    | 11.7   | ACSR 240      | 0,638       |
| 48 | Punagaya –<br>Jeneponto              | 2  | 150         | 62.14   | 31.07  | ACSR 240      | 0,638       |
| 49 | Tallasa –<br>Punagaya                | 2  | 150         | 27      | 13.5   | ACSR 2x435    | 1,836       |
| 50 | Bulukumba –<br>Tanete                | 1  | 150         | -       | -      | ACSR 240      | 0,638       |
| 51 | Sinjai - Tanete                      | 1  | 150         | -       | -      | ACSR 240      | 0,638       |
| 52 | Punagaya -<br>Tanjung Bunga          | 2  | 150         | 121.6   | 60.8   | ACSR 2x450    | 1,836       |
| 53 | Punagaya -<br>PLTU<br>Jeneponto      | 2  | 150         | 1.28    | 0.64   | ACSR 2x435    | 1,836       |

## Lanjutan Lampiran 1

| N0 | RUTE<br>TRANSMISI                           | CC | TEG<br>(KV) | PANJANG |        | KONDUKTOR     |             |
|----|---------------------------------------------|----|-------------|---------|--------|---------------|-------------|
|    |                                             |    |             | (kms)   | (km)   | JENIS         | KHA<br>(kA) |
| 54 | Punagaya -<br>PLTU<br>Jeneponto<br>Ekspansi | 2  | 150         | 1.28    | 0.64   | ACSR<br>2x435 | 1,836       |
| 55 | Jeneponto -<br>PLTB Tolo                    | 2  | 150         | -       | -      | ACSR 240      | 0,638       |
| 56 | Bantaeng<br>Switch -<br>Bantaeng<br>Smelter | 2  | 150         | -       | -      | ACSR 240      | 0,638       |
| 57 | Jeneponto -<br>Bantaeng<br>Switch           | 1  | 150         | 38.69   | 19.345 | ACSR 240      | 0,638       |
| 58 | Bantaeng<br>Switch -<br>Bantaeng New        | 1  | 150         | 15.51   | 7.755  | ACSR 240      | 0,638       |
| 59 | Bone - Sinjai                               | 1  | 150         | 74      | 37.004 | ACSR 240      | 0,638       |
| 60 | Soppeng - Bone                              | 2  | 150         | 87      | 43.322 | ACSR 240      | 0,638       |
| 61 | Soppeng –<br>Bengo                          | 2  | 150         | -       | -      | -             | -           |
| 62 | Majene –<br>Polmas                          | 2  | 150         | 100.32  | 50.16  | ACSR 240      | 0,638       |
| 63 | Majene –<br>Mamuju                          | 2  | 150         | 228.6   | 114.3  | ACSR 240      | 0,638       |
| 64 | Mamuju -<br>Mamuju Baru                     | 2  | 150         | 75.4    | 37.7   | ACSR<br>2x240 | 1,200       |
| 65 | Mamuju Baru -<br>PLTU Mamuju                | 2  | 150         | 14.62   | 7.31   | ACSR<br>2x240 | 1,200       |
| 66 | Mamuju Baru –<br>Topoyo                     | 2  | 150         | 110.28  | 55.14  | ACSR<br>2x240 | 1,200       |
| 67 | Topoyo –<br>Pasangkayu                      | 2  | 150         | 1252.78 | 626.39 | ACSR 240      | 0,638       |
| 68 | Pasangkayu –<br>Silae                       | 2  | 150         | 175.92  | 87.96  | ACSR 240      | 0,638       |
| 69 | Silae - Sidera                              | 2  | 150         | 57.78   | 28.89  | ACSR 240      | 0,638       |
| 70 | Sidera - Poso                               | 2  | 150         | 285.14  | 142.57 | HAWK<br>2x240 | 1,200       |
| 71 | Sidera - Tallise                            | 2  | 150         | -       | -      | ACSR 240      | 0,638       |

## Lanjutan Lampiran 1

| N0 | RUTE<br>TRANSMISI              | CC | TEG<br>(KV) | PANJANG |         | KONDUKTOR               |             |
|----|--------------------------------|----|-------------|---------|---------|-------------------------|-------------|
|    |                                |    |             | (kms)   | (km)    | JENIS                   | KHA<br>(kA) |
| 72 | Sidera 70 KV - Tallise 70 KV   | 1  | 70          | 40.4    | 20.2    | ACSR 185                | 0,638       |
| 73 | Tallise 70 KV - Parigi 70 KV   | 2  | 70          | 87.4    | 43.7    | ACSR 185                | 0,638       |
| 74 | Tallise 70 KV - PLTU PJPP      | 1  | 70          | -       | -       | ACSR 185                | 0,638       |
| 75 | PLTU PJPP - Parigi 70 KV       | 1  | 70          | -       | -       | ACSR 185                | 0,638       |
| 76 | Palopo - Latupa                | 2  | 150         | -       | -       | ACSR 240                | 0,638       |
| 77 | Palopo - Belopa                | 2  | 150         | 48.96   | 24.48   | ACSR 240                | 0,638       |
| 78 | Palopo – Makale                | 2  | 150         | 74.8    | 37.4    | ACSR 240                | 0,638       |
| 79 | Belopa - Siwa                  | 2  | 150         | 40.67   | 20.335  | ACSR 240                | 0,638       |
| 80 | Nii tanasa - Powatu 70 KV      | 2  | 70          | 25.4    | 12.7    | ACCC<br>HELSINKI<br>160 | 0,775       |
| 81 | Powatu 150 KV - Kendari New    | 2  | 150         | 28.36   | 14.18   | ACSR<br>2x240           | 1,200       |
| 82 | Unaha - Kendari New            | 2  | 150         | 101.82  | 50.91   | ACSR<br>2x240           | 1,276       |
| 83 | Unaha - Kolaka                 | 2  | 150         | 147.75  | 73.875  | ACSR<br>2x240           | 1,276       |
| 84 | Latuppa 275 KV - Pamona 275 KV | 1  | 275         | 418     | 209     | 2 x ACSR                | 1,200       |
| 85 | Latuppa 275 KV - Wotu 275 KV   | 1  | 275         | 187.23  | 93.615  | 2 x ACSR                | 1,200       |
| 86 | Wotu 275 KV - Pamona 275 KV    | 1  | 275         | -       | -       | 2 x ACSR                | 1,200       |
| 87 | Wotu - Malili                  | 2  | 150         | 93.09   | 46.545  | ACSR<br>2x240           | 1,200       |
| 88 | Wotu – Masamba                 | 2  | 150         | -       | -       | -                       | -           |
| 89 | Malili - Lasusu                | 2  | 150         | 234.39  | 117.195 | ACSR<br>2x240           | 1,200       |

## Lanjutan Lampiran 1

| N0 | RUTE TRANSMISI    | CC | TEG (KV) | PANJANG |      | KONDUKTOR  |          |
|----|-------------------|----|----------|---------|------|------------|----------|
|    |                   |    |          | (kms)   | (km) | JENIS      | KHA (kA) |
| 90 | Pamona – Sulewana | 2  | 275      | -       | -    | 2 x ACSR   | 1,200    |
| 91 | Pamona - Poso     | 2  | 150      | 87.2    | 43.6 | HAWK 2x240 | 1,200    |
| 92 | Kolaka - Wolo     | 2  | 150      |         |      | ACSR 2x240 | 1,276    |
| 93 | Wolo - Lasusu     | 2  | 150      | 12.22   | 6.11 | ACSR 2x250 | 1,200    |
| 94 | Wolo - BMPT       | 2  | 150      | -       | -    | -          | -        |
| 95 | Unaha – Konawe    | 2  | 150      | -       | -    | -          | -        |
| 96 | Kendari – Andolo  | 2  | 150      | -       | -    | ACSR 2x240 | 1,200    |
| 97 | Andolo – Kasipute | 2  | 150      | -       | -    | ACSR 2x240 | 1,200    |
| 98 | Kendari – Moramo  | 2  | 150      | 28.2    | 14.1 | ACSR 2x240 | 1,200    |

Sumber: PT. PLN (Persero) UIKL Sulawesi

## Lampiran 2 Data Impedansi Saluran Transmisi Sistem Sulbagsel

| N0 | RUTE TRANSMISI                   | IMPEDANSI TRANSMISI/KM |        |               |        |
|----|----------------------------------|------------------------|--------|---------------|--------|
|    |                                  | urutan positif/km      |        | urutan nol/km |        |
|    |                                  | R/km                   | JX/km  | R0/km         | JX0/km |
| 1  | Tello - Tello lama               | 0,091                  | 0,373  | 0,283         | 0,862  |
| 2  | Tello – Sungguminasa             | 0,037                  | 0,280  | 0,189         | 0,872  |
| 3  | Sungguminasa – Tallasa           | 0,037                  | 0,246  | 0,188         | 0,911  |
| 4  | Tello – Panakukang               | 0,093                  | 0,371  | 0,321         | 0,980  |
| 5  | Sungguminasa - Tanjung Bunga     | 0,68                   | 0,398  | 0,238         | 0,909  |
| 6  | Sungguminasa – Bollangi          | 0,032                  | 0,269  | 0,222         | 1,138  |
| 7  | Sungguminasa – Lanna             | 0,0336                 | 0,2614 | 0,184         | 0,784  |
| 8  | Tello Lama - GIS Bontoala (SKTT) | -                      | -      | -             | -      |

## Lanjutan Lampiran 2

| N0 | RUTE TRANSMISI                      | IMPEDANSI TRANSMISI/KM |        |               |        |
|----|-------------------------------------|------------------------|--------|---------------|--------|
|    |                                     | urutan positif/km      |        | urutan nol/km |        |
|    |                                     | R/km                   | JX/km  | R0/km         | JX0/km |
| 9  | Tanjung Bunga - GIS Bontoala (SKTT) | 0,0298                 | 0,1280 | 0,1777        | 0,3880 |
| 10 | Tello – Borongloe                   | 0,240                  | 0,813  | 0,600         | 2,000  |
| 11 | Tello Lama - Bontoala (SKTT)        | 0,240                  | 0,813  | 0,600         | 2,000  |
| 12 | Pangkep – Bosowa                    | 0,122                  | 0,396  | 0,245         | 0,833  |
| 13 | Pangkep – Kima                      | 0,122                  | 0,396  | 0,244         | 0,833  |
| 14 | Kima – Tello                        | 0,125                  | 0,415  | 0,403         | 0,993  |
| 15 | Tello – Bosowa                      | 0,182                  | 0,651  | 1,25          | 1,91   |
| 16 | Pangkep - Tonasa III                | 0,240                  | 0,813  | 0,600         | 2,00   |
| 17 | Pangkep – Mandai                    | 0,232                  | 0,394  | 0,418         | 1,143  |
| 18 | Mandai – Daya                       | 0,240                  | 0,813  | 0,606         | 2,000  |
| 19 | Daya – Tello                        | 0,180                  | 0,363  | 0,433         | 1,068  |
| 20 | Tello – Mandai                      | -                      | -      | -             | -      |
| 21 | Pangkep – Barru                     | 0,122                  | 0,396  | 0,245         | 0,833  |
| 22 | Kima - Daya Baru                    | 0,023                  | 0,155  | 0,077         | 0,077  |
| 23 | Daya Baru – Bollangi                | 0,037                  | 0,260  | 0,169         | 0,672  |
| 24 | Daya Baru – Maros                   | 0,037                  | 0,260  | 0,169         | 0,672  |
| 25 | Bakaru – Pinrang                    | 0,118                  | 0,423  | 0,267         | 1,289  |
| 26 | Bakaru – Polmas                     | 0,118                  | 0,425  | 0,266         | 1,274  |
| 27 | Pare Pare – Polmas                  | 0,118                  | 0,424  | 0,814         | 1,243  |
| 28 | Pinrang - Pare Pare                 | 0,124                  | 0,410  | 0,317         | 1,006  |
| 29 | Pare Pare – Suppa                   | 0,117                  | 0,409  | 0,329         | 1,009  |
| 30 | Pare Pare – Ballusu                 | 0,120                  | 0,40   | 0,295         | 0,967  |
| 31 | Ballusu – Pangkep                   | 0,119                  | 0,402  | 0,297         | 0,990  |
| 32 | Barru EXT - PLTB Sidrap             | 0,122                  | 0,396  | 0,245         | 0,833  |
| 33 | Barru EXT – Maros                   | 0,122                  | 0,396  | 0,245         | 0,833  |
| 34 | Pare Pare – Sidrap                  | 0,137                  | 0,436  | 0,311         | 1,121  |
| 35 | Sidrap – Soppeng                    | 0,122                  | 0,405  | 0,236         | 0,873  |
| 36 | Soppeng – Sengkang                  | 0,072                  | 0,370  | 0,150         | 0,500  |
| 37 | Siwa-Sengkang                       | 0,0336                 | 0,2614 | 0,184         | 0,784  |
| 38 | Sidrap – Makale                     | 0,073                  | 0,390  | 0,189         | 0,931  |
| 39 | Makale – Enrekang                   | 0,073                  | 0,394  | 0,189         | 0,930  |
| 40 | Sidrap – Enrekang                   | 0,073                  | 0,394  | 0,189         | 0,931  |

## Lanjutan Lampiran 2

| N0 | RUTE TRANSMISI                     | IMPEDANSI TRANSMISI/KM |        |               |        |
|----|------------------------------------|------------------------|--------|---------------|--------|
|    |                                    | urutan positif/km      |        | urutan nol/km |        |
|    |                                    | R/km                   | JX/km  | R0/km         | JX0/km |
| 41 | Sengkang – Sidrap                  | 0,035                  | 0,288  | 0,237         | 1,218  |
| 42 | Sidrap - PLTB Sidrap               | 0,039                  | 0,308  | 0,215         | 0,917  |
| 43 | Makale – Malea                     | 0,073                  | 0,390  | 0,189         | 0,931  |
| 44 | Makale – Rantepao                  | -                      | -      | -             | -      |
| 45 | Bone – Bulukumba                   | 0,120                  | 0,406  | 0,300         | 1,000  |
| 46 | Bulukumba - Bantaeng Switching     | 0,120                  | 0,406  | 0,300         | 1,000  |
| 47 | Jeneponto - Bantaeng New           | 0,120                  | 0,406  | 0,300         | 1,000  |
| 48 | Punagaya – Jeneponto               | 0,117                  | 0,396  | 0,293         | 0,975  |
| 49 | Tallasa – Punagaya                 | 0,033                  | 0,274  | 0,226         | 1,161  |
| 50 | Bulukumba – Tanete                 | 0,120                  | 0,406  | 0,300         | 1,000  |
| 51 | Sinjai – Tanete                    | 0,120                  | 0,406  | 0,300         | 1,000  |
| 52 | Punagaya - Tanjung Bunga           | 0,037                  | 0,260  | 0,169         | 0,672  |
| 53 | Punagaya - PLTU Jeneponto          | 0,037                  | 0,260  | 0,169         | 0,672  |
| 54 | Punagaya - PLTU Jeneponto Expansi  | 0,037                  | 0,260  | 0,169         | 0,672  |
| 55 | Jeneponto - PLTB Tolo              | 0,122                  | 0,396  | 0,245         | 0,833  |
| 56 | Bantaeng Switch - Bantaeng Smelter | 0,122                  | 0,396  | 0,245         | 0,833  |
| 57 | Jeneponto - Bantaeng Switch        | 0,122                  | 0,396  | 0,245         | 0,833  |
| 58 | Bantaeng Switch - Bantaeng New     | 0,122                  | 0,396  | 0,245         | 0,833  |
| 59 | Bone – Sinjai                      | 0,122                  | 0,410  | 0,299         | 0,959  |
| 60 | Soppeng – Bone                     | 0,119                  | 0,385  | 0,285         | 0,917  |
| 61 | Soppeng – Bengo                    | -                      | -      | -             | -      |
| 62 | Majene – Polmas                    | 0,122                  | 0,396  | 0,245         | 0,833  |
| 63 | Majene – Mamuju                    | 0,122                  | 0,396  | 0,245         | 0,833  |
| 64 | Mamuju - Mamuju Baru               | 0,0387                 | 0,2807 | 0,1887        | 0,8421 |
| 65 | Mamuju Baru - PLTU Mamuju          | 0,0387                 | 0,2807 | 0,1887        | 0,8421 |
| 66 | Mamuju Baru – Topoyo               | 0,0387                 | 0,2807 | 0,1887        | 0,8421 |
| 67 | Topoyo – Pasangkayu                | 0,122                  | 0,396  | 0,245         | 0,833  |
| 68 | Pasangkayu – Silae                 | 0,122                  | 0,396  | 0,245         | 0,833  |
| 69 | Silae – Sidera                     | 0,122                  | 0,396  | 0,245         | 0,833  |
| 70 | Sidera – Poso                      | 0,0336                 | 0,2614 | 0,184         | 0,784  |

Lanjutan Lampiran 2

| N0 | RUTE TRANSMISI                 | IMPEDANSI TRANSMISI/KM |        |               |        |
|----|--------------------------------|------------------------|--------|---------------|--------|
|    |                                | urutan positif/km      |        | urutan nol/km |        |
|    |                                | R/km                   | JX/km  | R0/km         | JX0/km |
| 71 | Sidera – Tallise               | 0,122                  | 0,396  | 0,245         | 0,833  |
| 72 | Sidera 70 KV - Tallise 70 KV   | 0,122                  | 0,396  | 0,245         | 0,833  |
| 73 | Tallise 70 KV - Parigi 70 KV   | 0,122                  | 0,396  | 0,245         | 0,833  |
| 74 | Tallise 70 KV - PLTU PJPP      | 0,122                  | 0,396  | 0,245         | 0,833  |
| 75 | PLTU PJPP - Parigi 70 KV       | 0,122                  | 0,396  | 0,245         | 0,833  |
| 76 | Palopo – Latupa                | 0,122                  | 0,396  | 0,245         | 0,833  |
| 77 | Palopo – Belopa                | 0,122                  | 0,396  | 0,245         | 0,833  |
| 78 | Palopo – Makale                | 0,122                  | 0,396  | 0,245         | 0,833  |
| 79 | Belopa – Siwa                  | 0,122                  | 0,396  | 0,245         | 0,833  |
| 80 | Nii tanasa - Powatu 70 KV      | 0,200                  | 0,411  | 0,389         | 0,955  |
| 81 | Powatu 150 KV - Kendari New    | 0,061                  | 0,283  | 0,346         | 0,954  |
| 82 | Unaha - Kendari New            | 0,063                  | 0,284  | 0,247         | 0,865  |
| 83 | Unaha – Kolaka                 | 0,064                  | 0,282  | 0,233         | 0,856  |
| 84 | Latuppa 275 KV - Pamona 275 KV | 0,0336                 | 0,2614 | 0,184         | 0,784  |
| 85 | Latuppa 275 KV - Wotu 275 KV   | 0,0336                 | 0,2614 | 0,184         | 0,784  |
| 86 | Wotu 275 KV - Pamona 275 KV    | 0,0336                 | 0,2614 | 0,184         | 0,784  |
| 87 | Wotu – Malili                  | 0,0387                 | 0,2807 | 0,1887        | 0,8421 |
| 88 | Wotu – Masamba                 | -                      | -      | -             | -      |
| 89 | Malili – Lasusu                | 0,0387                 | 0,2807 | 0,1887        | 0,8421 |
| 90 | Pamona – Sulewana              | 0,0336                 | 0,2614 | 0,184         | 0,784  |
| 91 | Pamona – Poso                  | 0,0336                 | 0,2614 | 0,184         | 0,784  |
| 92 | Kolaka – Wolo                  | 0,064                  | 0,282  | 0,233         | 0,856  |
| 93 | Wolo – Lasusu                  | 0,0336                 | 0,2614 | 0,184         | 0,784  |
| 94 | Wolo – BMPT                    | -                      | -      | -             | -      |
| 95 | Unaha – Konawe                 | -                      | -      | -             | -      |
| 96 | Kendari – Andolo               | 0,0387                 | 0,2807 | 0,1887        | 0,8421 |
| 97 | Andolo – Kasipute              | 0,0387                 | 0,2807 | 0,1887        | 0,8421 |
| 98 | Kendari – Moramo               | 0,0387                 | 0,2807 | 0,1887        | 0,8421 |

Sumber: PT. PLN (Persero) UIKL Sulawesi

**Lampiran 3** Data Pembangkit Sistem Sulbagsel

| <b>UNIT<br/>PEMBANGKIT</b> | <b>DAYA<br/>TERPASANG<br/>(MW)</b> | <b>DAYA<br/>MAMPU<br/>NETTO<br/>(MW)</b> | <b>DAYA<br/>MAMPU<br/>PASOK<br/>(MW)</b> | <b>KETERANGAN</b> |
|----------------------------|------------------------------------|------------------------------------------|------------------------------------------|-------------------|
| PLTA Bakaru #1             | 63                                 | 63                                       | 63                                       | PEMBANGKIT<br>PLN |
| PLTA Bakaru #2             | 63                                 | 63                                       | 59                                       |                   |
| PLTA Bili-bili<br>#1       | 5.78                               | 5.78                                     | 5.78                                     |                   |
| PLTA Bili-bili<br>#2       | 13.685                             | 13.685                                   | 13.685                                   |                   |
| PLTM Sawitto               | 1.62                               | 1.44                                     | 0.48                                     |                   |
| PLTU Barru #1              | 50                                 | 45.27                                    | 45                                       |                   |
| PLTU Barru #2              | 50                                 | 45.5                                     | 45                                       |                   |
| PLTU SULSEL<br>BARRU 2     | 100                                | 100                                      | 100                                      |                   |
| PLTG GE #1                 | 33.4                               | 26                                       | 26                                       |                   |
| PLTG GE #2                 | 33.4                               | 28                                       | 28                                       |                   |
| PLTD<br>Mitsubishi #1      | 12.6                               | 8                                        | 8                                        |                   |
| PLTD<br>Mitsubishi #2      | 12.6                               | 8                                        | 8                                        |                   |
| PLTD SWD #1                | 12.396                             | 8                                        | 8                                        |                   |
| PLTD SWD #2                | 12.396                             | 8                                        | 8                                        |                   |
| PLTU Punagaya<br>#1        | 125                                | 100                                      | 100                                      |                   |
| PLTU Punagaya<br>#2        | 125                                | 100                                      | 100                                      |                   |
| PLTU Nii<br>Tanassa #1     | 12                                 | 10                                       | 10                                       |                   |
| PLTU Nii<br>Tanassa #2     | 12                                 | 10                                       | 10                                       |                   |
| PLTU Nii<br>Tanassa #3     | 12                                 | 10.26                                    | 10                                       |                   |
| PLTMG Kendari<br>#1        | 9.78                               | 9.78                                     | 9.78                                     |                   |
| PLTMG Kendari<br>#2        | 9.78                               | 9.78                                     | 9.78                                     |                   |
| PLTMG Kendari<br>#3        | 9.78                               | 9.78                                     | 9.78                                     |                   |
| PLTMG Kendari<br>#4        | 9.78                               | 9.78                                     | 9.78                                     |                   |

## Lanjutan Lampiran 3

| <b>UNIT<br/>PEMBANGKIT</b> | <b>DAYA<br/>TERPASANG<br/>(MW)</b> | <b>DAYA<br/>MAMPU<br/>NETTO<br/>(MW)</b> | <b>DAYA<br/>MAMPU<br/>PASOK<br/>(MW)</b> | <b>KETERANGAN</b> |
|----------------------------|------------------------------------|------------------------------------------|------------------------------------------|-------------------|
| PLTMG Kendari<br>#5        | 9.78                               | 9.78                                     | 9.78                                     |                   |
| PLTMG Kendari<br>#6        | 9.78                               | 9.78                                     | 9.78                                     |                   |
| PLTD Silae #1              | 18                                 | 18                                       | 18                                       |                   |
| PLTD Suppa<br>#UNIT1       | 10.417                             | 10.367                                   | 10.367                                   |                   |
| PLTD Suppa<br>#UNIT2       | 10.417                             | 10.367                                   | 10.367                                   |                   |
| PLTD Suppa<br>#UNIT3       | 10.417                             | 10.367                                   | 10.367                                   |                   |
| PLTD Suppa<br>#UNIT4       | 10.417                             | 10.367                                   | 10.367                                   |                   |
| PLTD Suppa<br>#UNIT5       | 10.417                             | 10.367                                   | 10.367                                   |                   |
| PLTD Suppa<br>#UNIT6       | 10.417                             | 10.367                                   | 10.367                                   |                   |
| PLTA Poso Dua<br>#1        | 65                                 | 65                                       | 65                                       | PEMBANGKIT<br>IPP |
| PLTA Poso Dua<br>#2        | 65                                 | 65                                       | 65                                       |                   |
| PLTA Poso Dua<br>#3        | 65                                 | 65                                       | 65                                       |                   |
| PLTA Poso Dua<br>Ext #1    | 50                                 | 50                                       | 30                                       |                   |
| PLTA Poso Dua<br>Ext #2    | 50                                 | 50                                       | 30                                       |                   |
| PLTA Poso Dua<br>Ext #3    | 50                                 | 50                                       | 30                                       |                   |
| PLTA Poso Dua<br>Ext #4    | 50                                 | 50                                       | 30                                       |                   |
| PLTA Poso Satu<br>#1       | 30                                 | 30                                       | 50                                       |                   |
| PLTA Poso Satu<br>#2       | 30                                 | 30                                       | 50                                       |                   |
| PLTA Poso Satu<br>#3       | 30                                 | 30                                       | 50                                       |                   |
| PLTA Poso Satu<br>#4       | 30                                 | 30                                       | 50                                       |                   |

## Lanjutan Lampiran 3

| <b>UNIT<br/>PEMBANGKIT</b> | <b>DAYA<br/>TERPASANG<br/>(MW)</b> | <b>DAYA<br/>MAMPU<br/>NETTO<br/>(MW)</b> | <b>DAYA<br/>MAMPU<br/>PASOK<br/>(MW)</b> | <b>KETERANGAN</b> |
|----------------------------|------------------------------------|------------------------------------------|------------------------------------------|-------------------|
| PLTU Jeneponto #1          | 125                                | 100                                      | 100                                      |                   |
| PLTU Jeneponto #2          | 125                                | 100                                      | 100                                      |                   |
| PLTU Jeneponto #3          | 135                                | 125                                      | 125                                      |                   |
| PLTU Jeneponto #4          | 135                                | 125                                      | 125                                      |                   |
| PLTU Mamuju #1             | 25                                 | 25                                       | 25                                       |                   |
| PLTU Mamuju #2             | 25                                 | 25                                       | 25                                       |                   |
| PLTU Moramo #1             | 50                                 | 50                                       | 50                                       |                   |
| PLTU Moramo #2             | 50                                 | 50                                       | 50                                       |                   |
| PLTA Malea Ekspansi #1     | 45                                 | 45                                       | 45                                       |                   |
| PLTA Malea Ekspansi #2     | 45                                 | 45                                       | 45                                       |                   |
| PLTB Sidrap (VRE)          | 78.75                              | 77                                       | 77                                       |                   |
| PLTB Tolo (VRE)            | 72                                 | 66                                       | 66                                       |                   |
| Sengkang GT #11            | 42.5                               | 42.5                                     | 42.5                                     |                   |
| Sengkang GT #12            | 42.5                               | 42.5                                     | 42.5                                     |                   |
| Sengkang ST #18            | 50                                 | 50                                       | 50                                       |                   |
| Sengkang GT #21            | 60                                 | 60                                       | 60                                       |                   |
| Sengkang GT #22            | 60                                 | 60                                       | 60                                       |                   |
| Sengkang ST #28            | 60                                 | 60                                       | 60                                       |                   |
| PLTM Malea #1              | 6.7                                | 6.7                                      | 6.7                                      |                   |
| PLTM Malea #2              | 6.7                                | 6.7                                      | 6.7                                      |                   |

## Lanjutan Lampiran 3

| UNIT PEMBANGKIT       | DAYA TERPASANG (MW) | DAYA MAMPU NETTO (MW) | DAYA MAMPU PASOK (MW) | KETERANGAN |
|-----------------------|---------------------|-----------------------|-----------------------|------------|
| PLTA Tangka Manipi #1 | 10                  | 10                    | 10                    |            |
| PLTA Tangka Manipi #2 | 10                  | 10                    | 10                    |            |
| PLTA Tangka Manipi #3 | 10                  | 10                    | 10                    |            |
| PLTM Simbuang         | 3                   | 3                     | 3                     |            |
| PLTM Siteba           | 7.5                 | 7.5                   | 7.5                   |            |
| PLTM Madong #1        | 10                  | 10                    | 10                    |            |

Sumber: PT. PLN (Persero) UP2B Makassar

## Lampiran 4 Data Transformator Distribusi Sistem Sulbagsel

| ULTG  | GARDU INDUK | KAPASITAS |       |          | DATA INPUT BASE 100 MVA |             |
|-------|-------------|-----------|-------|----------|-------------------------|-------------|
|       |             | UNIT      | (MVA) | TEG (KV) | Xpos. (pu)              | Xpos. (ohm) |
| MAROS | Tello       | 1         | 60    | 150/20   | 0,2083                  | 46,88       |
|       |             | 2         | 60    | 150/20   | 0,2208                  | 49,69       |
|       | Daya        | 1         | 20    | 69/20    | 0,5810                  | 28,47       |
|       |             | 2         | 20    | 69/20    | 0,5950                  | 29,16       |
|       | Kima        | 1         | 30    | 150/20   | 0,4167                  | 93,75       |
|       |             | 2         | 60    | 150/20   | 0,2083                  | 46,88       |
|       | Mandai      | 1         | 20    | 69/20    | 0,5810                  | 28,47       |
|       |             | 2         | 20    | 69/20    | 0,5870                  | 28,76       |
|       | Maros       | 1         | 30    | 150/20   | 0,4247                  | 95,55       |
|       |             | 2         | 30    | 150/20   | 0,4146                  | 93,70       |
|       | Pangkep     | 4         | 20    | 150/20   | 0,6165                  | 138,71      |
|       |             | 5         | 30    | 150/20   | 0,4167                  | 93,75       |
|       |             | 6         | 30    | 150/20   | 0,4167                  | 93,75       |
|       | Daya Baru   | 1         | 60    | 150/20   | 0,2083                  | 46,88       |

## Lanjutan lampiran 4

| ULTG              | GARDU<br>INDUK   | KAPASITAS |       |             | DATA INPUT<br>BASE 100 MVA |                 |
|-------------------|------------------|-----------|-------|-------------|----------------------------|-----------------|
|                   |                  | UNIT      | (MVA) | TEG<br>(KV) | X pos.<br>(pu)             | X pos.<br>(ohm) |
| PANAKUKANG        | Bontoala         | 1         | 20    | 69/20/7     | 0,6000                     | 29,40           |
|                   |                  | 2         | 20    | 69/20/7     | 0,6000                     | 29,40           |
|                   | GIS Bontoala     | 1         | 60    | 150/20      | 0,2083                     | 46,88           |
|                   |                  | 2         | 60    | 150/20      | 0,2013                     | 45,29           |
|                   | Panakkukang      | 1         | 60    | 150/20      | 0,4167                     | 93,75           |
|                   |                  | 2         | 60    | 150/20      | 0,2214                     | 49,81           |
|                   |                  | 3         | 60    | 150/20      | 0,2015                     | 45,33           |
|                   | Tallo lama       | 1         | 30    | 150/20      | 0,4243                     | 95,48           |
|                   |                  | 2         | 30    | 150/20      | 0,4243                     | 95,48           |
|                   |                  | 3         | 60    | 150/20      | 0,2083                     | 46,88           |
|                   | Tanjung<br>Bunga | 1         | 60    | 150/20      | 0,2214                     | 49,81           |
|                   |                  | 2         | 60    | 150/20      | 0,2083                     | 46,88           |
|                   |                  | 3         | 60    | 150/20      | 0,2021                     | 45,48           |
|                   | Sungguminasa     | 1         | 60    | 150/20      | 0,2200                     | 49,50           |
|                   |                  | 2         | 60    | 150/20      | 0,2015                     | 45,33           |
|                   | Borongloe        | 1         | 20    | 69/20       | 0,5950                     | 29,16           |
|                   | Bolangi          | 1         | 60    | 150/20      | 0,2083                     | 46,88           |
|                   |                  | 2         | 60    | 150/20      | 0,2083                     | 46,88           |
|                   | Lanna            | 1         | 60    | 150/20      | 0,2083                     | 46,88           |
| ULTG PAREPARE     | Barru            | 1         | 20    | 150/20      | 0,6500                     | 146,25          |
|                   | Balusu           | 1         | 6.3   | -           | -                          | -               |
|                   | Pare pare        | 1         | 30    | 150/20      | 0,3990                     | 89,78           |
|                   |                  | 2         | 16    | 150/20      | 0,6650                     | 149,63          |
|                   |                  | 3         | 30    | 150/20      | 0,3990                     | 89,78           |
|                   | Pinrang          | 1         | 30    | 150/20      | 0,4167                     | 93,75           |
|                   |                  | 2         | 16    | 150/20      | 0,6650                     | 149,63          |
|                   |                  | 3         | 30    | 150/20      | 0,6867                     | 153,15          |
|                   | Bakaru           | 1         | 20    | 150/20      | 0,6165                     | 138,71          |
| ULTG<br>JENEPONTO | Tallasa          | 1         | 30    | 150/20      | 0,4240                     | 95,40           |
|                   |                  | 2         | 20    | 150/20      | 0,6250                     | 140,63          |
|                   |                  | 3         | 60    | 150/20      | 0,2083                     | 46,88           |
|                   | Jeneponto        | 1         | 20    | 150/20      | 0,6120                     | 137,70          |
|                   |                  | 2         | 30    | 150/20      | 0,4167                     | 93,75           |

Lanjutan Lampiran 4

| ULTG           | GARDU<br>INDUK | KAPASITAS |       |             | DATA INPUT<br>BASE 100 MVA |                 |
|----------------|----------------|-----------|-------|-------------|----------------------------|-----------------|
|                |                | UNIT      | (MVA) | TEG<br>(KV) | X pos.<br>(pu)             | X pos.<br>(ohm) |
|                | Bantaeng       | 1         | 30    | 150/20      | 0,4158                     | 93,56           |
|                | Punagaya       | 1         | 30    | 150/20      | 0,4181                     | 94,07           |
| ULTG WATAMPONE | Bulukumba      | 1         | 20    | 150/20      | 0,6120                     | 137,70          |
|                |                | 2         | 30    | 150/20      | 0,4147                     | 93,30           |
|                |                | 3         | 60    | 150/20      | 0,2083                     | 46,88           |
|                | Sinjai         | 1         | 20    | 150/20      | 0,6250                     | 140,63          |
|                |                | 2         | 30    | 150/20      | 0,4167                     | 93,75           |
|                |                | 3         | 30    | 150/20      | 0,4167                     | 93,75           |
|                | Bone           | 1         | 30    | 150/20      | 0,4167                     | 93,75           |
|                |                | 2         | 20    | 150/20      | 0,6120                     | 137,70          |
|                |                | 3         | 30    | 150/20      | 0,4167                     | 93,75           |
|                | Sopeng         | 2         | 30    | 150/20      | 0,4167                     | 93,75           |
|                |                | 3         | 60    | 150/20      | 0,2083                     | 46,88           |
|                | Tanete         | 1         | 30    | 150/20      | 0,4167                     | 93,75           |
| ULTG SIDRAP    | Sidrap         | 1         | 20    | 150/20      | 0,6165                     | 138,71          |
|                |                | 2         | 30    | 150/20      | 0,4100                     | 92,25           |
|                |                | 3         | 30    | 150/20      | 0,4100                     | 92,25           |
|                | Sengkang       | 1         | 20    | 150/20      | 0,6120                     | 137,70          |
|                |                | 2         | 30    | 150/20      | 0,4113                     | 92,55           |
|                |                | 3         | 60    | 150/20      | 0,2083                     | 46,88           |
|                | Enrekang       | 1         | 30    | 150/20      | 0,4167                     | 93,75           |
|                | Makale         | 1         | 20    | 150/20      | 0,6165                     | 138,71          |
|                |                | 2         | 30    | 150/20      | 0,4167                     | 93,75           |
| ULTG PALOPO    | Palopo         | 1         | 20    | 150/20      | 0,6165                     | 138,71          |
|                |                | 2         | 20    | 150/20      | 0,6165                     | 138,71          |
|                |                | 3         | 30    | 150/20      | 0,4167                     | 93,75           |
|                |                | 4         | 30    | 150/20      | 0,4148                     | 93,33           |
|                | Siwa           | 1         | 30    | 150/20      | 0,4095                     | 92,15           |
|                |                | 2         | 60    | 150/20      | 0,2083                     | 46,88           |
|                | Wotu           | 1         | 30    | 150/20      | 0,4167                     | 93,75           |
|                | Malili         | 1         | 30    | 150/20      | 0,4167                     | 93,75           |
|                | Belopa         | 1         | 60    | 150/20      | 0,2083                     | 46,88           |
|                | Masamba        | 1         | 30    | 150/20      | 0,4167                     | 93,75           |

Lanjutan Lampiran 4

| ULTG         | GARDU INDUK    | KAPASITAS |       |             | DATA INPUT<br>BASE 100 MVA |                 |
|--------------|----------------|-----------|-------|-------------|----------------------------|-----------------|
|              |                | UNIT      | (MVA) | TEG<br>(KV) | X pos.<br>(pu)             | X pos.<br>(ohm) |
| ULTG MAMUJU  | Mamuju         | 1         | 20    | 150/20      | 0,5885                     | 132,41          |
|              |                | 2         | 30    | 150/20      | 0,4167                     | 93,75           |
|              |                | 3         | 60    | 150/20      | 0,6250                     | 140,63          |
|              | Mamuju Baru    | 1         | 30    | 150/20      | 0,4167                     | 93,75           |
|              | Majene         | 1         | 20    | 150/20      | 0,6165                     | 138,71          |
|              |                | 2         | 30    | 150/20      | 0,4167                     | 93,75           |
|              | Polmas         | 1         | 20    | 150/20      | 0,6099                     | 137,23          |
|              |                | 2         | 30    | 150/20      | 0,6099                     | 137,23          |
|              | Topoyo         | 1         | 30    | 150/20      | 0,4167                     | 93,75           |
|              | Tanassa        | 1         | 10    | 70/20       | 0,4167                     | 93,75           |
| ULTG KENDARI | Puuwatu        | 1         | 20    | 70/20       | 0,6099                     | 137,23          |
|              |                | 2         | 30    | 70/20       | 0,4167                     | 93,75           |
|              |                | 3         | 30    | 70/20       | 0,4167                     | 93,75           |
|              | Kendari        | 1         | 60    | 150/20      | 0,2083                     | 46,88           |
|              |                | 2         | 60    | 150/20      | 0,2083                     | 46,88           |
|              | Unaaha         | 1         | 30    | 150/20      | 0,4167                     | 93,75           |
|              | Kolaka         | 1         | 30    | 150/20      | 0,4167                     | 93,75           |
|              | Lasusua        | 1         | 30    | 150/20      | 0,4167                     | 93,75           |
|              | Moramo         | 1         | 60    | 150/20      | 0,2083                     | 46,88           |
|              | Konawe         | 1         | 30    | 150/20      | 0,4167                     | 93,75           |
|              |                | 2         | 30    | 150/20      | 0,4167                     | 93,75           |
|              | Kolaka Smelter | 1         | 30    | 150/20      | 0,4167                     | 93,75           |
|              | Andolo         | 1         | 30    | 150/20      | 0,4167                     | 93,75           |
|              | Kasipute       | 1         | 30    | 150/20      | 0,4167                     | 93,75           |
| ULTG PALU    | Pamona         | 1         | 10    | 150/20      | 0,4167                     | 93,75           |
|              | Poso           | 1         | 30    | 150/20      | 0,4167                     | 93,75           |
|              | Sidera         | 1         | 30    | 150/20      | 0,4167                     | 93,75           |
|              |                | 2         | 60    | 150/20      | 0,2083                     | 46,88           |
|              | Silae          | 1         | 30    | 150/20      | 0,4167                     | 93,75           |

Lanjutan Lampiran 4

| ULTG | GARDU<br>INDUK    | KAPASITAS |       |             | DATA INPUT<br>BASE 100 MVA |                 |
|------|-------------------|-----------|-------|-------------|----------------------------|-----------------|
|      |                   | UNIT      | (MVA) | TEG<br>(KV) | X pos.<br>(pu)             | X pos.<br>(ohm) |
|      |                   | 2         | 60    | 150/20      | 0,2083                     | 46,88           |
|      | Tallise 150<br>kV | 4         | 60    | 150/20      | 0,2083                     | 46,88           |
|      | Tallise 70<br>kV  | 2         | 30    | 150/20      | 0,4167                     | 93,75           |
|      |                   | 3         | 30    | 150/20      | 0,4167                     | 93,75           |
|      | Parigi            | 1         | 20    | 70/20       | 0,6099                     | 137,23          |
|      |                   | 2         | 30    | 70/20       | 0,4167                     | 93,75           |
|      | Pasangkayu        | 1         | 30    | 150/20      | 0,4167                     | 93,75           |

Sumber: PT. PLN (Persero) UIKL Makassar

Lampiran 5 Data Transformator IBT Sistem Sulbagsel

| TRAFO IBT  | TEGANGAN (KV) | UNIT | DAYA (MW) |
|------------|---------------|------|-----------|
| Tello      | 150/30        | 1    | 20        |
|            | 150/70        | 3    | 31.5      |
|            | 150/70        | 5    | 31.5      |
| Pangkep    | 150/70        | 1    | 31.5      |
|            | 150/70        | 2    | 60        |
|            | 150/70        | 3    | 60        |
| Tello Lama | 150/70        | 1    | 31.5      |
|            | 150/70        | 2    | 31.5      |
| Wotu       | 275/150       | 1    | 90        |
|            | 275/150       | 2    | 250       |
| Latuppa    | 275/150       | 1    | 90        |
|            | 275/150       | 2    | 90        |
|            | 275/150       | 3    | 90        |
|            | 275/150       | 4    | 90        |
| Pamona     | 275/150       | 1    | 90        |
|            | 275/150       | 2    | 90        |
| Puuwatu    | 150/70        | 1    | 30        |
|            | 150/70        | 2    | 30        |
| Talise     | 150/70        | 1    | 30        |
|            | 150/70        | 2    | 30        |

Sumber: PT. PLN (Persero) UIKL Makassar

**Lampiran 6** Data Daya Bangkitan Sistem Sulbagsel

| <b>JENIS<br/>PEMBANGKIT</b> | <b>PEMBANGKIT</b>   | <b>BP MALAM (19.00)</b> |             |
|-----------------------------|---------------------|-------------------------|-------------|
|                             |                     | <b>MW</b>               | <b>MVAR</b> |
| PLTA                        | BAKARU #1           | 62.00                   | -0.20       |
|                             | BAKARU #2           | 58.00                   | -0.80       |
| PLTA                        | BILI-BILI #1        | 0.00                    | 0.00        |
|                             | BILI-BILI #2        | 8.00                    | -0.10       |
| PLTM                        | SAWITTO             | 0.57                    | 0.00        |
| PLTU                        | BARRU #1            | 0.00                    | 0.00        |
|                             | BARRU #2            | 0.00                    | 0.00        |
| PLTU                        | PLTU SULSEL BARRU-2 | 35.88                   | 21.04       |
| PLTG                        | GE #1               | 25.00                   | 9.20        |
|                             | GE #2               | 28.00                   | 8.40        |
| PLTD                        | MITSUBISHI #1       | 8.00                    | 0.00        |
|                             | MITSUBISHI #2       | 8.00                    | 0.00        |
| PLTD                        | SWD #1              | 8.00                    | 0.00        |
|                             | SWD #2              | 8.00                    | 0.00        |
| PLTU                        | PUNAGAYA #1         | 91.98                   | 43.20       |
|                             | PUNAGAYA #2         | 89.63                   | 41.72       |
| PLTU                        | NII TANASSA #1      | 7.08                    | 0           |
|                             | NII TANASSA #2      | 3.90                    | 0           |
|                             | NII TANASSA #3      | 0.00                    | 0           |
| PLTMG                       | NII TANASSA #1      | 9.00                    | 0           |
|                             | NII TANASSA #2      | 0.00                    | 0           |
|                             | NII TANASSA #3      | 8.00                    | 0           |
|                             | NII TANASSA #4      | 8.80                    | 0           |
|                             | NII TANASSA #5      | 8.00                    | 0           |
|                             | NII TANASSA #6      | 8.00                    | 0           |

Lanjutan Lampiran 6

| JENIS<br>PEMBANGKIT | PEMBANGKIT       | BP MALAM (19.00) |       |
|---------------------|------------------|------------------|-------|
|                     |                  | MW               | MVAR  |
| PLTD                | SILAE            | 10.25            | 0.00  |
| PLTD                | SUPPA #1         | 10.00            | 0.00  |
|                     | SUPPA #2         | 10.00            | 0.00  |
|                     | SUPPA #3         | 10.00            | 0.00  |
|                     | SUPPA #4         | 0.00             | 0.00  |
|                     | SUPPA #5         | 0.00             | 0.00  |
|                     | SUPPA #6         | 0.00             | 0.00  |
| PLTA POSO - 2A      | Unit # 1         | 0.00             | 0.00  |
|                     | Unit # 2         | 45.20            | -1.22 |
|                     | Unit # 3         | 47.30            | -0.78 |
| PLTA POSO - 2B      | Unit # 1         | 40.40            | 1.02  |
|                     | Unit # 2         | 47.70            | 1.50  |
|                     | Unit # 3         | 40.10            | 2.66  |
|                     | Unit # 4         | 40.20            | 2.63  |
| PLTA POSO – 1       | Unit # 1         | 0.00             | 0.00  |
|                     | Unit # 2         | 26.70            | 2.04  |
|                     | Unit # 3         | 30.00            | 1.93  |
|                     | Unit # 4         | 29.34            | 2.24  |
| PLTU                | JENEPONTO #1     | 57.58            | 23.31 |
|                     | JENEPONTO #2     | 65.73            | 26.27 |
| PLTU                | JENEPONTO EXP #3 | 98.28            | 57.42 |
|                     | JENEPONTO EXP #4 | 89.24            | 56.62 |
| PLTU                | MAMUJU #1        | 25.01            | 4.56  |
|                     | MAMUJU #2        | 23.03            | 4.99  |
| PLTU                | MORAMO #1        | 39.80            | 0.00  |
|                     | MORAMO #2        | 35.80            | 0.00  |
| PLTA                | MALEA #1         | 35.39            | 12.04 |
|                     | MALEA #2         | 35.50            | 10.12 |
| PLTB                | SIDRAP           | 19.51            | -0.11 |
| PLTB                | TOLO             | 37.80            | 0.06  |
| PLTG                | SENGKANG GT #11  | 0.00             | 0.00  |
| PLTG                | SENGKANG GT #12  | 0.00             | 0.00  |
| PLTGU               | SENGKANG ST #18  | 0.00             | 0.00  |
| PLTG                | SENGKANG GT #21  | 0.00             | 0.00  |

Lanjutan Lampiran 6

| JENIS<br>PEMBANGKIT | PEMBANGKIT       | BP MALAM (19.00) |      |
|---------------------|------------------|------------------|------|
|                     |                  | MW               | MVAR |
| PLTG                | SENGKANG GT #22  | 0.00             | 0.00 |
| PLTGU               | SENGKANG ST #28  | 0.00             | 0.00 |
| PLTM                | MALEA #1         | 2.07             | 0.00 |
|                     | MALEA #2         | 2.07             | 0.00 |
| PLTA                | TANGKA MANIPI #1 | 0.00             | 0.00 |
|                     | TANGKA MANIPI #2 | 0.00             | 0.00 |
|                     | TANGKA MANIPI #3 | 0.00             | 0.00 |
| PLTM                | SIMBUANG         | 0.00             | 0.00 |
| PLTM                | SITEBA           | 2.01             | 0.04 |
| PLTM                | MADONG #1        | 6.00             | 1.09 |

Sumber: PT. PLN (Persero) UP2B Makassar

Lampiran 7 Data Beban Sistem Sulbagsel

| ULTG       | GARDU INDUK | KAPASITAS |      | BP MALAM (19.00) |      |
|------------|-------------|-----------|------|------------------|------|
|            |             | UNIT      | DAYA | MW               | MVAR |
| ULTG MAROS | Tello       | 1         | 60   | 45.8             | 8.9  |
|            |             | 2         | 60   | 0                | 0    |
|            | Daya        | 1         | 20   | 0                | 0    |
|            |             | 2         | 20   | 13               | 2.7  |
|            | Kima        | 1         | 30   | 12               | 3.3  |
|            |             | 2         | 60   | 16.2             | 6    |
|            | Mandai      | 1         | 20   | 10.7             | 2.6  |
|            |             | 2         | 20   | 12.7             | 2.8  |
|            | Maros       | 1         | 30   | 10               | 2    |
|            |             | 2         | 30   | 15.4             | 2.6  |
|            | Pangkep     | 4         | 20   | 9.7              | 2    |
|            |             | 5         | 30   | 13.3             | 2.5  |
|            |             | 6         | 30   | 0                | 0    |
|            | Daya Baru   | 1         | 60   | 17.8             | 0    |

Lanjutan Lampiran 7

| ULTG             | GARDU INDUK   | KAPASITAS |      | BP MALAM (19.00) |      |
|------------------|---------------|-----------|------|------------------|------|
|                  |               | UNIT      | DAYA | MW               | MVAR |
| ULTG PANAKKUKANG | Bontoala      | 1         | 20   | 0                | 0    |
|                  |               | 2         | 20   | 0                | 0    |
|                  | GIS Bontoala  | 1         | 60   | 26.6             | 7.3  |
|                  |               | 2         | 60   | 21.3             | 6.3  |
|                  | Panakkukang   | 1         | 60   | 0                | 0    |
|                  |               | 2         | 60   | 34.7             | 7.8  |
|                  |               | 3         | 60   | 45.4             | 8.9  |
|                  | Tallo lama    | 1         | 30   | 0                | 0    |
|                  |               | 2         | 60   | 14.9             | 4.2  |
|                  |               | 3         | 60   | 27.2             | 5.2  |
|                  | Tanjung Bunga | 1         | 60   | 20.1             | 5.7  |
|                  |               | 2         | 60   | 16.5             | 4.6  |
|                  |               | 3         | 60   | 14.8             | 2.7  |
|                  | Sungguminasa  | 1         | 60   | 17.5             | 3.7  |
|                  |               | 2         | 60   | 29.2             | 5.5  |
|                  | Borongloe     | 1         | 20   | 6.1              | 4.1  |
|                  | Bolangi       | 1         | 60   | 26               | 5.3  |
|                  |               | 2         | 60   | 0                | 0    |
|                  | Lanna         | 1         | 60   | 1.9              | 0    |
|                  |               | 2         | 0    | 0                | 0    |
| ULTG PAREPARE    | Barru         | 1         | 20   | 10               | 1.7  |
|                  | Balusu        | 1         | 6.3  | 3.7              | 0.6  |
|                  | Pare pare     | 1         | 30   | 16.9             | 3.8  |
|                  |               | 2         | 16   | 0                | 0    |
|                  |               | 3         | 30   | 5.5              | 1.1  |
|                  | Pinrang       | 1         | 30   | 19.8             | 6.6  |
|                  |               | 2         | 16   | 0                | 0    |
|                  |               | 3         | 30   | 16.8             | 5.1  |
|                  | Bakaru        | 1         | 20   | 0.1              | 0    |
| ULTG JENEPONTO   | Tallasa       | 1         | 30   | 8.6              | 2.4  |
|                  |               | 2         | 20   | 0                | 0    |
|                  |               | 3         | 60   | 17.5             | 4.7  |
|                  | Jeneponto     | 1         | 20   | 11.3             | 2.2  |
|                  |               | 2         | 30   | 13.4             | 2.2  |

## Lanjutan Lampiran 7

| ULTG           | GARDU INDUK | KAPASITAS |      | BP MALAM (19.00) |       |
|----------------|-------------|-----------|------|------------------|-------|
|                |             | UNIT      | DAYA | MW               | MVAR  |
|                | Bantaeng    | 1         | 30   | 12.5             | 0.9   |
|                | Punagaya    | 1         | 30   | 4.71             | 0     |
| ULTG WATAMPONE | Bulukumba   | 1         | 20   | 4.1              | 0.5   |
|                |             | 2         | 30   | 15.2             | 3.9   |
|                |             | 3         | 60   | 11.1             | 1.4   |
|                | Sinjai      | 1         | 20   | 12.75            | 0.5   |
|                |             | 2         | 30   | 15.1             | 2.5   |
|                |             | 3         | 30   | 0                | 0     |
|                | Bone        | 1         | 30   | 16.5             | 3.4   |
|                |             | 2         | 20   | 0                | 0     |
|                |             | 3         | 30   | 10.5             | 3.7   |
|                | Sopeng      | 2         | 30   | 6.8              | 1.1   |
|                |             | 3         | 60   | 11.1             | 2.2   |
|                | Tanete      | 1         | 30   | 5.24             | 0.47  |
| ULTG SIDRAP    | Sidrap      | 1         | 20   | 12.3             | 3.1   |
|                |             | 2         | 30   | 0                | 0     |
|                |             | 3         | 30   | 11.2             | 0     |
|                | Sengkang    | 1         | 20   | 0                | 5.5   |
|                |             | 2         | 30   | 16.5             | 3.3   |
|                |             | 3         | 60   | 12.5             | 0     |
|                | Enrekang    | 1         | 30   | 13.9             | 1.7   |
|                | Makale      | 1         | 20   | 3.4              | 0.3   |
|                |             | 2         | 30   | 2.5              | -2.6  |
| ULTG PALOPO    | Palopo      | 1         | 20   | 11.9             | 3.1   |
|                |             | 2         | 20   | 5.7              | 1     |
|                |             | 3         | 30   | 0                | 0     |
|                |             | 4         | 30   | 8.5              | 1.4   |
|                | Siwa        | 1         | 30   | 4.8              | 0.5   |
|                |             | 2         | 60   | 0                | 0     |
|                | Wotu        | 1         | 30   | 8.89             | 1.48  |
|                | Malili      | 1         | 30   | 3.45             | -0.27 |
|                | Belopa      | 1         | 60   | 12.5             | 3.6   |

## Lanjutan Lampiran 7

| ULTG         | GARDU INDUK    | KAPASITAS |      | BP MALAM (19.00) |       |
|--------------|----------------|-----------|------|------------------|-------|
|              |                | UNIT      | DAYA | MW               | MVAR  |
|              | Masamba        | 1         | 30   | 8.74             | 0     |
| ULTG MAMUJU  | Mamuju         | 1         | 20   | 4.3              | 0.7   |
|              |                | 2         | 30   | 4.8              | 0.3   |
|              |                | 3         | 60   | 5.1              | 0.9   |
|              |                | 1         | 30   | 7.5              | -0.14 |
|              | Majene         | 1         | 20   | 6.7              | 0.6   |
|              |                | 2         | 30   | 9.3              | 0     |
|              | Polmas         | 1         | 20   | 9.6              | 2.1   |
|              |                | 2         | 30   | 8.1              | 0.3   |
|              | Topoyo         | 1         | 30   | 8.3              | 0     |
| ULTG KENDARI | Tanassa        | 1         | 10   | 1.84             | 0.32  |
|              | Puuwatu        | 1         | 20   | 8.7              | 3.5   |
|              |                | 2         | 30   | 1.4              | 0.6   |
|              |                | 3         | 30   | 10.7             | 3.8   |
|              | Kendari        | 1         | 60   | 15.61            | 6.07  |
|              |                | 2         | 60   | 12.35            | 3.46  |
|              | Unaaha         | 1         | 30   | 16.24            | 4.61  |
|              | Kolaka         | 1         | 30   | 12.35            | 3.33  |
|              | Lasusua        | 1         | 30   | 7.65             | 1.45  |
|              | Moramo         | 1         | 60   | 9.6              | 1.86  |
|              | Konawe         | 1         | 30   | 0                | 1.25  |
|              | Kolaka Smelter | 1         | 30   | 2.74             | 0     |
|              | Andolo         | 1         | 30   | 9.97             | 0     |
|              | Kasipute       | 1         | 30   | 7.05             | 0     |
| ULTG PALU    | Pamona         | 1         | 10   | -1.13            | 2.15  |
|              | Poso           | 1         | 30   | 9.2              | 1.81  |
|              | Sidera         | 1         | 30   | 0                | 0     |
|              |                | 2         | 60   | 16.5             | 2.2   |
|              | Silae          | 1         | 30   | 0                | 0     |
|              |                | 2         | 60   | 22.5             | 6.7   |
|              | Tallise 150 kV | 4         | 60   | 12.7             | 6.4   |
|              | Tallise 70 kV  | 2         | 30   | 14.1             | 2.3   |
|              |                | 3         | 30   | 7.4              | 0     |
|              | Parigi         | 1         | 20   | 8.2              | 0     |

## Lanjutan Lampiran 7

| ULTG      | GARDU INDUK    | KAPASITAS |      | BP MALAM (19.00) |      |
|-----------|----------------|-----------|------|------------------|------|
|           |                | UNIT      | DAYA | MW               | MVAR |
| PELANGGAN |                | 2         | 30   | 10.1             | 3.3  |
|           | Pasangkayu     | 1         | 30   | 14.1             | 2.4  |
|           | TONASA         |           | 90   | 86.7             |      |
|           | BOSOWA         |           | 68   | 36.3             |      |
|           | HUADI#1        |           | 40   | 19.6             |      |
|           | HUADI#2 YATAI  |           | 150  | 20.2             |      |
|           | HUADI#3 WUZHOU |           | 90   | 23.3             |      |
|           | TONASA 3&4     |           |      | 31.1             |      |
|           | TONASA 5       |           |      | 31.6             |      |

Sumber: PT. PLN (Persero) UP2B Makassar

## Lampiran 9 Data Tipikal Inersia Pembangkit

| UNIT PEMBANGKIT | MOMEN INERSIA<br>MW.Scc./MVA (H) |
|-----------------|----------------------------------|
| PLTU            | 5                                |
| PLTG            | 5.1                              |
| PLTA            | 2.97                             |
| PLTD            | 1.02                             |
| PLTGU           | 5.56                             |

Sumber: PT. PLN (Persero) UIKL Makassar

## Lampiran 10 Data Tipikal Governor pada Pembangkit

| JENIS<br>PEMBANGKIT | AVR    | GOVERNOR |
|---------------------|--------|----------|
| PLTD                | SEXS   | DEGOV    |
| PLTU                | IEEET1 | TGOV1    |
| PLTG                | ESST1A | GAST     |
| PLTA/PLTM           | SCRX   | HYGOV    |

Sumber: Engineering Academy Powered by Anak Teknik Indonesia

## Lampiran 11 Hasil Load Flow

|                                           |  |  |  |  |  |  |  |  |  |                                            |        |                   |       |                       |       |                  |            |                          |            |                 |           |
|-------------------------------------------|--|--|--|--|--|--|--|--|--|--------------------------------------------|--------|-------------------|-------|-----------------------|-------|------------------|------------|--------------------------|------------|-----------------|-----------|
|                                           |  |  |  |  |  |  |  |  |  | DigSILENT                                  |        | Project:          |       |                       |       |                  |            |                          |            |                 |           |
|                                           |  |  |  |  |  |  |  |  |  | PowerFactory                               |        | -                 |       |                       |       |                  |            |                          |            |                 |           |
|                                           |  |  |  |  |  |  |  |  |  | 15.1.7                                     |        | Date: 10/13/2024  |       |                       |       |                  |            |                          |            |                 |           |
| Load Flow Calculation                     |  |  |  |  |  |  |  |  |  | Busbars/Terminals                          |        |                   |       |                       |       |                  |            |                          |            |                 |           |
| AC Load Flow, balanced, positive sequence |  |  |  |  |  |  |  |  |  | Automatic Model Adaptation for Convergence |        |                   |       | No                    |       |                  |            |                          |            |                 |           |
| Automatic Tap Adjust of Transformers      |  |  |  |  |  |  |  |  |  | Max. Acceptable Load Flow Error for        |        |                   |       |                       |       |                  |            |                          |            |                 |           |
| Consider Reactive Power Limits            |  |  |  |  |  |  |  |  |  | Nodes                                      |        |                   |       | 1.00 kVA              |       |                  |            |                          |            |                 |           |
|                                           |  |  |  |  |  |  |  |  |  | Model Equations                            |        |                   |       | 0.10 %                |       |                  |            |                          |            |                 |           |
| Grid: Grid                                |  |  |  |  |  |  |  |  |  | System Stage: Grid                         |        |                   |       | Study Case: Case 01   |       | Annex:           |            | / 1                      |            |                 |           |
| rated Voltage [kV]                        |  |  |  |  |  |  |  |  |  | Bus-voltage [p.u.] [kV] [deg]              |        | Active Power [MW] |       | Reactive Power [Mvar] |       | Power Factor [-] |            | Current Loading [kA] [%] |            | Additional Data |           |
| 1PLTA POS03                               |  |  |  |  |  |  |  |  |  |                                            |        |                   |       |                       |       |                  |            |                          |            |                 |           |
| PLTA 2POS0.00                             |  |  |  |  |  |  |  |  |  | 1.00                                       | 11.00  | 22.90             |       |                       |       |                  |            |                          |            |                 |           |
| Cub_1 /Sym                                |  |  |  |  |  |  |  |  |  | POSO 2A #3                                 | 48.18  | 23.81             | 0.90  | 2.82                  | 82.67 | IType:           | FV         |                          |            |                 |           |
| Cub_1 /Tr2                                |  |  |  |  |  |  |  |  |  | TG POSO 2A #3                              | 48.18  | 23.81             | 0.90  | 2.82                  | 67.17 | ITap:            | 4.00       | Min:                     | 1          | Max:            | 5         |
| 1PLTU NTNSA                               |  |  |  |  |  |  |  |  |  |                                            |        |                   |       |                       |       |                  |            |                          |            |                 |           |
| PLTU NI TA.00                             |  |  |  |  |  |  |  |  |  | 1.00                                       | 20.00  | 22.39             |       |                       |       |                  |            |                          |            |                 |           |
| Cub_1 /Sym                                |  |  |  |  |  |  |  |  |  | PLTU N11 TNASA#2                           | 4.00   | -1.19             | 0.96  | 0.12                  | 34.78 | IType:           | FV         |                          |            |                 |           |
| Cub_1 /Tr2                                |  |  |  |  |  |  |  |  |  | TG PLTU NTNSA2                             | 4.00   | -1.19             | 0.96  | 0.12                  | 34.78 | ITap:            | 9.00       | Min:                     | 1          | Max:            | 18        |
| 2PLTA POS02                               |  |  |  |  |  |  |  |  |  |                                            |        |                   |       |                       |       |                  |            |                          |            |                 |           |
| PLTA 2POS0.00                             |  |  |  |  |  |  |  |  |  | 0.97                                       | 10.62  | 18.43             |       |                       |       |                  |            |                          |            |                 |           |
| Cub_1 /Sym                                |  |  |  |  |  |  |  |  |  | POSO 2A #1                                 |        |                   |       |                       |       | IType:           | FV         |                          |            |                 |           |
| Cubicle/Coup                              |  |  |  |  |  |  |  |  |  | CBS                                        |        |                   |       |                       |       |                  |            |                          |            |                 |           |
| Cub_1 /Tr2                                |  |  |  |  |  |  |  |  |  | TG POSO 2A #1                              | -0.00  | 0.00              | -1.00 | 0.00                  | 0.00  | ITap:            | 4.00       | Min:                     | 1          | Max:            | 5         |
| PLTA 2POS0.00                             |  |  |  |  |  |  |  |  |  | 1.00                                       | 11.00  | 22.73             |       |                       |       |                  |            |                          |            |                 |           |
| Cub_1 /Sym                                |  |  |  |  |  |  |  |  |  | POSO 2A #2                                 | 46.41  | 23.67             | 0.89  | 2.73                  | 80.15 | IType:           | FV         |                          |            |                 |           |
| Cubicle/Coup                              |  |  |  |  |  |  |  |  |  | CBS                                        |        |                   |       |                       |       |                  |            |                          |            |                 |           |
| Cub_1 /Tr2                                |  |  |  |  |  |  |  |  |  | TG POSO 2A #2                              | 46.41  | 23.67             | 0.89  | 2.73                  | 65.12 | ITap:            | 4.00       | Min:                     | 1          | Max:            | 5         |
| 1ADLOG                                    |  |  |  |  |  |  |  |  |  |                                            |        |                   |       |                       |       |                  |            |                          |            |                 |           |
| ANDOLO 150.00                             |  |  |  |  |  |  |  |  |  | 0.99                                       | 148.49 | 16.31             |       |                       |       |                  |            |                          |            |                 |           |
| Cub_1 /Lne                                |  |  |  |  |  |  |  |  |  | ANDOLO-KASIPUTE                            | 3.48   | 2.62              | 0.80  | 0.02                  | 1.33  | IPv:             | 0.78 kW    | cLod:                    | -0.00 Mvar | L:              | 15.00 km  |
| Cub_1 /Lne                                |  |  |  |  |  |  |  |  |  | ANDOLO-KASIPUTE(1)                         | 3.48   | 2.62              | 0.80  | 0.02                  | 1.33  | IPv:             | 0.78 kW    | cLod:                    | -0.00 Mvar | L:              | 15.00 km  |
| Cub_1 /Lne                                |  |  |  |  |  |  |  |  |  | KENDARI - ANDOLO                           | -8.40  | -5.35             | -0.84 | 0.04                  | 3.04  | IPv:             | 5.40 kW    | cLod:                    | -0.00 Mvar | L:              | 20.00 km  |
| Cub_1 /Lne                                |  |  |  |  |  |  |  |  |  | KENDARI - ANDOLO(1)                        | -8.40  | -5.35             | -0.84 | 0.04                  | 3.04  | IPv:             | 5.40 kW    | cLod:                    | -0.00 Mvar | L:              | 20.00 km  |
| Cub_1 /Tr2                                |  |  |  |  |  |  |  |  |  | DIS-ANDOLO-30MVA                           | 9.85   | 5.45              | 0.87  | 0.04                  | 37.89 | ITap:            | 8.00       | Min:                     | 1          | Max:            | 18        |
| Grid: Grid                                |  |  |  |  |  |  |  |  |  |                                            |        |                   |       |                       |       |                  |            |                          |            |                 |           |
| rated Voltage [kV]                        |  |  |  |  |  |  |  |  |  | Bus-voltage [p.u.] [kV] [deg]              |        | Active Power [MW] |       | Reactive Power [Mvar] |       | Power Factor [-] |            | Current Loading [kA] [%] |            | Additional Data |           |
| 1ANDOLO 20KV                              |  |  |  |  |  |  |  |  |  |                                            |        |                   |       |                       |       |                  |            |                          |            |                 |           |
| ANDOLO 20K.00                             |  |  |  |  |  |  |  |  |  | 0.99                                       | 19.87  | 13.98             |       |                       |       |                  |            |                          |            |                 |           |
| Cub_1 /Lod                                |  |  |  |  |  |  |  |  |  | LOAD-ANDOLO                                | 9.85   | 4.94              | 0.89  | 0.32                  |       | PI0:             | 9.97 MW    | Q10:                     | 5.00 Mvar  |                 |           |
| Cub_1 /Tr2                                |  |  |  |  |  |  |  |  |  | DIS-ANDOLO-30MVA                           | -9.85  | -4.94             | -0.89 | 0.32                  | 37.89 | ITap:            | 8.00       | Min:                     | 1          | Max:            | 18        |
| 1BAKARU 1                                 |  |  |  |  |  |  |  |  |  |                                            |        |                   |       |                       |       |                  |            |                          |            |                 |           |
| BAKARU 111.00                             |  |  |  |  |  |  |  |  |  | 1.00                                       | 11.00  | 12.56             |       |                       |       |                  |            |                          |            |                 |           |
| Cub_1 /Sym                                |  |  |  |  |  |  |  |  |  | PLTA BAKARU#1(1)                           | 52.97  | 14.71             | 0.96  | 2.89                  | 87.26 | IType:           | FV         |                          |            |                 |           |
| Cubicle/Coup                              |  |  |  |  |  |  |  |  |  | CBS                                        |        |                   |       |                       |       |                  |            |                          |            |                 |           |
| Cub_1 /Tr2                                |  |  |  |  |  |  |  |  |  | TG BAKARU1                                 | 52.97  | 14.71             | 0.96  | 2.89                  | 68.71 | ITap:            | 8.00       | Min:                     | 1          | Max:            | 18        |
| BB2 11.00                                 |  |  |  |  |  |  |  |  |  | 1.00                                       | 11.00  | 11.91             |       |                       |       |                  |            |                          |            |                 |           |
| Cub_1 /Sym                                |  |  |  |  |  |  |  |  |  | PLTA BAKARU#2(1)                           | 49.60  | 15.47             | 0.95  | 2.73                  | 82.48 | IType:           | FV         |                          |            |                 |           |
| Cubicle/Coup                              |  |  |  |  |  |  |  |  |  | CBS                                        |        |                   |       |                       |       |                  |            |                          |            |                 |           |
| Cub_1 /Tr2                                |  |  |  |  |  |  |  |  |  | TG BAKARU2                                 | 49.60  | 15.47             | 0.95  | 2.73                  | 64.95 | ITap:            | 8.00       | Min:                     | 1          | Max:            | 18        |
| 1BAKARU 20KV                              |  |  |  |  |  |  |  |  |  |                                            |        |                   |       |                       |       |                  |            |                          |            |                 |           |
| BAKARU 20K.00                             |  |  |  |  |  |  |  |  |  | 1.00                                       | 19.93  | 8.02              |       |                       |       |                  |            |                          |            |                 |           |
| Cub_1 /Lod                                |  |  |  |  |  |  |  |  |  | LOAD-BAKARU                                | 0.10   | 0.00              | 1.00  | 0.00                  |       | PI0:             | 0.10 MW    | Q10:                     | 0.00 Mvar  |                 |           |
| Cub_1 /Tr2                                |  |  |  |  |  |  |  |  |  | DIS-BAKARU-20MVA(2                         | -0.10  | -0.00             | -1.00 | 0.00                  | 0.50  | ITap:            | 9.00       | Min:                     | 1          | Max:            | 18        |
| 1BAKARU                                   |  |  |  |  |  |  |  |  |  |                                            |        |                   |       |                       |       |                  |            |                          |            |                 |           |
| BAKARU 150.00                             |  |  |  |  |  |  |  |  |  | 1.00                                       | 149.45 | 8.05              |       |                       |       |                  |            |                          |            |                 |           |
| Cub_1 /Lne                                |  |  |  |  |  |  |  |  |  | BAKARU - PLMAS                             | 72.84  | 18.14             | 0.97  | 0.29                  | 45.46 | IPv:             | 1489.25 kW | cLod:                    | -0.00 Mvar | L:              | 50.02 km  |
| Cub_1 /Lne                                |  |  |  |  |  |  |  |  |  | PRANG - BAKARU                             | 29.63  | 4.04              | 0.99  | 0.12                  | 18.11 | IPv:             | 1133.71 kW | cLod:                    | -0.00 Mvar | L:              | 240.00 km |
| Cub_1 /Tr2                                |  |  |  |  |  |  |  |  |  | 2-Winding Transfor                         | 0.00   | 0.00              | 1.00  | 0.00                  | 0.00  | ITap:            | 8.00       | Min:                     | 1          | Max:            | 18        |
| Cub_1 /Tr2                                |  |  |  |  |  |  |  |  |  | 2-Winding Transfor                         | 0.00   | 0.00              | 1.00  | 0.00                  | 0.00  | ITap:            | 8.00       | Min:                     | 1          | Max:            | 18        |
| Cub_1 /Tr2                                |  |  |  |  |  |  |  |  |  | DIS-BAKARU-20MVA(2                         | 0.10   | 0.00              | 1.00  | 0.00                  | 0.50  | ITap:            | 9.00       | Min:                     | 1          | Max:            | 18        |
| Cub_1 /Tr2                                |  |  |  |  |  |  |  |  |  | TG BAKARU1                                 | -52.97 | -10.31            | -0.98 | 0.21                  | 68.71 | ITap:            | 8.00       | Min:                     | 1          | Max:            | 18        |
| Cub_1 /Tr2                                |  |  |  |  |  |  |  |  |  | TG BAKARU2                                 | -49.60 | -11.87            | -0.97 | 0.20                  | 64.95 | ITap:            | 8.00       | Min:                     | 1          | Max:            | 18        |
| 1BAKARU2                                  |  |  |  |  |  |  |  |  |  |                                            |        |                   |       |                       |       |                  |            |                          |            |                 |           |
| BAKARU 211.00                             |  |  |  |  |  |  |  |  |  | 0.98                                       | 10.80  | 8.05              |       |                       |       |                  |            |                          |            |                 |           |
| Cub_1 /Sym                                |  |  |  |  |  |  |  |  |  | PLTA BAKARU2 #1                            | 0.00   | 0.00              | 1.00  | 0.00                  | 0.00  | IType:           | FV         |                          |            |                 |           |
| Cubicle/Coup                              |  |  |  |  |  |  |  |  |  | CBS                                        |        |                   |       |                       |       |                  |            |                          |            |                 |           |
| Cub_1 /Tr2                                |  |  |  |  |  |  |  |  |  | 2-Winding Transfor                         | -0.00  | 0.00              | -1.00 | 0.00                  | 0.00  | ITap:            | 8.00       | Min:                     | 1          | Max:            | 18        |
| BAKARU 2(1.00                             |  |  |  |  |  |  |  |  |  | 0.98                                       | 10.80  | 8.05              |       |                       |       |                  |            |                          |            |                 |           |
| Cub_1 /Sym                                |  |  |  |  |  |  |  |  |  | PLTA BAKARU2 #2                            | 0.00   | 0.00              | 1.00  | 0.00                  | 0.00  | IType:           | FV         |                          |            |                 |           |
| Cubicle/Coup                              |  |  |  |  |  |  |  |  |  | CBS                                        |        |                   |       |                       |       |                  |            |                          |            |                 |           |
| Cub_1 /Tr2                                |  |  |  |  |  |  |  |  |  | 2-Winding Transfor                         | -0.00  | 0.00              | -1.00 | 0.00                  | 0.00  | ITap:            | 8.00       | Min:                     | 1          | Max:            | 18        |

| Grid: Grid      |                    | System Stage: Grid |        |              |                | Study Case: Case 01 |         |         |                 | Annex:    |                 |             |        | / 3  |       |
|-----------------|--------------------|--------------------|--------|--------------|----------------|---------------------|---------|---------|-----------------|-----------|-----------------|-------------|--------|------|-------|
|                 | rated              | Bus-voltage        | deg    | Active Power | Reactive Power | Power Factor        | Current | Loading | Additional Data |           |                 |             |        |      |       |
|                 | Voltage            |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
|                 | [kV]               |                    |        |              |                |                     |         |         |                 |           |                 |             | [p.u.] | [kV] | [deg] |
|                 |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BANTAENG SWITCH |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BANTAENG 5.00   |                    | 0.97               | 145.50 | -2.01        |                |                     |         |         |                 |           |                 |             |        |      |       |
| Cub_1 /Lne      | BLQKBA - BNTNG SWT |                    |        | 8.50         | 13.40          | 0.54                | 0.06    | 9.87    | 10.41           | 10.41 kW  | cLod: 0.00 Mvar | L: 7.30 km  |        |      |       |
| Cub_1 /Lne      | BNTNG NEW - BNTNG  |                    |        | 11.27        | 0.87           | 1.00                | 0.04    | 7.03    | 12.90           | 12.90 kW  | cLod: 0.00 Mvar | L: 15.95 km |        |      |       |
| Cub_1 /Lne      | BNTNG NEW - BNTNG  |                    |        | 11.27        | 0.87           | 1.00                | 0.04    | 7.03    | 12.90           | 12.90 kW  | cLod: 0.00 Mvar | L: 15.95 km |        |      |       |
| Cub_1 /Lne      | BNTNG NEW - BNTNG  |                    |        | -31.04       | -15.15         | -0.90               | 0.14    | 21.48   | 117.70          | 117.70 kW | cLod: 0.00 Mvar | L: 15.59 km |        |      |       |
| Cub_1 /Tr2      | DIS-HUADI3         |                    |        | 0.00         | 0.00           | 1.00                | 0.00    | 0.00    | 10.00           |           | Min: 1          | Max: 18     |        |      |       |
|                 |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR BILI1       |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR BILI11.00   |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| Cub_1 /Sym      | PLTA BILI#1        |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| Cub_1 /Tr2      | TG PLTA BILI1      |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
|                 |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR BILI2       |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR BILI21.00   |                    | 1.00               | 11.00  | -9.60        |                |                     |         |         |                 |           |                 |             |        |      |       |
| Cub_1 /Sym      | PLTA BILI#2        |                    |        | 6.73         | 3.11           | 0.91                | 0.39    | 54.15   |                 |           |                 |             |        |      |       |
| Cub_1 /Tr2      | TG PLTA BILI2      |                    |        | 6.73         | 3.11           | 0.91                | 0.39    | 37.05   |                 |           |                 |             |        |      |       |
|                 |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR G11         |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR G11 11.00   |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| Cub_1 /Sym      | PLTG GT11          |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| Cub_1 /Tr2      | TG GT11            |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
|                 |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR G12         |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR G12 11.00   |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| Cub_1 /Sym      | PLTG GT12          |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| Cub_1 /Tr2      | TG GT12            |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
|                 |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR G18         |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR G18 11.00   |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| Cub_1 /Sym      | PLTU GT18          |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| Cub_1 /Tr2      | TG GT18            |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
|                 |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR G21         |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR G21 11.00   |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| Cub_1 /Sym      | PLTG GT21          |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| Cub_1 /Tr2      | TG GT21            |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
|                 |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR G22         |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR G22 11.00   |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| Cub_1 /Sym      | PLTG GT22          |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| Cub_1 /Tr2      | TG GT22            |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
|                 |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
|                 |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| Grid: Grid      |                    | System Stage: Grid |        |              |                | Study Case: Case 01 |         |         |                 | Annex:    |                 |             |        |      |       |
|                 | rated              | Bus-voltage        | deg    | Active Power | Reactive Power | Power Factor        | Current | Loading | Additional Data |           |                 |             |        |      |       |
|                 | Voltage            |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
|                 | [kV]               |                    |        |              |                |                     |         |         |                 |           |                 |             | [p.u.] | [kV] | [deg] |
|                 |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR G28         |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR G28 11.00   |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| Cub_1 /Sym      | PLTG GT28          |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| Cub_1 /Tr2      | TG GT28            |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
|                 |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR MRAMO1      |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR MRAMO1.00   |                    | 1.00               | 11.00  | 21.18        |                |                     |         |         |                 |           |                 |             |        |      |       |
| Cub_1 /Sym      | PLTU MORAMO#1      |                    |        | 41.87        | 34.25          | 0.77                | 2.84    | 108.19  |                 |           |                 |             |        |      |       |
| Cub_1 /Tr2      | TG MRAMO 75MVA     |                    |        | 41.87        | 34.25          | 0.77                | 2.84    | 72.13   |                 |           |                 |             |        |      |       |
|                 |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR MRAMO2      |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR MRAMO2.00   |                    | 1.00               | 11.00  | 21.26        |                |                     |         |         |                 |           |                 |             |        |      |       |
| Cub_1 /Sym      | PLTU MORAMO#2      |                    |        | 42.71        | 34.31          | 0.78                | 2.88    | 109.57  |                 |           |                 |             |        |      |       |
| Cub_1 /Tr2      | TG MRAMO2          |                    |        | 42.71        | 34.31          | 0.78                | 2.88    | 73.05   |                 |           |                 |             |        |      |       |
|                 |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR PGAYA1      |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR PLTU P.00   |                    | 1.04               | 11.40  | 4.58         |                |                     |         |         |                 |           |                 |             |        |      |       |
| Cub_1 /Sym      | PLTU PGAYA#1       |                    |        | 85.74        | 75.00          | 0.75                | 5.77    | 91.13   |                 |           |                 |             |        |      |       |
| Cub_1 /Tr2      | TG PGAYA1          |                    |        | 85.74        | 75.00          | 0.75                | 5.77    | 87.95   |                 |           |                 |             |        |      |       |
|                 |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR PGAYA2      |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR PLTU P.00   |                    | 1.00               | 11.00  | 4.63         |                |                     |         |         |                 |           |                 |             |        |      |       |
| Cub_1 /Sym      | PLTU PGAYA#2       |                    |        | 83.76        | 34.31          | 0.93                | 4.75    | 72.42   |                 |           |                 |             |        |      |       |
| Cub_1 /Tr2      | TG PGAYA2          |                    |        | 83.76        | 34.31          | 0.93                | 4.75    | 72.42   |                 |           |                 |             |        |      |       |
|                 |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR PLTA MALEA  |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| BAR PLTA M.00   |                    | 1.00               | 20.00  | 7.74         |                |                     |         |         |                 |           |                 |             |        |      |       |
| Cub_1 /Lod      | LOAD-MKALE1        |                    |        | 3.40         | 0.30           | 1.00                | 0.10    |         |                 |           |                 |             |        |      |       |
| Cub_1 /Lod      | LOAD-MKALE2        |                    |        | 2.50         | -2.60          | 0.69                | 0.10    |         |                 |           |                 |             |        |      |       |
| Cub_1 /Sym      | FLTM MADONG        |                    |        | 5.04         | -4.39          | 0.75                | 0.19    | 66.88   |                 |           |                 |             |        |      |       |
| Cub_1 /Sym      | FLTM MALEA         |                    |        | 4.54         | -0.00          | 1.00                | 0.13    | 33.88   |                 |           |                 |             |        |      |       |
| Cub_1 /Sym      | FLTM MALEA(1)      |                    |        | 4.54         | -0.00          | 1.00                | 0.13    | 33.88   |                 |           |                 |             |        |      |       |
| Cub_1 /Tr2      | DIS-MAKALE-20MVA   |                    |        | 3.32         | -0.84          | 0.97                | 0.10    | 17.55   |                 |           |                 |             |        |      |       |
| Cub_1 /Tr2      | DIS-MAKALE-30MVA   |                    |        | 4.91         | -1.25          | 0.97                | 0.15    | 17.31   |                 |           |                 |             |        |      |       |
| Total           |                    |                    |        |              |                |                     |         |         |                 |           |                 |             |        |      |       |
| Generation:     |                    |                    |        |              | 14.12          | -4.39               |         |         |                 |           |                 |             |        |      |       |
| Load:           |                    |                    |        |              | 5.90           | -2.30               |         |         |                 |           |                 |             |        |      |       |

| Grid: Grid           |  |  |  |  |  |  |  |  |  |  |  |  |  | System Stage: Grid       |                            |        |                         | Study Case: Case 01         |                 |                 |                | Annex:          |           |       |            | / 5  |           |  |  |  |
|----------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--------------------------|----------------------------|--------|-------------------------|-----------------------------|-----------------|-----------------|----------------|-----------------|-----------|-------|------------|------|-----------|--|--|--|
|                      |  |  |  |  |  |  |  |  |  |  |  |  |  | rated<br>Voltage<br>[kV] | Bus-voltage<br>[p.u.] [kV] | [deg]  | Active<br>Power<br>[MW] | Reactive<br>Power<br>[Mvar] | Power<br>Factor | Current<br>[kA] | Loading<br>[%] | Additional Data |           |       |            |      |           |  |  |  |
| BAR PLTA TANGKAL     |  |  |  |  |  |  |  |  |  |  |  |  |  |                          |                            |        |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| BAR PLTA T.00        |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.98                     | 19.58                      | -7.78  |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| Cub_1 /Lod           |  |  |  |  |  |  |  |  |  |  |  |  |  | LOAD-SINJAI1             |                            |        | 12.27                   | 0.48                        | 1.00            | 0.36            |                | P10:            | 12.80 MW  | Q10:  | 0.50 Mvar  |      |           |  |  |  |
| Cubicle/Coup         |  |  |  |  |  |  |  |  |  |  |  |  |  | CBS                      |                            |        |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| Cub_1 /Lne           |  |  |  |  |  |  |  |  |  |  |  |  |  | SINJAI-TANGKA            |                            |        |                         |                             |                 |                 |                | Pv:             |           | cLod: |            | L:   | 40.00 km  |  |  |  |
| Cub_1 /Tr2           |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-SINJAI-20MVA         |                            |        | -12.27                  | -0.48                       | -1.00           | 0.36            | 66.00          | Tap:            | 7.00      | Min:  | 1          | Max: | 18        |  |  |  |
| BAR PLTA T.00        |  |  |  |  |  |  |  |  |  |  |  |  |  | 1.00                     | 19.98                      | -6.97  |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| Cub_1 /Lod           |  |  |  |  |  |  |  |  |  |  |  |  |  | LOAD-SINJAI2             |                            |        | 15.87                   | 2.50                        | 0.99            | 0.46            |                | P10:            | 15.90 MW  | Q10:  | 2.50 Mvar  |      |           |  |  |  |
| Cubicle/Coup         |  |  |  |  |  |  |  |  |  |  |  |  |  | CBS                      |                            |        |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| Cub_1 /Tr2           |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-SINJAI-30MVA         |                            |        | -15.87                  | -2.50                       | -0.99           | 0.46            | 57.95          | Tap:            | 6.00      | Min:  | 1          | Max: | 18        |  |  |  |
| BAR PLTB TOLO        |  |  |  |  |  |  |  |  |  |  |  |  |  |                          |                            |        |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| BAR PLTB T.00        |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.99                     | 149.09                     | 0.08   |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| Cub_1 /Lne           |  |  |  |  |  |  |  |  |  |  |  |  |  | JNPTOE-PLTB TOLO2        |                            |        | 18.90                   | -0.53                       | 1.00            | 0.07            | 11.48          | Pv:             | 64.66 kW  | cLod: | -0.00 Mvar | L:   | 30.00 km  |  |  |  |
| Cub_1 /Lne           |  |  |  |  |  |  |  |  |  |  |  |  |  | JNPTOE-PLTB TOLO1        |                            |        | 18.90                   | -0.53                       | 1.00            | 0.07            | 11.48          | Pv:             | 64.66 kW  | cLod: | -0.00 Mvar | L:   | 30.00 km  |  |  |  |
| Cub_1 /Tr2           |  |  |  |  |  |  |  |  |  |  |  |  |  | TG PLTB TOLO1            |                            |        | -37.80                  | 1.06                        | -1.00           | 0.15            | 90.89          | Tap:            | 4.00      | Min:  | 1          | Max: | 18        |  |  |  |
| Cub_1 /Tr2           |  |  |  |  |  |  |  |  |  |  |  |  |  | TG PLTB TOLO2            |                            |        |                         |                             |                 |                 |                | Tap:            | 1         | Min:  | 1          | Max: | 18        |  |  |  |
| BAR PLTU JNPTOE EXPN |  |  |  |  |  |  |  |  |  |  |  |  |  |                          |                            |        |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| BAR PLTU J.00        |  |  |  |  |  |  |  |  |  |  |  |  |  | 1.00                     | 11.00                      | 4.56   |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| Cub_1 /Sym           |  |  |  |  |  |  |  |  |  |  |  |  |  | PLTU JNPTOE#2 EXPN       |                            |        | 91.84                   | 20.57                       | 0.98            | 4.94            | 69.72          | Typ:            | FV        |       |            |      |           |  |  |  |
| Cub_1 /Tr2           |  |  |  |  |  |  |  |  |  |  |  |  |  | TG PLTU JNPTOE EXP       |                            |        | 91.84                   | 20.57                       | 0.98            | 4.94            | 67.23          | Tap:            | 8.00      | Min:  | 1          | Max: | 18        |  |  |  |
| BAR PLTU JNPTOE1     |  |  |  |  |  |  |  |  |  |  |  |  |  |                          |                            |        |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| BAR PLTU J.00        |  |  |  |  |  |  |  |  |  |  |  |  |  | 1.02                     | 11.22                      | 3.52   |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| Cub_1 /Sym           |  |  |  |  |  |  |  |  |  |  |  |  |  | PLTU JNPTOE#1            |                            |        | 65.23                   | 38.40                       | 0.86            | 3.89            | 60.55          | Typ:            | FV        |       |            |      |           |  |  |  |
| Cub_1 /Tr2           |  |  |  |  |  |  |  |  |  |  |  |  |  | TG JNPTOE 125MVA         |                            |        | 65.23                   | 38.40                       | 0.86            | 3.89            | 59.37          | Tap:            | 8.00      | Min:  | 1          | Max: | 18        |  |  |  |
| BAR PLTU JNPTOE2     |  |  |  |  |  |  |  |  |  |  |  |  |  |                          |                            |        |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| BAR PLTU J.00        |  |  |  |  |  |  |  |  |  |  |  |  |  | 1.04                     | 11.44                      | 3.82   |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| Cub_1 /Sym           |  |  |  |  |  |  |  |  |  |  |  |  |  | PLTU JNPTOE#2            |                            |        | 72.08                   | 61.45                       | 0.76            | 4.78            | 75.78          | Typ:            | FV        |       |            |      |           |  |  |  |
| Cub_1 /Tr2           |  |  |  |  |  |  |  |  |  |  |  |  |  | TG JNPTOE 125MVA(1       |                            |        | 72.08                   | 61.45                       | 0.76            | 4.78            | 72.86          | Tap:            | 8.00      | Min:  | 1          | Max: | 18        |  |  |  |
| BARANGLEOE           |  |  |  |  |  |  |  |  |  |  |  |  |  |                          |                            |        |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| BORANGLEOE0.00       |  |  |  |  |  |  |  |  |  |  |  |  |  | 1.00                     | 69.94                      | -10.33 |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| Cub_1 /Lne           |  |  |  |  |  |  |  |  |  |  |  |  |  | TELLO - BRLOE            |                            |        | 0.68                    | -1.04                       | 0.55            | 0.01            | 2.40           | Pv:             | 0.94 kW   | cLod: | 0.00 Mvar  | L:   | 12.40 km  |  |  |  |
| Cub_1 /Tr2           |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-BRLOE 10MVA          |                            |        | -0.27                   | 0.41                        | -0.55           | 0.00            | 4.91           | Tap:            | 9.00      | Min:  | 1          | Max: | 18        |  |  |  |
| Cub_1 /Tr2           |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-BRLOE 20MVA          |                            |        | -0.41                   | 0.63                        | -0.55           | 0.01            | 3.77           | Tap:            | 9.00      | Min:  | 1          | Max: | 18        |  |  |  |
|                      |  |  |  |  |  |  |  |  |  |  |  |  |  |                          |                            |        |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
|                      |  |  |  |  |  |  |  |  |  |  |  |  |  |                          |                            |        |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| Grid: Grid           |  |  |  |  |  |  |  |  |  |  |  |  |  | System Stage: Grid       |                            |        |                         | Study Case: Case 01         |                 |                 |                | Annex:          |           |       |            | / 6  |           |  |  |  |
|                      |  |  |  |  |  |  |  |  |  |  |  |  |  | rated<br>Voltage<br>[kV] | Bus-voltage<br>[p.u.] [kV] | [deg]  | Active<br>Power<br>[MW] | Reactive<br>Power<br>[Mvar] | Power<br>Factor | Current<br>[kA] | Loading<br>[%] | Additional Data |           |       |            |      |           |  |  |  |
| BARRU EXT            |  |  |  |  |  |  |  |  |  |  |  |  |  |                          |                            |        |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| BALLUSU(1).00        |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.97                     | 146.25                     | -0.28  |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| Cubicle/Coup         |  |  |  |  |  |  |  |  |  |  |  |  |  | CBS                      |                            |        |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| Cub_1 /Lne           |  |  |  |  |  |  |  |  |  |  |  |  |  | BARRRU EXT-SIDRAP        |                            |        | -16.03                  | 24.68                       | -0.54           | 0.12            | 6.33           | Pv:             | 51.88 kW  | cLod: | -0.00 Mvar | L:   | 37.67 km  |  |  |  |
| Cub_1 /Lne           |  |  |  |  |  |  |  |  |  |  |  |  |  | BARRRU EXT-SIDRAP        |                            |        | -16.03                  | 24.68                       | -0.54           | 0.12            | 6.33           | Pv:             | 51.88 kW  | cLod: | -0.00 Mvar | L:   | 37.67 km  |  |  |  |
| Cub_1 /Lne           |  |  |  |  |  |  |  |  |  |  |  |  |  | MAROS - BARRU EXT        |                            |        | 39.49                   | 2.22                        | 1.00            | 0.16            | 8.50           | Pv:             | 295.93 kW | cLod: | 0.00 Mvar  | L:   | 119.00 km |  |  |  |
| Cub_1 /Lne           |  |  |  |  |  |  |  |  |  |  |  |  |  | MAROS - BARRU EXT        |                            |        | 39.49                   | 2.22                        | 1.00            | 0.16            | 8.50           | Pv:             | 295.93 kW | cLod: | 0.00 Mvar  | L:   | 119.00 km |  |  |  |
| Cub_1 /Tr2           |  |  |  |  |  |  |  |  |  |  |  |  |  | TG BARRU(1)              |                            |        | -46.91                  | -53.80                      | -0.66           | 0.28            | 64.72          | Tap:            | 2.00      | Min:  | 1          | Max: | 18        |  |  |  |
| BALLUSU150.00        |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.95                     | 142.05                     | -2.52  |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| Cubicle/Coup         |  |  |  |  |  |  |  |  |  |  |  |  |  | CBS                      |                            |        |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| Cub_1 /Lne           |  |  |  |  |  |  |  |  |  |  |  |  |  | BARRRU - BLUSU1          |                            |        | 52.17                   | -5.18                       | 1.00            | 0.21            | 33.40          | Pv:             | 356.56 kW | cLod: | 0.00 Mvar  | L:   | 22.00 km  |  |  |  |
| Cub_1 /Lne           |  |  |  |  |  |  |  |  |  |  |  |  |  | BARRRU - BLUSU2          |                            |        | 52.17                   | -5.18                       | 1.00            | 0.21            | 33.40          | Pv:             | 356.56 kW | cLod: | 0.00 Mvar  | L:   | 22.00 km  |  |  |  |
| Cub_1 /Lne           |  |  |  |  |  |  |  |  |  |  |  |  |  | PFARE - BLUSU1           |                            |        | -53.99                  | 4.85                        | -1.00           | 0.22            | 34.54          | Pv:             | 783.71 kW | cLod: | -0.00 Mvar | L:   | 44.84 km  |  |  |  |
| Cub_1 /Lne           |  |  |  |  |  |  |  |  |  |  |  |  |  | PFARE - BLUSU2           |                            |        | -53.99                  | 4.85                        | -1.00           | 0.22            | 34.54          | Pv:             | 783.71 kW | cLod: | -0.00 Mvar | L:   | 44.84 km  |  |  |  |
| Cub_1 /Tr2           |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-BALUSU 6MVA(2)       |                            |        | 3.65                    | 0.66                        | 0.98            | 0.02            | 62.24          | Tap:            | 7.00      | Min:  | 1          | Max: | 18        |  |  |  |
| Cub_1 /Tr2           |  |  |  |  |  |  |  |  |  |  |  |  |  | TG BARRU(1)(2)           |                            |        |                         |                             |                 |                 |                | Tap:            | 9         | Min:  | 1          | Max: | 18        |  |  |  |
| Cub_1 /Tr2           |  |  |  |  |  |  |  |  |  |  |  |  |  | TG BARRU(2)              |                            |        |                         |                             |                 |                 |                | Tap:            | 1         | Min:  | 1          | Max: | 18        |  |  |  |
| BARRU                |  |  |  |  |  |  |  |  |  |  |  |  |  |                          |                            |        |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| BARRU 150.00         |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.94                     | 141.45                     | -3.87  |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| Cub_1 /Lne           |  |  |  |  |  |  |  |  |  |  |  |  |  | BARRRU1                  |                            |        | -4.81                   | -1.12                       | -0.97           | 0.02            | 3.16           | Pv:             | 0.03 kW   | cLod: | 0.00 Mvar  | L:   | 0.20 km   |  |  |  |
| Cub_1 /Lne           |  |  |  |  |  |  |  |  |  |  |  |  |  | BARRRU2                  |                            |        | -4.81                   | -1.12                       | -0.97           | 0.02            | 3.16           | Pv:             | 0.03 kW   | cLod: | 0.00 Mvar  | L:   | 0.20 km   |  |  |  |
| Cub_1 /Tr2           |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-BAKARU-20MVA         |                            |        | 9.61                    | 2.24                        | 0.97            | 0.04            | 52.35          | Tap:            | 7.00      | Min:  | 1          | Max: | 18        |  |  |  |
| Cub_1 /Tr2           |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-BARRU-SMVA           |                            |        |                         |                             |                 |                 |                | Tap:            | 0         | Min:  | 0          | Max: | 0         |  |  |  |
| BARRU2 20KV          |  |  |  |  |  |  |  |  |  |  |  |  |  |                          |                            |        |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| BARRRU 20K.00        |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.98                     | 19.61                      | -7.37  |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| Cub_1 /Lod           |  |  |  |  |  |  |  |  |  |  |  |  |  | LOAD-BARRRU1             |                            |        | 9.61                    | 1.63                        | 0.99            | 0.29            |                | P10:            | 10.00 MW  | Q10:  | 1.70 Mvar  |      |           |  |  |  |
| Cubicle/Coup         |  |  |  |  |  |  |  |  |  |  |  |  |  | CBS                      |                            |        |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| Cub_1 /Tr2           |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-BAKARU-20MVA         |                            |        | -9.61                   | -1.63                       | -0.99           | 0.29            | 52.35          | Tap:            | 7.00      | Min:  | 1          | Max: | 18        |  |  |  |
| BARRRU2 20K.00       |  |  |  |  |  |  |  |  |  |  |  |  |  |                          |                            |        |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| Cub_1 /Lod           |  |  |  |  |  |  |  |  |  |  |  |  |  | LOAD-BARRRU2             |                            |        |                         |                             |                 |                 |                | P10:            | 0.00 MW   | Q10:  | 0.00 Mvar  |      |           |  |  |  |
| Cubicle/Coup         |  |  |  |  |  |  |  |  |  |  |  |  |  | CBS                      |                            |        |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| Cub_1 /Tr2           |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-BARRRU-SMVA          |                            |        |                         |                             |                 |                 |                | Tap:            | 0         | Min:  | 0          | Max: | 0         |  |  |  |
| BELOPA               |  |  |  |  |  |  |  |  |  |  |  |  |  |                          |                            |        |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| BELOPA3-20.00        |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.97                     | 19.35                      | 5.49   |                         |                             |                 |                 |                |                 |           |       |            |      |           |  |  |  |
| Cub_1 /Lod           |  |  |  |  |  |  |  |  |  |  |  |  |  | LOAD-BELOPA              |                            |        | 11.70                   | 3.37                        | 0.96            | 0.36            |                | P10:            | 12.50 MW  | Q10:  | 3.60 Mvar  |      |           |  |  |  |
| Cub_1 /Tr2           |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-BELOPA-60MVA(2       |                            |        | -11.70                  | -3.37                       | -0.96           | 0.36            | 20.98          | Tap:            | 9.00      | Min:  | 1          | Max: | 18        |  |  |  |

| Grid: Grid      |  |                     |  | System Stage: Grid |  |                |  | Study Case: Case 01 |  |                 |  | Annex:          |  |      |  | / 7                                             |  |
|-----------------|--|---------------------|--|--------------------|--|----------------|--|---------------------|--|-----------------|--|-----------------|--|------|--|-------------------------------------------------|--|
| rated Voltage   |  | Bus-voltage         |  | Active Power       |  | Reactive Power |  | Power Factor        |  | Current Loading |  | Additional Data |  |      |  |                                                 |  |
| [KV]            |  | [p.u.]              |  | [KV]               |  | [deg]          |  | [MW]                |  | [Mvar]          |  | [-]             |  | [kA] |  | [%]                                             |  |
| BILI            |  |                     |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| BILI-20KV0.00   |  | 1.00                |  | 19.91              |  | -10.18         |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| Cub_1 /Lod      |  | LOAD-BRLOE          |  |                    |  |                |  | 6.04                |  | 4.06            |  | 0.83            |  | 0.21 |  | P10: 6.10 MW Q10: 4.10 Mvar                     |  |
| Cub_1 /Tr2      |  | DIS-BRLOE 10MVA     |  |                    |  |                |  | 0.27                |  | -0.41           |  | 0.55            |  | 0.01 |  | 4.91 Tap: 9.00 Min: 1 Max: 18                   |  |
| Cub_1 /Tr2      |  | DIS-BRLOE 20MVA     |  |                    |  |                |  | 0.41                |  | -0.63           |  | 0.55            |  | 0.02 |  | 3.77 Tap: 9.00 Min: 1 Max: 18                   |  |
| Cub_1 /Tr2      |  | TG PLTA BILI1       |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  | Tap: 1 Min: 1 Max: 18                           |  |
| Cub_1 /Tr2      |  | TG PLTA BILI2       |  |                    |  |                |  | -6.73               |  | -3.03           |  | -0.91           |  | 0.21 |  | 37.05 Tap: 9.00 Min: 1 Max: 18                  |  |
| BLKMB           |  |                     |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| BULUKUMBA .00   |  | 0.97                |  | 145.18             |  | -2.05          |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| Cub_1 /Shnt     |  | FILTER BULUKUMBA    |  |                    |  |                |  | 0.00                |  | 0.00            |  | 1.00            |  | 0.00 |  |                                                 |  |
| Cub_1 /Line     |  | BLKMB - BNTNG SWT   |  |                    |  |                |  | -8.48               |  | -13.36          |  | -0.54           |  | 0.06 |  | 9.87 Pv: 10.41 kW cLod: 0.00 Mvar L: 7.30 km    |  |
| Cub_1 /Line     |  | BLKMB - JNPOT       |  |                    |  |                |  | -34.29              |  | -15.83          |  | -0.91           |  | 0.15 |  | 23.54 Pv: 393.07 kW cLod: 0.00 Mvar L: 46.40 km |  |
| Cub_1 /Line     |  | BONE - BLKMB        |  |                    |  |                |  | -0.98               |  | 11.68           |  | -0.08           |  | 0.05 |  | 7.31 Pv: 107.29 kW cLod: 0.00 Mvar L: 137.20 km |  |
| Cub_1 /Line     |  | SINJAI - BLKMB      |  |                    |  |                |  | 13.64               |  | 10.38           |  | 0.80            |  | 0.07 |  | 10.69 Pv: 111.34 kW cLod: 0.00 Mvar L: 63.87 km |  |
| Cub_1 /Tr2      |  | DIS-BLKMB-20MVA     |  |                    |  |                |  | 4.01                |  | 0.59            |  | 0.99            |  | 0.02 |  | 20.96 Tap: 8.00 Min: 1 Max: 18                  |  |
| Cub_1 /Tr2      |  | DIS-BLKMB-30MVA     |  |                    |  |                |  | 15.23               |  | 4.91            |  | 0.95            |  | 0.06 |  | 55.12 Tap: 7.00 Min: 1 Max: 18                  |  |
| Cub_1 /Tr2      |  | DIS-BLKMB-60MVA     |  |                    |  |                |  | 10.87               |  | 1.63            |  | 0.99            |  | 0.04 |  | 18.92 Tap: 8.00 Min: 1 Max: 18                  |  |
| BLKMBAL 20KV    |  |                     |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| BLKMBAL 20.00   |  | 1.00                |  | 20.02              |  | -5.54          |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| Cub_1 /Lod      |  | LOAD-BLKMBAL2       |  |                    |  |                |  | 15.23               |  | 3.91            |  | 0.97            |  | 0.45 |  | P10: 15.20 MW Q10: 3.90 Mvar                    |  |
| Cubicle/Coup    |  | CBS                 |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| Cub_1 /Tr2      |  | DIS-BLKMB-30MVA     |  |                    |  |                |  | -15.23              |  | -3.91           |  | -0.97           |  | 0.45 |  | 55.12 Tap: 7.00 Min: 1 Max: 18                  |  |
| BLKMB2 20K.00   |  | 0.99                |  | 19.79              |  | -3.48          |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| Cub_1 /Lod      |  | LOAD-BLKMBAL(1)     |  |                    |  |                |  | 4.01                |  | 0.49            |  | 0.99            |  | 0.12 |  | P10: 4.10 MW Q10: 0.50 Mvar                     |  |
| Cubicle/Coup    |  | CBS                 |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| Cub_1 /Tr2      |  | DIS-BLKMB-20MVA     |  |                    |  |                |  | -4.01               |  | -0.49           |  | -0.99           |  | 0.12 |  | 20.96 Tap: 8.00 Min: 1 Max: 18                  |  |
| BLKMB3          |  |                     |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| BLKMB3 20.00    |  | 0.99                |  | 19.79              |  | -3.37          |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| Cub_1 /Lod      |  | LOAD-BLKMB3         |  |                    |  |                |  | 10.87               |  | 1.37            |  | 0.99            |  | 0.32 |  | P10: 11.10 MW Q10: 1.40 Mvar                    |  |
| Cub_1 /Tr2      |  | DIS-BLKMB-60MVA     |  |                    |  |                |  | -10.87              |  | -1.37           |  | -0.99           |  | 0.32 |  | 18.92 Tap: 8.00 Min: 1 Max: 18                  |  |
| BLSU1(2)        |  |                     |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| BLSU1 20KV.00   |  | 0.99                |  | 19.88              |  | -3.53          |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| Cub_1 /Lod      |  | LOAD-BLSU1(2)       |  |                    |  |                |  | 3.65                |  | 0.59            |  | 0.99            |  | 0.11 |  | P10: 3.70 MW Q10: 0.60 Mvar                     |  |
| Cub_1 /Tr2      |  | DIS-BALUSU 6MVA(2)  |  |                    |  |                |  | -3.65               |  | -0.59           |  | -0.99           |  | 0.11 |  | 62.24 Tap: 7.00 Min: 1 Max: 18                  |  |
| BLSU2 20KV(1)   |  |                     |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| PLTU BLSU0.00   |  | 0.94                |  | 10.36              |  | 2.79           |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| Cub_1 /Sym      |  | PLTU BARRU NEW      |  |                    |  |                |  | 46.91               |  | 60.00           |  | 0.62            |  | 4.25 |  | 76.16 Typ: FV                                   |  |
| Cub_1 /Tr2      |  | TG BARRU1(1)        |  |                    |  |                |  | 46.91               |  | 60.00           |  | 0.62            |  | 4.25 |  | 64.72 Tap: 2.00 Min: 1 Max: 18                  |  |
| BLSU2 20KV(2)   |  |                     |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| PLTU BLSU0.00   |  |                     |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| Cub_1 /Sym      |  | PLTU BARRU#1(2)     |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  | Typ: FV                                         |  |
| Cub_1 /Tr2      |  | TG BARRU1(2)        |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  | Tap: 9 Min: 1 Max: 18                           |  |
| BLSU3 20KV(2)   |  |                     |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| PLTU BLSU0.00   |  |                     |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| Cub_1 /Sym      |  | PLTU BARRU#2(2)     |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  | Typ: PQ                                         |  |
| Cub_1 /Tr2      |  | TG BARRU2(2)        |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  | Tap: 1 Min: 1 Max: 18                           |  |
| BNTLA2 20KV     |  |                     |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| BONTOLAL .00    |  | 1.00                |  | 19.99              |  | -7.39          |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| Cub_1 /Lod      |  | LOAD BNTLA1         |  |                    |  |                |  | 26.59               |  | 7.30            |  | 0.96            |  | 0.80 |  | P10: 26.60 MW Q10: 7.30 Mvar                    |  |
| Cubicle/Coup    |  | CBS                 |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| Cub_1 /Tr2      |  | DIS-G BNTLA2 60MVA  |  |                    |  |                |  | -26.59              |  | -7.30           |  | -0.96           |  | 0.80 |  | 48.38 Tap: 7.00 Min: 1 Max: 18                  |  |
| BONTOLAL2 .00   |  | 1.00                |  | 20.03              |  | -6.88          |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| Cub_1 /Lod      |  | LOAD BNTLA2         |  |                    |  |                |  | 21.37               |  | 6.32            |  | 0.96            |  | 0.64 |  | P10: 21.30 MW Q10: 6.30 Mvar                    |  |
| Cubicle/Coup    |  | CBS                 |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| Cub_1 /Tr2      |  | DIS-G BNTLA1 60MVA  |  |                    |  |                |  | -21.37              |  | -6.32           |  | -0.96           |  | 0.64 |  | 39.03 Tap: 7.00 Min: 1 Max: 18                  |  |
| BNTLA3 20KV     |  |                     |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| BONTOLAL3 .00   |  |                     |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| Cub_1 /Lod      |  | LOAD BNTLA3         |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  | P10: 0.00 MW Q10: 0.00 Mvar                     |  |
| Cub_4 /Coup     |  | CBS(1)              |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| Cub_1 /Tr2      |  | DIS-BNTLA2 20MVA    |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  | Tap: 0 Min: 1 Max: 18                           |  |
| BONTOLAL4 .00   |  |                     |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| Cub_1 /Lod      |  | LOAD BNTLA4         |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  | P10: 0.00 MW Q10: 0.00 Mvar                     |  |
| Cub_5 /Coup     |  | CBS(1)              |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| Cub_1 /Tr2      |  | DIS-BNTLA1 20MVA    |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  | Tap: 0 Min: 1 Max: 18                           |  |
| BNTING NEW      |  |                     |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| BANTAENG N.00   |  | 0.98                |  | 146.67             |  | -1.53          |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| Cub_1 /Line     |  | BNTING NEW - BNTING |  |                    |  |                |  | 31.15               |  | 15.53           |  | 0.89            |  | 0.14 |  | 21.48 Pv: 117.70 kW cLod: 0.00 Mvar L: 15.59 km |  |
| Cub_1 /Line     |  | JNPOT - BNTING NEW  |  |                    |  |                |  | -43.60              |  | -17.08          |  | -0.93           |  | 0.18 |  | 28.89 Pv: 286.19 kW cLod: 0.00 Mvar L: 23.40 km |  |
| Cub_1 /Tr2      |  | DIS-BNTING NEW-30MV |  |                    |  |                |  | 12.44               |  | 1.55            |  | 0.99            |  | 0.05 |  | 42.75 Tap: 8.00 Min: 1 Max: 18                  |  |
| BNTING SMLTR(1) |  |                     |  |                    |  |                |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| HUADI 33.00     |  | 0.92                |  | 30.44              |  | -2.22          |  |                     |  |                 |  |                 |  |      |  |                                                 |  |
| Cub_1 /Lod      |  | LOAD-HUADI2         |  |                    |  |                |  | 0.00                |  | 0.00            |  | 1.00            |  | 0.00 |  | P10: 75.00 MW Q10: 20.00 Mvar                   |  |
| Cub_1 /Tr2      |  | DIS-HUADI2          |  |                    |  |                |  | -0.00               |  | -0.00           |  | -1.00           |  | 0.00 |  | 0.00 Tap: 11.00 Min: 1 Max: 18                  |  |

| Grid: Grid      |  |  |  |  |  |  |  |  |  |  |  |  |  | System Stage: Grid  |                |              |         | Study Case: Case 01 |                 |  |  | Annex: |  |  |  | / 9 |  |  |  |  |  |  |  |
|-----------------|--|--|--|--|--|--|--|--|--|--|--|--|--|---------------------|----------------|--------------|---------|---------------------|-----------------|--|--|--------|--|--|--|-----|--|--|--|--|--|--|--|
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  | Active Power        | Reactive Power | Power Factor | Current | Loading             | Additional Data |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  | [MW]                | [Mvar]         | [-]          | [kA]    | [%]                 |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  | [kV]                | [p.u.]         | [kV]         | [deg]   |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| BNTING SMLTR(2) |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| HUADI 33.00     |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.95                | 31.23          | -2.01        |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| Cub_1 /Lod      |  |  |  |  |  |  |  |  |  |  |  |  |  | LOAD-HUADI3         | 0.00           | 0.00         | 1.00    | 0.00                |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| Cub_1 /Tr2      |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-HUADI3          | -0.00          | 0.00         | -1.00   | 0.00                | 0.00            |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| BNTING SMLTR    |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| HUADI 33.00     |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.92                | 30.36          | -6.45        |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| Cub_1 /Lod      |  |  |  |  |  |  |  |  |  |  |  |  |  | LOAD-HUADI1         | 22.52          | 0.00         | 1.00    | 0.43                |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| Cub_1 /Tr2      |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-HUADI           | -22.52         | -0.00        | -1.00   | 0.43                | 54.38           |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| BNTING SWITCH   |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| BNTING SWTC.00  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.97                | 145.30         | -2.22        |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| Cub_1 /Lne      |  |  |  |  |  |  |  |  |  |  |  |  |  | BNTING NEW - BNTING | -11.26         | -0.83        | -1.00   | 0.04                | 7.03            |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| Cub_1 /Lne      |  |  |  |  |  |  |  |  |  |  |  |  |  | BNTING NEW - BNTING | -11.26         | -0.83        | -1.00   | 0.04                | 7.03            |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| Cub_1 /Tr2      |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-HUADI           | 22.52          | 1.66         | 1.00    | 0.09                | 54.38           |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| Cub_1 /Tr2      |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-HUADI2          | 0.00           | 0.00         | 1.00    | 0.00                | 0.00            |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| BNTINGNEW       |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| BNTING NEW .00  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1.00                | 19.96          | -4.49        |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| Cub_1 /Lod      |  |  |  |  |  |  |  |  |  |  |  |  |  | LOAD-BNTING         | 12.44          | 0.90         | 1.00    | 0.36                |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| Cub_1 /Tr2      |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-BNTING NEW-30MV | -12.44         | -0.90        | -1.00   | 0.36                | 42.75           |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| BOLANGI 20KV(1) |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| BOLANGI 20.00   |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| Cub_1 /Lod      |  |  |  |  |  |  |  |  |  |  |  |  |  | LOAD-BLINGI2        |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| Cub_1 /Tr2      |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-BOLANGI2        |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| BOLANGI 20KV    |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| BOLANGI 20.00   |  |  |  |  |  |  |  |  |  |  |  |  |  | 1.00                | 19.98          | -6.52        |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| Cub_1 /Lod      |  |  |  |  |  |  |  |  |  |  |  |  |  | LOAD-BLINGI         | 20.97          | 7.59         | 0.94    | 0.64                |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| Cub_1 /Tr2      |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-BOLANGI         | -20.97         | -7.59        | -0.94   | 0.64                | 39.15           |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| BOLANGI         |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| BOLANGI150.00   |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.97                | 144.93         | -3.90        |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| Cub_1 /Lne      |  |  |  |  |  |  |  |  |  |  |  |  |  | DAYA BARU-BOLANGI   | -17.88         | 3.60         | -0.98   | 0.07                | 3.96            |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| Cub_1 /Lne      |  |  |  |  |  |  |  |  |  |  |  |  |  | DAYA BARU-BOLANGI   | -17.88         | 3.60         | -0.98   | 0.07                | 3.96            |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| Cub_1 /Lne      |  |  |  |  |  |  |  |  |  |  |  |  |  | SGMSA - BLNGI       | 8.24           | -8.82        | 0.68    | 0.05                | 2.38            |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| Cub_1 /Lne      |  |  |  |  |  |  |  |  |  |  |  |  |  | SGMSA - BLNGI(1)    | 6.56           | -7.06        | 0.68    | 0.04                | 2.09            |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| Cub_1 /Tr2      |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-BOLANGI         | 20.97          | 8.69         | 0.92    | 0.09                | 39.15           |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
| Cub_1 /Tr2      |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-BOLANGI2        |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |  |                     |                |              |         |                     |                 |  |  |        |  |  |  |     |  |  |  |  |  |  |  |

| Grid: Grid     | System Stage: Grid       |                       |                    |       | Study Case: Case 01     |                             |                        |                 | Annex:         |                 |                  |             | / 12 |
|----------------|--------------------------|-----------------------|--------------------|-------|-------------------------|-----------------------------|------------------------|-----------------|----------------|-----------------|------------------|-------------|------|
|                | rated<br>Voltage<br>[kV] | Bus-voltage<br>[p.u.] | [kV]               | [deg] | Active<br>Power<br>[MW] | Reactive<br>Power<br>[Mvar] | Power<br>Factor<br>[-] | Current<br>[kA] | Loading<br>[%] | Additional Data |                  |             |      |
| GE2            |                          |                       |                    |       |                         |                             |                        |                 |                |                 |                  |             |      |
| BAR-GE2        | 11.00                    | 0.98                  | 10.75              | -2.19 |                         |                             |                        |                 |                |                 |                  |             |      |
| Cub_1 /Sym     |                          |                       | PLTG-GE-2          |       | 23.54                   | 8.40                        | 0.94                   | 1.34            | 74.84          | Typ: PQ         |                  |             |      |
| Cub_1 /Tr2     |                          |                       | TG GE2             |       | 23.54                   | 8.40                        | 0.94                   | 1.34            | 36.55          | Tap: 0.00       | Min: 0           | Max: 0      |      |
| JENEPONTO EXPN |                          |                       |                    |       |                         |                             |                        |                 |                |                 |                  |             |      |
| JENEPONTO .00  |                          | 1.00                  | 150.07             | 0.04  |                         |                             |                        |                 |                |                 |                  |             |      |
| Cub_1 /Lne     |                          |                       | LINE-T2            |       | 58.41                   | -5.15                       | 1.00                   | 0.23            | 12.29          | Pv: 5.27 kW     | cLod: -0.00 Mvar | L: 1.00 km  |      |
| Cub_1 /Lne     |                          |                       | PNGAYA - JNPTOE2   |       | 132.88                  | 30.68                       | 0.97                   | 0.52            | 28.58          | Pv: 28.49 kW    | cLod: -0.00 Mvar | L: 1.00 km  |      |
| Cub_1 /Tr2     |                          |                       | TG PLTU JNPTOE EXP |       | -99.44                  | -12.45                      | -0.99                  | 0.39            | 72.63          | Tap: 8.00       | Min: 1           | Max: 18     |      |
| Cub_1 /Tr2     |                          |                       | TG PLTU JNPTOE EXP |       | -91.84                  | -13.08                      | -0.99                  | 0.36            | 67.23          | Tap: 8.00       | Min: 1           | Max: 18     |      |
| JNPTO          |                          |                       |                    |       |                         |                             |                        |                 |                |                 |                  |             |      |
| JENEPONTO .00  |                          | 0.99                  | 148.63             | -0.56 |                         |                             |                        |                 |                |                 |                  |             |      |
| Cub_1 /Lne     |                          |                       | BLIMBA - JNPTOE    |       | 34.67                   | 17.11                       | 0.90                   | 0.15            | 23.54          | Pv: 383.07 kW   | cLod: 0.00 Mvar  | L: 46.40 km |      |
| Cub_1 /Lne     |                          |                       | JNPTOE - BNING NEW |       | 43.88                   | 18.05                       | 0.92                   | 0.18            | 28.89          | Pv: 286.19 kW   | cLod: 0.00 Mvar  | L: 23.40 km |      |
| Cub_1 /Lne     |                          |                       | JNPTOE-PLTB TOLO2  |       | -18.84                  | 0.74                        | -1.00                  | 0.07            | 11.48          | Pv: 64.66 kW    | cLod: -0.00 Mvar | L: 30.00 km |      |
| Cub_1 /Lne     |                          |                       | JNPTOE-PLTB TOLO1  |       | -18.84                  | 0.74                        | -1.00                  | 0.07            | 11.48          | Pv: 64.66 kW    | cLod: -0.00 Mvar | L: 30.00 km |      |
| Cub_1 /Lne     |                          |                       | PNGAYA - JNPTOE1   |       | -32.87                  | -21.32                      | -0.84                  | 0.15            | 11.93          | Pv: 107.27 kW   | cLod: 0.00 Mvar  | L: 24.50 km |      |
| Cub_1 /Lne     |                          |                       | PNGAYA - JNPTOE2   |       | -32.87                  | -21.32                      | -0.84                  | 0.15            | 11.93          | Pv: 107.27 kW   | cLod: 0.00 Mvar  | L: 24.50 km |      |
| Cub_1 /Tr2     |                          |                       | DIS-JNPTOE-20MVA   |       | 11.31                   | 3.01                        | 0.97                   | 0.05            | 59.06          | Tap: 8.00       | Min: 1           | Max: 18     |      |
| Cub_1 /Tr2     |                          |                       | DIS-JNPTOE-30MVA   |       | 13.55                   | 3.00                        | 0.98                   | 0.05            | 46.68          | Tap: 8.00       | Min: 1           | Max: 18     |      |
| JNPTO2 20KV    |                          |                       |                    |       |                         |                             |                        |                 |                |                 |                  |             |      |
| JNPTO1 20K.00  |                          | 1.01                  | 20.11              | -3.73 |                         |                             |                        |                 |                |                 |                  |             |      |
| Cub_1 /Lod     |                          |                       | LOAD-JNPTOE2       |       | 13.55                   | 2.22                        | 0.99                   | 0.39            |                | P10: 13.40 MW   | Q10: 2.20 Mvar   |             |      |
| Cubicle/Coup   |                          |                       | CBS                |       |                         |                             |                        |                 |                |                 |                  |             |      |
| Cub_1 /Tr2     |                          |                       | DIS-JNPTOE-30MVA   |       | -13.55                  | -2.22                       | -0.99                  | 0.39            | 46.68          | Tap: 8.00       | Min: 1           | Max: 18     |      |
| JNPTO2 20K.00  |                          | 1.00                  | 20.01              | -4.47 |                         |                             |                        |                 |                |                 |                  |             |      |
| Cub_1 /Lod     |                          |                       | LOAD-JNPTOE1       |       | 11.31                   | 2.20                        | 0.98                   | 0.33            |                | P10: 11.30 MW   | Q10: 2.20 Mvar   |             |      |
| Cubicle/Coup   |                          |                       | CBS                |       |                         |                             |                        |                 |                |                 |                  |             |      |
| Cub_1 /Tr2     |                          |                       | DIS-JNPTOE-20MVA   |       | -11.31                  | -2.20                       | -0.98                  | 0.33            | 59.06          | Tap: 8.00       | Min: 1           | Max: 18     |      |

| Grid: Grid         |                     | System Stage: Grid |                  |       |                   | Study Case: Case 01   |                  |              |             | Annex:          |           |                  |             | / 13 |  |
|--------------------|---------------------|--------------------|------------------|-------|-------------------|-----------------------|------------------|--------------|-------------|-----------------|-----------|------------------|-------------|------|--|
| rated Voltage [KV] |                     | Bus-voltage [p.u.] | Bus-voltage [KV] | [deg] | Active Power [MW] | Reactive Power [Mvar] | Power Factor [-] | Current [kA] | Loading [%] | Additional Data |           |                  |             |      |  |
| KENDARI            |                     |                    |                  |       |                   |                       |                  |              |             |                 |           |                  |             |      |  |
| KENDARI            | 15.00               | 0.99               | 148.75           | 16.42 |                   |                       |                  |              |             |                 |           |                  |             |      |  |
| Cub_1 /Lne         | KENDARI - ANDOLO    |                    |                  |       | 8.41              | 5.37                  | 0.84             | 0.04         | 3.04        | Pv:             | 5.40 kW   | cLod: -0.00 Mvar | L: 20.00 km |      |  |
| Cub_1 /Lne         | KENDARI - ANDOLO(1  |                    |                  |       | 8.41              | 5.37                  | 0.84             | 0.04         | 3.04        | Pv:             | 5.40 kW   | cLod: -0.00 Mvar | L: 20.00 km |      |  |
| Cub_1 /Lne         | KENDARI - MRAH01    |                    |                  |       | -37.37            | -27.67                | -0.80            | 0.18         | 14.14       | Pv:             | 138.96 kW | cLod: -0.00 Mvar | L: 23.70 km |      |  |
| Cub_1 /Lne         | KENDARI - MRAH02    |                    |                  |       | -37.37            | -27.67                | -0.80            | 0.18         | 14.14       | Pv:             | 138.96 kW | cLod: -0.00 Mvar | L: 23.70 km |      |  |
| Cub_1 /Lne         | FWATU 150KV - KEND  |                    |                  |       | -11.96            | 11.03                 | -0.73            | 0.06         | 5.26        | Pv:             | 10.35 kW  | cLod: -0.00 Mvar | L: 14.18 km |      |  |
| Cub_1 /Lne         | FWATU 150KV - KEND  |                    |                  |       | -11.96            | 11.03                 | -0.73            | 0.06         | 5.26        | Pv:             | 10.35 kW  | cLod: -0.00 Mvar | L: 14.18 km |      |  |
| Cub_1 /Lne         | UNHHA - KENDARI1    |                    |                  |       | 20.11             | 5.39                  | 0.97             | 0.08         | 6.33        | Pv:             | 62.82 kW  | cLod: -0.00 Mvar | L: 50.91 km |      |  |
| Cub_1 /Lne         | UNHHA - KENDARI2    |                    |                  |       | 20.11             | 5.39                  | 0.97             | 0.08         | 6.33        | Pv:             | 62.82 kW  | cLod: -0.00 Mvar | L: 50.91 km |      |  |
| Cub_1 /Tr2         | DIS-KENDARI1-60MVA  |                    |                  |       | 28.71             | 7.99                  | 0.96             | 0.12         | 50.08       | Tap:            | 8.00      | Min: 1           | Max: 18     |      |  |
| Cub_1 /Tr2         | DIS-KENDARI2-60MVA  |                    |                  |       | 12.92             | 3.75                  | 0.96             | 0.05         | 22.61       | Tap:            | 9.00      | Min: 1           | Max: 18     |      |  |
| KIMA               |                     |                    |                  |       |                   |                       |                  |              |             |                 |           |                  |             |      |  |
| KIMA               | 150.00              | 0.96               | 143.47           | -5.11 |                   |                       |                  |              |             |                 |           |                  |             |      |  |
| Cub_1 /Lne         | KIMA - TELLO        |                    |                  |       | -64.10            | -26.17                | -0.93            | 0.28         | 43.67       | Pv:             | 222.74 kW | cLod: 0.00 Mvar  | L: 7.65 km  |      |  |
| Cub_1 /Lne         | PNKEP - KIMA        |                    |                  |       | 36.30             | 15.75                 | 0.92             | 0.16         | 24.96       | Pv:             | 339.63 kW | cLod: 0.00 Mvar  | L: 36.60 km |      |  |
| Cub_1 /Tr2         | DIS-KIMA-30MVA      |                    |                  |       | 11.81             | 3.88                  | 0.95             | 0.05         | 43.32       | Tap:            | 7.00      | Min: 1           | Max: 18     |      |  |
| Cub_1 /Tr2         | DIS-KIMA-60MVA      |                    |                  |       | 16.00             | 6.54                  | 0.93             | 0.07         | 30.12       | Tap:            | 7.00      | Min: 1           | Max: 18     |      |  |
| KIMA2              |                     |                    |                  |       |                   |                       |                  |              |             |                 |           |                  |             |      |  |
| KIMA 20KV0.00      | 0.99                | 19.84              | -7.93            |       |                   |                       |                  |              |             |                 |           |                  |             |      |  |
| Cub_1 /Lod         | LOAD-KIMA1          |                    |                  |       | 11.81             | 3.25                  | 0.96             | 0.36         |             | P10:            | 12.00 MW  | Q10: 3.30 Mvar   |             |      |  |
| Cubicle/Coup       | CBS                 |                    |                  |       |                   |                       |                  |              |             |                 |           |                  |             |      |  |
| Cub_1 /Tr2         | DIS-KIMA-30MVA      |                    |                  |       | -11.81            | -3.25                 | -0.96            | 0.36         | 43.32       | Tap:            | 7.00      | Min: 1           | Max: 18     |      |  |
| KIMA1-20KV.00      | 0.99                | 19.88              | -7.02            |       |                   |                       |                  |              |             |                 |           |                  |             |      |  |
| Cub_1 /Lod         | LOAD-KIMA2          |                    |                  |       | 16.00             | 5.93                  | 0.94             | 0.50         |             | P10:            | 16.20 MW  | Q10: 6.00 Mvar   |             |      |  |
| Cubicle/Coup       | CBS                 |                    |                  |       |                   |                       |                  |              |             |                 |           |                  |             |      |  |
| Cub_1 /Tr2         | DIS-KIMA-60MVA      |                    |                  |       | -16.00            | -5.93                 | -0.94            | 0.50         | 30.12       | Tap:            | 7.00      | Min: 1           | Max: 18     |      |  |
| KONAWA (1)         |                     |                    |                  |       |                   |                       |                  |              |             |                 |           |                  |             |      |  |
| KONAWA             | 150.00              |                    |                  |       |                   |                       |                  |              |             |                 |           |                  |             |      |  |
| Cub_1 /Lne         | UNHHA - KONAWA      |                    |                  |       |                   |                       |                  |              |             | Pv:             |           | cLod:            | L: 50.00 km |      |  |
| Cub_1 /Lne         | UNHHA - KONAWA (1   |                    |                  |       |                   |                       |                  |              |             | Pv:             |           | cLod:            | L: 50.00 km |      |  |
| Cub_1 /Tr2         | DIS-KONAWA-30MVA (1 |                    |                  |       |                   |                       |                  |              |             | Tap:            | 8         | Min: 1           | Max: 18     |      |  |
| Cub_1 /Tr2         | DIS-KONAWA-30MVA (2 |                    |                  |       |                   |                       |                  |              |             | Tap:            | 8         | Min: 1           | Max: 18     |      |  |

| Grid: Grid     |                     | System Stage: Grid |                    |       |       | Study Case: Case 01 |                       |                  |              | Annex:      |                 |          |       | / 14       |             |
|----------------|---------------------|--------------------|--------------------|-------|-------|---------------------|-----------------------|------------------|--------------|-------------|-----------------|----------|-------|------------|-------------|
|                |                     | rated Voltage [KV] | Bus-voltage [p.u.] | [KV]  | [deg] | Active Power [MW]   | Reactive Power [Mvar] | Power Factor [-] | Current [kA] | Loading [%] | Additional Data |          |       |            |             |
| KENDRI2 20KV   |                     |                    |                    |       |       |                     |                       |                  |              |             |                 |          |       |            |             |
| KENDRI1 20K.00 |                     | 1.00               | 20.03              | 12.85 |       |                     |                       |                  |              |             |                 |          |       |            |             |
| Cub_1 /Lod     | LOAD-KENDRI1        |                    |                    |       |       | 28.71               | 6.09                  | 0.98             | 0.85         |             | P10:            | 28.61 MW | Q10:  | 6.07 Mvar  |             |
| Cubicle/Coup   | CBS                 |                    |                    |       |       |                     |                       |                  |              |             |                 |          |       |            |             |
| Cub_1 /Tr2     | DIS-KENDARI1-60MVA  |                    |                    |       |       | -28.71              | -6.09                 | -0.98            | 0.85         | 50.08       | Tap:            | 8.00     | Min:  | 1          | Max: 18     |
| KENDRI2 20K.00 |                     | 0.98               | 19.67              | 14.74 |       |                     |                       |                  |              |             |                 |          |       |            |             |
| Cub_1 /Lod     | LOAD-KENDRI2        |                    |                    |       |       | 12.92               | 3.35                  | 0.97             | 0.39         |             | P10:            | 13.35 MW | Q10:  | 3.46 Mvar  |             |
| Cubicle/Coup   | CBS                 |                    |                    |       |       |                     |                       |                  |              |             |                 |          |       |            |             |
| Cub_1 /Tr2     | DIS-KENDARI2-60MVA  |                    |                    |       |       | -12.92              | -3.35                 | -0.97            | 0.39         | 22.61       | Tap:            | 9.00     | Min:  | 1          | Max: 18     |
| KONWE (1)      |                     |                    |                    |       |       |                     |                       |                  |              |             |                 |          |       |            |             |
| KONAWA 20K.00  |                     |                    |                    |       |       |                     |                       |                  |              |             |                 |          |       |            |             |
| Cub_1 /Lod     | LOAD-KONAWA2        |                    |                    |       |       |                     |                       |                  |              |             | P10:            | 0.00 MW  | Q10:  | 0.00 Mvar  |             |
| Cub_1 /Tr2     | DIS-KONAWA-30MVA (2 |                    |                    |       |       |                     |                       |                  |              |             | Tap:            | 8        | Min:  | 1          | Max: 18     |
| KONWE          |                     |                    |                    |       |       |                     |                       |                  |              |             |                 |          |       |            |             |
| KONAWA 20K.00  |                     |                    |                    |       |       |                     |                       |                  |              |             |                 |          |       |            |             |
| Cub_1 /Lod     | LOAD-KONAWA1        |                    |                    |       |       |                     |                       |                  |              |             | P10:            | 0.00 MW  | Q10:  | 0.00 Mvar  |             |
| Cub_1 /Tr2     | DIS-KONAWA-30MVA (1 |                    |                    |       |       |                     |                       |                  |              |             | Tap:            | 8        | Min:  | 1          | Max: 18     |
| KOLAKA 20KV    |                     |                    |                    |       |       |                     |                       |                  |              |             |                 |          |       |            |             |
| KOLAKA 20K.00  |                     | 0.99               | 19.82              | 12.19 |       |                     |                       |                  |              |             |                 |          |       |            |             |
| Cub_1 /Lod     | LOAD-KLAKA          |                    |                    |       |       | 12.13               | 3.27                  | 0.97             | 0.37         |             | P10:            | 12.35 MW | Q10:  | 3.33 Mvar  |             |
| Cub_1 /Tr2     | DIS-KOLAKA-30MVA    |                    |                    |       |       | -12.13              | -3.27                 | -0.97            | 0.37         | 43.34       | Tap:            | 8.00     | Min:  | 1          | Max: 18     |
| KOLAKA         |                     |                    |                    |       |       |                     |                       |                  |              |             |                 |          |       |            |             |
| KOLAKA 150.00  |                     | 0.98               | 147.13             | 15.10 |       |                     |                       |                  |              |             |                 |          |       |            |             |
| Cub_1 /Lne     | KOLAKA-WOLO         |                    |                    |       |       | 5.52                | 0.10                  | 1.00             | 0.02         | 1.70        | Pv:             | 2.07 kW  | cLod: | -0.00 Mvar | L: 30.00 km |
| Cub_1 /Lne     | KOLAKA-WOLO (1)     |                    |                    |       |       | 5.52                | 0.10                  | 1.00             | 0.02         | 1.70        | Pv:             | 2.07 kW  | cLod: | -0.00 Mvar | L: 30.00 km |
| Cub_1 /Lne     | UNHHA - KOLAKA1     |                    |                    |       |       | -11.58              | -2.07                 | -0.98            | 0.05         | 3.62        | Pv:             | 30.23 kW | cLod: | -0.00 Mvar | L: 73.88 km |
| Cub_1 /Lne     | UNHHA - KOLAKA2     |                    |                    |       |       | -11.58              | -2.07                 | -0.98            | 0.05         | 3.62        | Pv:             | 30.23 kW | cLod: | -0.00 Mvar | L: 73.88 km |
| Cub_1 /Tr2     | DIS-KOLAKA-30MVA    |                    |                    |       |       | 12.13               | 3.94                  | 0.95             | 0.05         | 43.34       | Tap:            | 8.00     | Min:  | 1          | Max: 18     |
| KSPITE (1)     |                     |                    |                    |       |       |                     |                       |                  |              |             |                 |          |       |            |             |
| KASIFUTE 2.00  |                     | 0.99               | 19.87              | 14.63 |       |                     |                       |                  |              |             |                 |          |       |            |             |
| Cub_1 /Lod     | LOAD-KLAKA (2)      |                    |                    |       |       | 6.96                | 4.94                  | 0.82             | 0.25         |             | P10:            | 7.05 MW  | Q10:  | 5.00 Mvar  |             |
| Cub_1 /Tr2     | DIS-KASIFUTE-30MVA  |                    |                    |       |       | -6.96               | -4.94                 | -0.82            | 0.25         | 29.36       | Tap:            | 8.00     | Min:  | 1          | Max: 18     |
| KSPITE         |                     |                    |                    |       |       |                     |                       |                  |              |             |                 |          |       |            |             |
| KASIFUTE50.00  |                     | 0.99               | 148.39             | 16.28 |       |                     |                       |                  |              |             |                 |          |       |            |             |
| Cub_1 /Lne     | ANDOLO-KASIFUTE     |                    |                    |       |       | -3.48               | -2.62                 | -0.80            | 0.02         | 1.33        | Pv:             | 0.78 kW  | cLod: | -0.00 Mvar | L: 15.00 km |
| Cub_1 /Lne     | ANDOLO-KASIFUTE (1) |                    |                    |       |       | -3.48               | -2.62                 | -0.80            | 0.02         | 1.33        | Pv:             | 0.78 kW  | cLod: | -0.00 Mvar | L: 15.00 km |
| Cub_1 /Tr2     | DIS-KASIFUTE-30MVA  |                    |                    |       |       | 6.96                | 5.24                  | 0.80             | 0.03         | 29.36       | Tap:            | 8.00     | Min:  | 1          | Max: 18     |

| Grid: Grid    |                          |                       |                     | System Stage: Grid |                         |                             |                        | Study Case: Case 01 |                |      |                 | Annex: |               |           |    | / 15 |  |
|---------------|--------------------------|-----------------------|---------------------|--------------------|-------------------------|-----------------------------|------------------------|---------------------|----------------|------|-----------------|--------|---------------|-----------|----|------|--|
|               | rated<br>Voltage<br>[KV] | Bus-voltage<br>[p.u.] | Bus-voltage<br>[KV] | [deg]              | Active<br>Power<br>[MW] | Reactive<br>Power<br>[Mvar] | Power<br>Factor<br>[-] | Current<br>[kA]     | Loading<br>[%] |      | Additional Data |        |               |           |    |      |  |
| LANNA (1)     |                          |                       |                     |                    |                         |                             |                        |                     |                |      |                 |        |               |           |    |      |  |
| LANNA 20KV.00 | 0.99                     | 19.84                 | -4.23               |                    |                         |                             |                        |                     |                |      |                 |        |               |           |    |      |  |
| Cub_1 /Lod    | LOAD-LANNA               |                       |                     |                    | 1.87                    | 0.00                        | 1.00                   | 0.05                |                | P10: | 1.90 MW         | Q10:   | 0.00 Mvar     |           |    |      |  |
| Cubicle/Coup  | CBS                      |                       |                     |                    |                         |                             |                        |                     |                |      |                 |        |               |           |    |      |  |
| Cub_1 /Tr2    | DIS-LANNA                |                       |                     |                    | -1.87                   | 0.00                        | -1.00                  | 0.05                | 3.22           | Tap: | 8.00            | Min:   | 1             | Max:      | 18 |      |  |
| LANNA 20KV.00 |                          |                       |                     |                    |                         |                             |                        |                     |                |      |                 |        |               |           |    |      |  |
| Cub_1 /Lod    | LOAD-SGMSA1 (1)          |                       |                     |                    |                         |                             |                        |                     |                | P10: | 0.00 MW         | Q10:   | 0.00 Mvar     |           |    |      |  |
| Cubicle/Coup  | CBS                      |                       |                     |                    |                         |                             |                        |                     |                |      |                 |        |               |           |    |      |  |
| Cub_1 /Tr2    | DIS-LANNA (1)            |                       |                     |                    |                         |                             |                        |                     |                | Tap: | 1               | Min:   | 1             | Max:      | 18 |      |  |
| LANNA         |                          |                       |                     |                    |                         |                             |                        |                     |                |      |                 |        |               |           |    |      |  |
| LANNA 150K.00 | 0.97                     | 145.08                | -3.99               |                    |                         |                             |                        |                     |                |      |                 |        |               |           |    |      |  |
| Cub_1 /Lne    | SGMINASA-LANNA           |                       |                     |                    | -0.93                   | -0.00                       | -1.00                  | 0.00                | 0.31           | Pv:  | 0.06 kW         | cLod:  | 0.00 Mvar L:  | 22.60 km  |    |      |  |
| Cub_1 /Lne    | SGMINASA-LANNA (1)       |                       |                     |                    | -0.93                   | -0.00                       | -1.00                  | 0.00                | 0.31           | Pv:  | 0.06 kW         | cLod:  | 0.00 Mvar L:  | 22.60 km  |    |      |  |
| Cub_1 /Tr2    | DIS-LANNA                |                       |                     |                    | 1.87                    | 0.01                        | 1.00                   | 0.01                | 3.22           | Tap: | 8.00            | Min:   | 1             | Max:      | 18 |      |  |
| Cub_1 /Tr2    | DIS-LANNA (1)            |                       |                     |                    |                         |                             |                        |                     |                | Tap: | 1               | Min:   | 1             | Max:      | 18 |      |  |
| LASUSU 20KV   |                          |                       |                     |                    |                         |                             |                        |                     |                |      |                 |        |               |           |    |      |  |
| LASUSU 20K.00 | 0.98                     | 19.52                 | 12.88               |                    |                         |                             |                        |                     |                |      |                 |        |               |           |    |      |  |
| Cub_1 /Lod    | LOAD-LISUSU              |                       |                     |                    | 7.28                    | 1.38                        | 0.98                   | 0.22                |                | P10: | 7.65 MW         | Q10:   | 1.45 Mvar     |           |    |      |  |
| Cub_1 /Tr2    | DIS-LISUSU-30MVA         |                       |                     |                    | -7.28                   | -1.38                       | -0.98                  | 0.22                | 25.33          | Tap: | 9.00            | Min:   | 1             | Max:      | 18 |      |  |
| LASUSU        |                          |                       |                     |                    |                         |                             |                        |                     |                |      |                 |        |               |           |    |      |  |
| LASUSU 150.00 | 0.98                     | 147.32                | 14.69               |                    |                         |                             |                        |                     |                |      |                 |        |               |           |    |      |  |
| Cub_1 /Lne    | KOLAKA - LSUSUA1         |                       |                     |                    | -4.17                   | 2.42                        | -0.86                  | 0.02                | 1.48           | Pv:  | 5.80 kW         | cLod:  | -0.00 Mvar L: | 110.20 km |    |      |  |
| Cub_1 /Lne    | KOLAKA - LSUSUA2         |                       |                     |                    | -4.18                   | 2.43                        | -0.86                  | 0.02                | 1.48           | Pv:  | 5.81 kW         | cLod:  | -0.00 Mvar L: | 110.02 km |    |      |  |
| Cub_1 /Lne    | MLILI-LSUSU1             |                       |                     |                    | 0.54                    | -3.23                       | 0.16                   | 0.01                | 1.01           | Pv:  | 2.88 kW         | cLod:  | -0.00 Mvar L: | 118.80 km |    |      |  |
| Cub_1 /Lne    | MLILI-LSUSU2             |                       |                     |                    | 0.54                    | -3.23                       | 0.16                   | 0.01                | 1.01           | Pv:  | 2.88 kW         | cLod:  | -0.00 Mvar L: | 118.80 km |    |      |  |
| Cub_1 /Tr2    | DIS-LISUSU-30MVA         |                       |                     |                    | 7.28                    | 1.62                        | 0.98                   | 0.03                | 25.33          | Tap: | 9.00            | Min:   | 1             | Max:      | 18 |      |  |
| LATUPPA 275KV |                          |                       |                     |                    |                         |                             |                        |                     |                |      |                 |        |               |           |    |      |  |
| LATUPPA 27.00 | 0.97                     | 265.54                | 13.55               |                    |                         |                             |                        |                     |                |      |                 |        |               |           |    |      |  |
| Cub_1 /Lne    | LTUPA-PMONA              |                       |                     |                    | -102.38                 | -12.51                      | -0.99                  | 0.22                | 12.21          | Pv:  | 1103.42 kW      | cLod:  | -0.00 Mvar L: | 212.00 km |    |      |  |
| Cub_1 /Lne    | LTUPA-MOTU275KV          |                       |                     |                    | -89.57                  | -5.29                       | -1.00                  | 0.20                | 10.63          | Pv:  | 382.13 kW       | cLod:  | -0.00 Mvar L: | 97.00 km  |    |      |  |
| Cub_1 /Tr2    | IBT1 90MVA               |                       |                     |                    | 47.99                   | 4.45                        | 1.00                   | 0.10                | 55.46          | Tap: | 8.00            | Min:   | 1             | Max:      | 18 |      |  |
| Cub_1 /Tr2    | IBT2 90MVA               |                       |                     |                    | 47.99                   | 4.45                        | 1.00                   | 0.10                | 55.46          | Tap: | 8.00            | Min:   | 1             | Max:      | 18 |      |  |
| Cub_1 /Tr2    | IBT3 90MVA               |                       |                     |                    | 47.99                   | 4.45                        | 1.00                   | 0.10                | 55.46          | Tap: | 8.00            | Min:   | 1             | Max:      | 18 |      |  |
| Cub_1 /Tr2    | IBT4 90MVA               |                       |                     |                    | 47.99                   | 4.45                        | 1.00                   | 0.10                | 55.46          | Tap: | 8.00            | Min:   | 1             | Max:      | 18 |      |  |

| Grid: Grid    |                          | System Stage: Grid    |               |     | Study Case: Case 01     |                             |                        |                 | Annex:         |                 | / 16             |              |
|---------------|--------------------------|-----------------------|---------------|-----|-------------------------|-----------------------------|------------------------|-----------------|----------------|-----------------|------------------|--------------|
|               | rated<br>Voltage<br>[kV] | Bus-voltage<br>[p.u.] | Power<br>[kW] | deg | Active<br>Power<br>[MW] | Reactive<br>Power<br>[Mvar] | Power<br>Factor<br>[-] | Current<br>[kA] | Loading<br>[%] | Additional Data |                  |              |
| LATUPPA       |                          |                       |               |     |                         |                             |                        |                 |                |                 |                  |              |
| LATUPPA150.00 | 0.99                     | 147.96                | 9.64          |     |                         |                             |                        |                 |                |                 |                  |              |
| Cub_1 /Lne    | FLOPO-LTUPA1             |                       |               |     | 95.98                   | 2.32                        | 1.00                   | 0.37            | 29.36          | Pv: 934.66 kW   | cLod: -0.00 Mvar | L: 26.43 km  |
| Cub_1 /Lne    | FLOPO-LTUPA2             |                       |               |     | 95.98                   | 2.32                        | 1.00                   | 0.37            | 29.36          | Pv: 934.66 kW   | cLod: -0.00 Mvar | L: 26.43 km  |
| Cub_1 /Tr2    | IBT1 90MVA               |                       |               |     | -47.99                  | -1.16                       | -1.00                  | 0.19            | 55.46          | Tap: 8.00       | Min: 1           | Max: 18      |
| Cub_1 /Tr2    | IBT2 90MVA               |                       |               |     | -47.99                  | -1.16                       | -1.00                  | 0.19            | 55.46          | Tap: 8.00       | Min: 1           | Max: 18      |
| Cub_1 /Tr2    | IBT3 90MVA               |                       |               |     | -47.99                  | -1.16                       | -1.00                  | 0.19            | 55.46          | Tap: 8.00       | Min: 1           | Max: 18      |
| Cub_1 /Tr2    | IBT4 90MVA               |                       |               |     | -47.99                  | -1.16                       | -1.00                  | 0.19            | 55.46          | Tap: 8.00       | Min: 1           | Max: 18      |
| LOAD PGAYA    |                          |                       |               |     |                         |                             |                        |                 |                |                 |                  |              |
| PGAYA-20KV.00 | 1.00                     | 19.99                 | -1.19         |     |                         |                             |                        |                 |                |                 |                  |              |
| Cub_1 /Lod    | LOAD-PGAYA               |                       |               |     | 4.71                    | 0.00                        | 1.00                   | 0.14            |                | P10: 4.71 MW    | Q10: 0.00 Mvar   |              |
| Cub_1 /Tr2    | DIS-PGAYA-30MVA          |                       |               |     | -4.71                   | 0.00                        | -1.00                  | 0.14            | 15.69          | Tap: 9.00       | Min: 1           | Max: 18      |
| MAJENE 20KV   |                          |                       |               |     |                         |                             |                        |                 |                |                 |                  |              |
| MAJENE 20K.00 | 1.00                     | 19.96                 | 1.50          |     |                         |                             |                        |                 |                |                 |                  |              |
| Cub_1 /Lod    | LOAD MAJENE              |                       |               |     | 6.67                    | 0.60                        | 1.00                   | 0.19            |                | P10: 6.70 MW    | Q10: 0.60 Mvar   |              |
| Cub_1 /Tr2    | DIS-MAJENE-20MVA         |                       |               |     | -6.67                   | -0.60                       | -1.00                  | 0.19            | 35.34          | Tap: 7.00       | Min: 1           | Max: 18      |
| MAJENE        |                          |                       |               |     |                         |                             |                        |                 |                |                 |                  |              |
| MAJENE 150.00 | 0.95                     | 142.88                | 3.86          |     |                         |                             |                        |                 |                |                 |                  |              |
| Cub_1 /Lne    | MAJENE-MBUJ1             |                       |               |     | 0.45                    | 6.92                        | 0.06                   | 0.03            | 4.39           | Pv: 34.75 kW    | cLod: -0.00 Mvar | L: 114.30 km |
| Cub_1 /Lne    | MAJENE-MBUJ2             |                       |               |     | 0.45                    | 6.92                        | 0.06                   | 0.03            | 4.39           | Pv: 34.75 kW    | cLod: -0.00 Mvar | L: 114.30 km |
| Cub_1 /Lne    | POIMAS-MAJENE1           |                       |               |     | -8.95                   | -7.58                       | -0.76                  | 0.05            | 7.43           | Pv: 40.92 kW    | cLod: -0.00 Mvar | L: 50.16 km  |
| Cub_1 /Lne    | POIMAS-MAJENE2           |                       |               |     | -8.95                   | -7.58                       | -0.76                  | 0.05            | 7.43           | Pv: 40.92 kW    | cLod: -0.00 Mvar | L: 50.16 km  |
| Cub_1 /Tr2    | DIS-MAJENE-20MVA         |                       |               |     | 6.67                    | 0.88                        | 0.99                   | 0.03            | 35.34          | Tap: 7.00       | Min: 1           | Max: 18      |
| Cub_1 /Tr2    | DIS-MAJENE-30MVA(1       |                       |               |     | 10.34                   | 0.44                        | 1.00                   | 0.04            | 36.20          | Tap: 7.00       | Min: 1           | Max: 18      |
| MAJALE        |                          |                       |               |     |                         |                             |                        |                 |                |                 |                  |              |
| MAJALE 150.00 | 0.98                     | 147.04                | 6.58          |     |                         |                             |                        |                 |                |                 |                  |              |
| Cub_1 /Lne    | MJALE - ERJONG           |                       |               |     | 63.29                   | 5.55                        | 1.00                   | 0.25            | 27.17          | Pv: 728.20 kW   | cLod: -0.00 Mvar | L: 53.44 km  |
| Cub_1 /Lne    | MJALE-PALOP1             |                       |               |     | -17.50                  | 8.78                        | -0.89                  | 0.08            | 12.05          | Pv: 48.40 kW    | cLod: -0.00 Mvar | L: 37.40 km  |
| Cub_1 /Lne    | MJALE-PALOP2             |                       |               |     | -17.50                  | 8.78                        | -0.89                  | 0.08            | 12.05          | Pv: 48.40 kW    | cLod: -0.00 Mvar | L: 37.40 km  |
| Cub_1 /Lne    | SURAP - MJALE            |                       |               |     | 56.35                   | 4.09                        | 1.00                   | 0.22            | 24.17          | Pv: 1137.01 kW  | cLod: -0.00 Mvar | L: 105.50 km |
| Cub_1 /Tr2    | DIS-MAJALE-20MVA         |                       |               |     | -3.32                   | 0.92                        | -0.96                  | 0.01            | 17.55          | Tap: 8.00       | Min: 1           | Max: 18      |
| Cub_1 /Tr2    | DIS-MAJALE-30MVA         |                       |               |     | -4.91                   | 1.35                        | -0.96                  | 0.02            | 17.31          | Tap: 8.00       | Min: 1           | Max: 18      |
| Cub_1 /Tr2    | TG MAJALE1(3)            |                       |               |     | -38.16                  | -22.87                      | -0.86                  | 0.17            | 68.72          | Tap: 5.00       | Min: 1           | Max: 18      |
| Cub_1 /Tr2    | TG MAJALE2(1)            |                       |               |     | -38.25                  | -6.61                       | -0.99                  | 0.15            | 63.36          | Tap: 1.00       | Min: 1           | Max: 18      |
| MALEA(1)      |                          |                       |               |     |                         |                             |                        |                 |                |                 |                  |              |
| PLTA MALEA.00 | 0.97                     | 10.69                 | 10.93         |     |                         |                             |                        |                 |                |                 |                  |              |
| Cub_1 /Sym    | PLTA MALEA #1            |                       |               |     | 38.16                   | 27.00                       | 0.82                   | 2.52            | 103.88         | Typ: FV         |                  |              |
| Cub_1 /Tr2    | TG MALEA1(3)             |                       |               |     | 38.16                   | 27.00                       | 0.82                   | 2.52            | 68.72          | Tap: 5.00       | Min: 1           | Max: 18      |

| Grid: Grid    |                  | System Stage: Grid |       |                         | Study Case: Case 01         |                        |                 |                |                 | Annex:   |       | / 17       |              |
|---------------|------------------|--------------------|-------|-------------------------|-----------------------------|------------------------|-----------------|----------------|-----------------|----------|-------|------------|--------------|
|               | rated<br>Voltage | Bus-voltage        |       | Active<br>Power<br>[MW] | Reactive<br>Power<br>[Mvar] | Power<br>Factor<br>[-] | Current<br>[kA] | Loading<br>[%] | Additional Data |          |       |            |              |
|               | [KV]             | [p.u.]             | [KV]  |                         |                             |                        |                 |                | [deg]           |          |       |            |              |
| MALEA(2)      |                  |                    |       |                         |                             |                        |                 |                |                 |          |       |            |              |
| PLTA MALEA.00 | 0.89             | 9.81               | 11.60 |                         |                             |                        |                 |                |                 |          |       |            |              |
| Cub_1 /Sym    |                  | PLTA MALEA#2       |       | 38.25                   | 10.12                       | 0.97                   | 2.33            | 87.93          | Typ:            | PQ       |       |            |              |
| Cub_1 /Tr2    |                  | TG MALEA2(1)       |       | 38.25                   | 10.12                       | 0.97                   | 2.33            | 63.36          | Tap:            | 1.00     | Min:  | 1          | Max: 18      |
| MALILI 20KV   |                  |                    |       |                         |                             |                        |                 |                |                 |          |       |            |              |
| MALILI 20K.00 | 0.99             | 19.74              | 13.78 |                         |                             |                        |                 |                |                 |          |       |            |              |
| Cub_1 /Lod    |                  | LOAD-MILILI        |       | 3.36                    | -0.26                       | 1.00                   | 0.10            |                | P10:            | 3.45 MW  | Q10:  | -0.27 Mvar |              |
| Cub_1 /Tr2    |                  | DIS-MALILI-30MVA   |       | -3.36                   | 0.26                        | -1.00                  | 0.10            | 11.38          | Tap:            | 9.00     | Min:  | 1          | Max: 18      |
| MALILI 150.00 |                  |                    |       |                         |                             |                        |                 |                |                 |          |       |            |              |
| Cub_1 /Lne    |                  | MLILI-LSUSU1       |       | -0.53                   | 3.25                        | -0.16                  | 0.01            | 1.01           | Pv:             | 2.88 KW  | cLod: | -0.00 Mvar | L: 118.80 km |
| Cub_1 /Lne    |                  | MLILI-LSUSU2       |       | -0.53                   | 3.25                        | -0.16                  | 0.01            | 1.01           | Pv:             | 2.88 KW  | cLod: | -0.00 Mvar | L: 118.80 km |
| Cub_1 /Lne    |                  | WOTU-MLILI1        |       | -1.15                   | -3.14                       | -0.34                  | 0.01            | 1.02           | Pv:             | 1.17 KW  | cLod: | -0.00 Mvar | L: 46.54 km  |
| Cub_1 /Lne    |                  | WOTU-MLILI2        |       | -1.15                   | -3.14                       | -0.34                  | 0.01            | 1.02           | Pv:             | 1.17 KW  | cLod: | -0.00 Mvar | L: 46.54 km  |
| Cub_1 /Tr2    |                  | DIS-MALILI-30MVA   |       | 3.36                    | -0.21                       | 1.00                   | 0.01            | 11.38          | Tap:            | 9.00     | Min:  | 1          | Max: 18      |
| MANDAI 70K.00 |                  |                    |       |                         |                             |                        |                 |                |                 |          |       |            |              |
| Cub_1 /Lne    |                  | MANDAI - DAYA      |       | 3.65                    | -6.12                       | 0.51                   | 0.06            | 7.43           | Pv:             | 12.46 KW | cLod: | 0.00 Mvar  | L: 5.00 km   |
| Cub_1 /Lne    |                  | PNREP - MANDAI1    |       | 5.64                    | -1.56                       | 0.96                   | 0.05            | 6.10           | Pv:             | 64.54 KW | cLod: | 0.00 Mvar  | L: 39.70 km  |
| Cub_1 /Lne    |                  | PNREP - MANDAI2    |       | 5.64                    | -1.56                       | 0.96                   | 0.05            | 6.10           | Pv:             | 64.54 KW | cLod: | 0.00 Mvar  | L: 39.70 km  |
| Cub_1 /Lne    |                  | TELLO - MANDAI     |       | -38.11                  | 2.23                        | -1.00                  | 0.32            | 39.78          | Pv:             | 69.09 KW | cLod: | 0.00 Mvar  | L: 1.00 km   |
| Cub_1 /Tr2    |                  | DIS-MANDAI1        |       | 12.85                   | 3.83                        | 0.96                   | 0.11            | 67.08          | Tap:            | 8.00     | Min:  | 1          | Max: 18      |
| Cub_1 /Tr2    |                  | DIS-MANDAI2        |       | 10.33                   | 3.20                        | 0.96                   | 0.09            | 54.08          | Tap:            | 9.00     | Min:  | 1          | Max: 18      |
| MANDAI1 20.00 |                  |                    |       |                         |                             |                        |                 |                |                 |          |       |            |              |
| Cub_1 /Lod    |                  | LOAD-MANDAI2       |       | 10.33                   | 2.51                        | 0.97                   | 0.31            |                | P10:            | 10.70 MW | Q10:  | 2.60 Mvar  |              |
| Cubicle/Coup  |                  | CBS                |       |                         |                             |                        |                 |                |                 |          |       |            |              |
| Cub_1 /Tr2    |                  | DIS-MANDAI2        |       | -10.33                  | -2.51                       | -0.97                  | 0.31            | 54.08          | Tap:            | 9.00     | Min:  | 1          | Max: 18      |
| MANDAI1-20.00 |                  |                    |       |                         |                             |                        |                 |                |                 |          |       |            |              |
| Cub_1 /Lod    |                  | LOAD-MANDAI1       |       | 12.85                   | 2.83                        | 0.98                   | 0.38            |                | P10:            | 12.70 MW | Q10:  | 2.80 Mvar  |              |
| Cubicle/Coup  |                  | CBS                |       |                         |                             |                        |                 |                |                 |          |       |            |              |
| Cub_1 /Tr2    |                  | DIS-MANDAI1        |       | -12.85                  | -2.83                       | -0.98                  | 0.38            | 67.08          | Tap:            | 8.00     | Min:  | 1          | Max: 18      |

| Grid: Grid     |                     | System Stage: Grid |                  |       | Study Case: Case 01 |                       |                  |              |             | Annex:          |           | / 18  |            |              |
|----------------|---------------------|--------------------|------------------|-------|---------------------|-----------------------|------------------|--------------|-------------|-----------------|-----------|-------|------------|--------------|
|                | rated Voltage [kV]  | Bus-voltage [p.u.] | Bus-voltage [kV] | [deg] | Active Power [MW]   | Reactive Power [Mvar] | Power Factor [-] | Current [kA] | Loading [%] | Additional Data |           |       |            |              |
| MAROS 150.00   |                     |                    |                  |       |                     |                       |                  |              |             |                 |           |       |            |              |
| Cub_1 /Lne     | DAYA BARU-MAROS     |                    |                  |       | 26.61               | -3.20                 | 0.99             | 0.11         | 5.82        | Pv:             | 4.42 kW   | cLod: | 0.00 Mvar  | L: 3.69 km   |
| Cub_1 /Tr2     | DISA-BARU-MAROS(1)  |                    |                  |       | 26.61               | -3.20                 | 0.99             | 0.11         | 5.82        | Pv:             | 4.42 kW   | cLod: | 0.00 Mvar  | L: 3.69 km   |
| Cub_1 /Lne     | MAROS - BARU EXT    |                    |                  |       | -39.19              | 0.19                  | -1.00            | 0.16         | 8.50        | Pv:             | 295.93 kW | cLod: | 0.00 Mvar  | L: 119.00 km |
| Cub_1 /Lne     | MAROS - BARU EXT    |                    |                  |       | -39.19              | 0.19                  | -1.00            | 0.16         | 8.50        | Pv:             | 295.93 kW | cLod: | 0.00 Mvar  | L: 119.00 km |
| Cub_1 /Tr2     | DIS-MAROS1          |                    |                  |       | 15.52               | 3.66                  | 0.97             | 0.06         | 55.01       | Tap:            | 7.00      | Min:  | 1          | Max: 18      |
| Cub_1 /Tr2     | DIS-MAROS2          |                    |                  |       | 9.64                | 2.35                  | 0.97             | 0.04         | 34.23       | Tap:            | 8.00      | Min:  | 1          | Max: 18      |
| MAROS2 20KV    |                     |                    |                  |       |                     |                       |                  |              |             |                 |           |       |            |              |
| MAROS1 20K.00  | 0.98                | 19.64              | -6.14            |       |                     |                       |                  |              |             |                 |           |       |            |              |
| Cub_1 /Lod     | LOAD-MAROS2         |                    |                  |       | 9.64                | 1.93                  | 0.98             | 0.29         |             | P10:            | 10.00 MW  | Q10:  | 2.00 Mvar  |              |
| Cubicle/Coup   | CBS                 |                    |                  |       |                     |                       |                  |              |             |                 |           |       |            |              |
| Cub_1 /Tr2     | DIS-MAROS2          |                    |                  |       | -9.64               | -1.93                 | -0.98            | 0.29         | 34.23       | Tap:            | 8.00      | Min:  | 1          | Max: 18      |
| MAROS2 20K.00  | 1.00                | 20.08              | -7.47            |       |                     |                       |                  |              |             |                 |           |       |            |              |
| Cub_1 /Lod     | LOAD-MAROS1         |                    |                  |       | 15.52               | 2.62                  | 0.99             | 0.45         |             | P10:            | 15.40 MW  | Q10:  | 2.60 Mvar  |              |
| Cubicle/Coup   | CBS                 |                    |                  |       |                     |                       |                  |              |             |                 |           |       |            |              |
| Cub_1 /Tr2     | DIS-MAROS1          |                    |                  |       | -15.52              | -2.62                 | -0.99            | 0.45         | 55.01       | Tap:            | 7.00      | Min:  | 1          | Max: 18      |
| MIITS1         |                     |                    |                  |       |                     |                       |                  |              |             |                 |           |       |            |              |
| BAR-MIITS16.30 | 0.96                | 6.06               | -1.72            |       |                     |                       |                  |              |             |                 |           |       |            |              |
| Cub_1 /Sym     | PLTD-MIITS-1        |                    |                  |       | 6.73                | -0.00                 | 1.00             | 0.64         | 53.38       | Typ:            | PQ        |       |            |              |
| Cub_1 /Tr2     | TG MIITS1           |                    |                  |       | 6.73                | -0.00                 | 1.00             | 0.64         | 46.61       | Tap:            | 0.00      | Min:  | 0          | Max: 0       |
| MIITS2         |                     |                    |                  |       |                     |                       |                  |              |             |                 |           |       |            |              |
| BAR-MIITS26.30 | 0.96                | 6.06               | -1.72            |       |                     |                       |                  |              |             |                 |           |       |            |              |
| Cub_1 /Sym     | PLTD-MIITS-2        |                    |                  |       | 6.73                | -0.00                 | 1.00             | 0.64         | 53.38       | Typ:            | PQ        |       |            |              |
| Cub_1 /Tr2     | TG MIITS2           |                    |                  |       | 6.73                | -0.00                 | 1.00             | 0.64         | 46.61       | Tap:            | 0.00      | Min:  | 0          | Max: 0       |
| MAJENE 20KV(1) |                     |                    |                  |       |                     |                       |                  |              |             |                 |           |       |            |              |
| MAJENE 20K.00  | 1.00                | 20.03              | 1.40             |       |                     |                       |                  |              |             |                 |           |       |            |              |
| Cub_1 /Lod     | LOAD-MAJENE         |                    |                  |       | 10.34               | 0.00                  | 1.00             | 0.30         |             | P10:            | 10.30 MW  | Q10:  | 0.00 Mvar  |              |
| Cub_1 /Tr2     | DIS-MAJENE-30MVA(1) |                    |                  |       | -10.34              | 0.00                  | -1.00            | 0.30         | 36.20       | Tap:            | 7.00      | Min:  | 1          | Max: 18      |
| MMUJU BARU     |                     |                    |                  |       |                     |                       |                  |              |             |                 |           |       |            |              |
| BAR MMUJU .00  | 0.93                | 140.23             | 4.45             |       |                     |                       |                  |              |             |                 |           |       |            |              |
| Cub_1 /Lne     | MMUJU-PLTU MMUJU1   |                    |                  |       | 6.49                | -5.71                 | 0.75             | 0.04         | 5.58        | Pv:             | 17.19 kW  | cLod: | -0.00 Mvar | L: 37.70 km  |
| Cub_1 /Lne     | MMUJU-PLTU MMUJU2   |                    |                  |       | 6.49                | -5.71                 | 0.75             | 0.04         | 5.58        | Pv:             | 17.19 kW  | cLod: | -0.00 Mvar | L: 37.70 km  |
| Cub_1 /Lne     | TPOYO-PLTU1         |                    |                  |       | 10.08               | 9.86                  | 0.71             | 0.06         | 9.10        | Pv:             | 110.02 kW | cLod: | -0.00 Mvar | L: 90.75 km  |
| Cub_1 /Lne     | TPOYO-PLTU2         |                    |                  |       | 10.08               | 9.86                  | 0.71             | 0.06         | 9.10        | Pv:             | 110.02 kW | cLod: | -0.00 Mvar | L: 90.75 km  |
| Cub_1 /Tr2     | DIS-MMUJU BARU      |                    |                  |       | 7.26                | 0.09                  | 1.00             | 0.03         | 25.90       | Tap:            | 7.00      | Min:  | 1          | Max: 18      |
| Cub_1 /Tr2     | TG MMUJU1           |                    |                  |       | -21.03              | -3.93                 | -0.98            | 0.09         | 82.01       | Tap:            | 1.00      | Min:  | 1          | Max: 18      |
| Cub_1 /Tr2     | TG MMUJU2           |                    |                  |       | -19.36              | -4.45                 | -0.97            | 0.08         | 76.16       | Tap:            | 1.00      | Min:  | 1          | Max: 18      |

| Grid: Grid    |                          | System Stage: Grid    |                     |       | Study Case: Case 01     |                             |                        |                 | Annex:         |                 |          | / 19  |                         |
|---------------|--------------------------|-----------------------|---------------------|-------|-------------------------|-----------------------------|------------------------|-----------------|----------------|-----------------|----------|-------|-------------------------|
|               | rated<br>Voltage<br>[kV] | Bus-voltage<br>[p.u.] | Bus-voltage<br>[kV] | [deg] | Active<br>Power<br>[MW] | Reactive<br>Power<br>[Mvar] | Power<br>Factor<br>[-] | Current<br>[kA] | Loading<br>[%] | Additional Data |          |       |                         |
| MMUJU-20KV(1) |                          |                       |                     |       |                         |                             |                        |                 |                |                 |          |       |                         |
| MMUJU-20K.00  | 0.98                     | 19.65                 | 2.64                |       |                         |                             |                        |                 |                |                 |          |       |                         |
| Cub_1 /Lod    | LOAD-MMUJU(1)            |                       |                     |       | 4.15                    | 0.68                        | 0.99                   | 0.12            |                | P10:            | 4.30 MW  | Q10:  | 0.70 Mvar               |
| Cub_1 /Tr2    | DIS-MMUJU-20MVA          |                       |                     |       | -4.15                   | -0.68                       | -0.99                  | 0.12            | 22.53          | Tap:            | 7.00     | Min:  | 1 Max: 18               |
| MMUJU-20KV    |                          |                       |                     |       |                         |                             |                        |                 |                |                 |          |       |                         |
| MMUJU3-20K.00 | 0.99                     | 19.71                 | 3.60                |       |                         |                             |                        |                 |                |                 |          |       |                         |
| Cub_1 /Lod    | LOAD-MMUJU1              |                       |                     |       | 4.95                    | 0.87                        | 0.98                   | 0.15            |                | P10:            | 5.10 MW  | Q10:  | 0.90 Mvar               |
| Cubicle/Coup  | CBS                      |                       |                     |       |                         |                             |                        |                 |                |                 |          |       |                         |
| Cub_1 /Tr2    | DIS-MMUJU-60MVA          |                       |                     |       | -4.95                   | -0.87                       | -0.98                  | 0.15            | 8.95           | Tap:            | 7.00     | Min:  | 1 Max: 18               |
| MMUJU2-20K.00 | 0.99                     | 19.71                 | 2.94                |       |                         |                             |                        |                 |                |                 |          |       |                         |
| Cub_1 /Lod    | LOAD-MMUJU2              |                       |                     |       | 4.66                    | 0.29                        | 1.00                   | 0.14            |                | P10:            | 4.80 MW  | Q10:  | 0.30 Mvar               |
| Cubicle/Coup  | CBS                      |                       |                     |       |                         |                             |                        |                 |                |                 |          |       |                         |
| Cub_1 /Tr2    | DIS-MMUJU-30MVA          |                       |                     |       | -4.66                   | -0.29                       | -1.00                  | 0.14            | 16.63          | Tap:            | 7.00     | Min:  | 1 Max: 18               |
| MMUJU         |                          |                       |                     |       |                         |                             |                        |                 |                |                 |          |       |                         |
| MMUJU 150.00  | 0.94                     | 140.64                | 4.09                |       |                         |                             |                        |                 |                |                 |          |       |                         |
| Cub_1 /Shnt   | FILTER MMUJU1            |                       |                     |       |                         |                             |                        |                 |                |                 |          |       |                         |
| Cub_1 /Shnt   | FILTER MMUJU2            |                       |                     |       |                         |                             |                        |                 |                |                 |          |       |                         |
| Cub_1 /Lne    | MJENE-MMUJU1             |                       |                     |       | -0.41                   | -6.82                       | -0.06                  | 0.03            | 4.39           | Pv:             | 34.75 kW | cLod: | -0.00 Mvar L: 114.30 km |
| Cub_1 /Lne    | MJENE-MMUJU2             |                       |                     |       | -0.41                   | -6.82                       | -0.06                  | 0.03            | 4.39           | Pv:             | 34.75 kW | cLod: | -0.00 Mvar L: 114.30 km |
| Cub_1 /Lne    | MMUJU-FLTU MMUJU2        |                       |                     |       | -6.47                   | 5.77                        | -0.75                  | 0.04            | 5.58           | Pv:             | 17.19 kW | cLod: | -0.00 Mvar L: 37.70 km  |
| Cub_1 /Lne    | MMUJU-FLTU MMUJU2        |                       |                     |       | -6.47                   | 5.77                        | -0.75                  | 0.04            | 5.58           | Pv:             | 17.19 kW | cLod: | -0.00 Mvar L: 37.70 km  |
| Cub_1 /Tr2    | DIS-MMUJU-20MVA          |                       |                     |       | 4.15                    | 0.78                        | 0.98                   | 0.02            | 22.53          | Tap:            | 7.00     | Min:  | 1 Max: 18               |
| Cub_1 /Tr2    | DIS-MMUJU-30MVA          |                       |                     |       | 4.66                    | 0.38                        | 1.00                   | 0.02            | 16.63          | Tap:            | 7.00     | Min:  | 1 Max: 18               |
| Cub_1 /Tr2    | DIS-MMUJU-60MVA          |                       |                     |       | 4.95                    | 0.92                        | 0.98                   | 0.02            | 8.95           | Tap:            | 7.00     | Min:  | 1 Max: 18               |
| MRAMO 20KV    |                          |                       |                     |       |                         |                             |                        |                 |                |                 |          |       |                         |
| MRAMO 20KV.00 | 1.00                     | 19.96                 | 15.73               |       |                         |                             |                        |                 |                |                 |          |       |                         |
| Cub_1 /Lod    | LOAD-MRAMO               |                       |                     |       | 9.56                    | 1.85                        | 0.98                   | 0.28            |                | P10:            | 9.60 MW  | Q10:  | 1.86 Mvar               |
| Cub_1 /Tr2    | DIS-MRAMO-60MVA          |                       |                     |       | -9.56                   | -1.85                       | -0.98                  | 0.28            | 16.26          | Tap:            | 9.00     | Min:  | 1 Max: 18               |
| MSMBA 20KV    |                          |                       |                     |       |                         |                             |                        |                 |                |                 |          |       |                         |
| MSMBA 20KV.00 | 0.98                     | 19.62                 | 12.51               |       |                         |                             |                        |                 |                |                 |          |       |                         |
| Cub_1 /Lod    | LOAD-MASAMBA             |                       |                     |       | 8.55                    | 1.42                        | 0.99                   | 0.26            |                | P10:            | 8.89 MW  | Q10:  | 1.48 Mvar               |
| Cub_1 /Tr2    | DIS-MASAMBA-30MVA        |                       |                     |       | -8.55                   | -1.42                       | -0.99                  | 0.26            | 29.46          | Tap:            | 9.00     | Min:  | 1 Max: 18               |
| MSMBA         |                          |                       |                     |       |                         |                             |                        |                 |                |                 |          |       |                         |
| MASAMBA150.00 | 0.98                     | 147.23                | 14.24               |       |                         |                             |                        |                 |                |                 |          |       |                         |
| Cub_1 /Lne    | WOTU-MASAMBA             |                       |                     |       | -6.11                   | -2.76                       | -0.91                  | 0.03            | 4.12           | Pv:             | 18.72 kW | cLod: | -0.00 Mvar L: 70.00 km  |
| Cub_1 /Lne    | WOTU-MASAMBA(1)          |                       |                     |       | -6.11                   | -2.76                       | -0.91                  | 0.03            | 4.12           | Pv:             | 18.72 kW | cLod: | -0.00 Mvar L: 70.00 km  |
| Cub_1 /Tr2    | DIS-WOTU-30MVA(1)        |                       |                     |       | 12.22                   | 5.51                        | 0.91                   | 0.05            | 45.53          | Tap:            | 8.00     | Min:  | 1 Max: 18               |

| Grid: Grid     |                          | System Stage: Grid    |                     |       | Study Case: Case 01     |                             |                        |                 | Annex:         |                 |           | / 20  |                        |
|----------------|--------------------------|-----------------------|---------------------|-------|-------------------------|-----------------------------|------------------------|-----------------|----------------|-----------------|-----------|-------|------------------------|
|                | rated<br>Voltage<br>[kV] | Bus-voltage<br>[p.u.] | Bus-voltage<br>[kV] | [deg] | Active<br>Power<br>[MW] | Reactive<br>Power<br>[Mvar] | Power<br>Factor<br>[-] | Current<br>[kA] | Loading<br>[%] | Additional Data |           |       |                        |
| NII TANASA     |                          |                       |                     |       |                         |                             |                        |                 |                |                 |           |       |                        |
| NII TANASA.00  | 1.01                     | 70.73                 | 20.50               |       |                         |                             |                        |                 |                |                 |           |       |                        |
| Cub_1 /Lne     | NII TANASA - PMATU       |                       |                     |       | 22.90                   | -5.15                       | 0.98                   | 0.19            | 24.72          | Pv:             | 279.66 kW | cLod: | -0.00 Mvar L: 12.70 km |
| Cub_1 /Lne     | NII TANASA - PMATU       |                       |                     |       | 22.90                   | -5.15                       | 0.98                   | 0.19            | 24.72          | Pv:             | 279.66 kW | cLod: | -0.00 Mvar L: 12.70 km |
| Cub_1 /Tr2     | DIS-NTNSA                |                       |                     |       | 1.87                    | 0.35                        | 0.98                   | 0.02            | 15.68          | Tap:            | 9.00      | Min:  | 1 Max: 18              |
| Cub_1 /Tr2     | TG PLTU NTNSA1           |                       |                     |       | -15.13                  | 6.55                        | -0.92                  | 0.13            | 19.60          | Tap:            | 9.00      | Min:  | 1 Max: 18              |
| Cub_1 /Tr2     | TG PLTU NTNSA2           |                       |                     |       | -22.53                  | 0.64                        | -1.00                  | 0.18            | 18.59          | Tap:            | 1.00      | Min:  | 1 Max: 18              |
| Cub_1 /Tr2     | TG PLTU NTNSA1           |                       |                     |       | -6.00                   | 1.42                        | -0.97                  | 0.05            | 50.85          | Tap:            | 9.00      | Min:  | 1 Max: 18              |
| Cub_1 /Tr2     | TG PLTU NTNSA2           |                       |                     |       | -4.00                   | 1.34                        | -0.95                  | 0.03            | 34.78          | Tap:            | 9.00      | Min:  | 1 Max: 18              |
| Cub_1 /Tr2     | TG PLTU NTNSA3           |                       |                     |       |                         |                             |                        |                 |                | Tap:            | 9         | Min:  | 1 Max: 18              |
| NTNSA 20KV     |                          |                       |                     |       |                         |                             |                        |                 |                |                 |           |       |                        |
| NTNSA 20KV.00  | 1.01                     | 20.15                 | 19.62               |       |                         |                             |                        |                 |                |                 |           |       |                        |
| Cub_1 /Lod     | LOAD-NTNSA               |                       |                     |       | 1.87                    | 0.32                        | 0.99                   | 0.05            |                | P10:            | 1.84 MW   | Q10:  | 0.32 Mvar              |
| Cub_1 /Tr2     | DIS-NTNSA                |                       |                     |       | -1.87                   | -0.32                       | -0.99                  | 0.05            | 15.68          | Tap:            | 9.00      | Min:  | 1 Max: 18              |
| PALOPO         |                          |                       |                     |       |                         |                             |                        |                 |                |                 |           |       |                        |
| PALOPO 150.00  | 0.98                     | 146.50                | 7.33                |       |                         |                             |                        |                 |                |                 |           |       |                        |
| Cub_1 /Lne     | MHALA-PALOPO1            |                       |                     |       | 17.55                   | -8.52                       | 0.90                   | 0.08            | 12.05          | Pv:             | 48.40 kW  | cLod: | -0.00 Mvar L: 37.40 km |
| Cub_1 /Lne     | MHALA-PALOPO2            |                       |                     |       | 17.55                   | -8.52                       | 0.90                   | 0.08            | 12.05          | Pv:             | 48.40 kW  | cLod: | -0.00 Mvar L: 37.40 km |
| Cub_1 /Lne     | PALOPO-BELOPA(1)         |                       |                     |       | 65.93                   | 3.76                        | 1.00                   | 0.26            | 20.40          | Pv:             | 417.89 kW | cLod: | -0.00 Mvar L: 24.48 km |
| Cub_1 /Lne     | PALOPO-STBAL             |                       |                     |       | 65.93                   | 3.76                        | 1.00                   | 0.26            | 20.40          | Pv:             | 417.89 kW | cLod: | -0.00 Mvar L: 24.48 km |
| Cub_1 /Lne     | PALOPO-LITUPAL           |                       |                     |       | -95.04                  | 1.53                        | -1.00                  | 0.37            | 29.36          | Pv:             | 934.66 kW | cLod: | -0.00 Mvar L: 26.43 km |
| Cub_1 /Lne     | PALOPO-LITUPA2           |                       |                     |       | -95.04                  | 1.53                        | -1.00                  | 0.37            | 29.36          | Pv:             | 934.66 kW | cLod: | -0.00 Mvar L: 26.43 km |
| Cub_1 /Tr2     | DIS-PALOPO-20MVA         |                       |                     |       | 11.44                   | 3.88                        | 0.95                   | 0.05            | 61.82          | Tap:            | 8.00      | Min:  | 1 Max: 18              |
| Cub_1 /Tr2     | DIS-PALOPO-30MVA         |                       |                     |       |                         |                             |                        |                 |                | Tap:            | 1         | Min:  | 1 Max: 18              |
| Cub_1 /Tr2     | DIS-PALANGI 60MVA        |                       |                     |       | 5.36                    | 1.14                        | 0.98                   | 0.02            | 28.07          | Tap:            | 9.00      | Min:  | 1 Max: 18              |
| Cub_1 /Tr2     | DIS-PALOPO-30MVA         |                       |                     |       | 6.32                    | 1.46                        | 0.97                   | 0.03            | 22.14          | Tap:            | 9.00      | Min:  | 1 Max: 18              |
| PAMONA         |                          |                       |                     |       |                         |                             |                        |                 |                |                 |           |       |                        |
| PAMONA 150.00  | 0.99                     | 147.80                | 15.29               |       |                         |                             |                        |                 |                |                 |           |       |                        |
| Cub_1 /Lne     | POSO-PMONA2              |                       |                     |       | 59.17                   | 20.10                       | 0.95                   | 0.24            | 38.26          | Pv:             | 934.82 kW | cLod: | -0.00 Mvar L: 43.57 km |
| Cub_1 /Lne     | POSO-PMONA2              |                       |                     |       | 59.17                   | 20.10                       | 0.95                   | 0.24            | 38.26          | Pv:             | 934.82 kW | cLod: | -0.00 Mvar L: 43.57 km |
| Cub_1 /Tr2     | DIS-PMONA-10MVA          |                       |                     |       | -1.09                   | 2.15                        | -0.45                  | 0.01            | 24.51          | Tap:            | 8.00      | Min:  | 1 Max: 18              |
| Cub_1 /Tr2     | IBT1 275KV               |                       |                     |       | -34.16                  | 75.73                       | -0.41                  | 0.32            | 93.68          | Tap:            | 14.00     | Min:  | 1 Max: 18              |
| Cub_1 /Tr2     | IBT2 275KV               |                       |                     |       | -83.09                  | -118.08                     | -0.58                  | 0.56            | 88.01          | Tap:            | 6.00      | Min:  | 1 Max: 18              |
| PANAKUNGANG    |                          |                       |                     |       |                         |                             |                        |                 |                |                 |           |       |                        |
| PANAKUNGANG.00 | 0.96                     | 144.24                | -4.77               |       |                         |                             |                        |                 |                |                 |           |       |                        |
| Cub_1 /Lne     | TELLO-PKANG1 150KV       |                       |                     |       | -39.23                  | -11.87                      | -0.96                  | 0.16            | 14.24          | Pv:             | 31.55 kW  | cLod: | 0.00 Mvar L: 4.20 km   |
| Cub_1 /Lne     | TELLO-PKANG2 150KV       |                       |                     |       | -39.23                  | -11.87                      | -0.96                  | 0.16            | 14.24          | Pv:             | 31.55 kW  | cLod: | 0.00 Mvar L: 4.20 km   |
| Cub_1 /Tr2     | DIS-PKANG1 60MVA         |                       |                     |       | 34.16                   | 10.44                       | 0.96                   | 0.14            | 61.91          | Tap:            | 7.00      | Min:  | 1 Max: 18              |
| Cub_1 /Tr2     | DIS-PKANG2 30MVA         |                       |                     |       |                         |                             |                        |                 |                | Tap:            | 1         | Min:  | 1 Max: 18              |
| Cub_1 /Tr2     | DIS-PKANG3 60MVA         |                       |                     |       | 44.31                   | 13.31                       | 0.96                   | 0.19            | 80.18          | Tap:            | 7.00      | Min:  | 1 Max: 18              |

| Grid: Grid    |  |                  |  |              |                |              |         |         |                 |               |            |               |    | System Stage: Grid |  |  |  | Study Case: Case 01 |  |  |  | Annex: |  |  |  | / 21 |  |
|---------------|--|------------------|--|--------------|----------------|--------------|---------|---------|-----------------|---------------|------------|---------------|----|--------------------|--|--|--|---------------------|--|--|--|--------|--|--|--|------|--|
| rated Voltage |  | Bus-voltage      |  | Active Power | Reactive Power | Power Factor | Current | Loading | Additional Data |               |            |               |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| [kV]          |  | [p.u.] [kV]      |  | [deg]        | [MW]           | [MVar]       | [-]     | [kA]    | [%]             |               |            |               |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| PANGKEP 70KV  |  |                  |  |              |                |              |         |         |                 |               |            |               |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| PANGKEP 70.00 |  | 0.99 69.57       |  | -11.83       |                |              |         |         |                 |               |            |               |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Shnt   |  | C-PANGKEP1       |  |              | -0.00          | -9.88        | -0.00   | 0.08    |                 |               |            |               |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Shnt   |  | C-PANGKEP2       |  |              | -0.00          | -9.88        | -0.00   | 0.08    |                 |               |            |               |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Shnt   |  | C-PANGKEP3       |  |              | -0.00          | -9.88        | -0.00   | 0.08    |                 |               |            |               |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Shnt   |  | C-PANGKEP4       |  |              | -0.00          | -9.88        | -0.00   | 0.08    |                 |               |            |               |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Shnt   |  | C-PANGKEP5       |  |              | -0.00          | -9.88        | -0.00   | 0.08    |                 |               |            |               |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lne    |  | PNKEP - MANDAL1  |  |              | -5.58          | 1.67         | -0.96   | 0.05    | 6.10            | Pv: 64.54 kW  | cLod: 0.00 | Mvar L: 39.70 | km |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lne    |  | PNKEP - MANDAL2  |  |              | -5.58          | 1.67         | -0.96   | 0.05    | 6.10            | Pv: 64.54 kW  | cLod: 0.00 | Mvar L: 39.70 | km |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lne    |  | PNKEP - TNSA1    |  |              | 62.17          | 16.77        | 0.97    | 0.53    | 124.87          | Pv: 760.90 kW | cLod: 0.00 | Mvar L: 3.70  | km |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lne    |  | PNKEP - TNSA2    |  |              | 62.17          | 16.77        | 0.97    | 0.53    | 124.87          | Pv: 760.90 kW | cLod: 0.00 | Mvar L: 3.70  | km |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  | IBT1-PNKEP       |  |              | -23.54         | 2.60         | -0.99   | 0.20    | 79.62           | Tap: 7.00     | Min: 1     | Max: 18       |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  | IBT2-PNKEP       |  |              | -44.83         | 4.95         | -0.99   | 0.37    | 79.62           | Tap: 7.00     | Min: 1     | Max: 18       |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  | IBT3-PNKEP       |  |              | -44.83         | 4.95         | -0.99   | 0.37    | 79.62           | Tap: 7.00     | Min: 1     | Max: 18       |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|               |  | Total            |  |              |                |              |         |         |                 |               |            |               |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|               |  | Compensation:    |  |              |                | -49.38       |         |         |                 |               |            |               |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| PANGKEP       |  |                  |  |              |                |              |         |         |                 |               |            |               |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| PANGKEP150.00 |  | 0.94 140.78      |  | -6.40        |                |              |         |         |                 |               |            |               |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lne    |  | PNKEP - BARRU1   |  |              | -46.41         | 9.53         | -0.98   | 0.19    | 30.45           | Pv: 597.96 kW | cLod: 0.00 | Mvar L: 44.38 | km |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lne    |  | PNKEP - BARRU2   |  |              | -46.41         | 9.53         | -0.98   | 0.19    | 30.45           | Pv: 597.96 kW | cLod: 0.00 | Mvar L: 44.38 | km |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lne    |  | PNKEP - BOSOWA   |  |              | -7.50          | -8.58        | -0.66   | 0.05    | 7.33            | Pv: 16.71 kW  | cLod: 0.00 | Mvar L: 20.90 | km |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lne    |  | PNKEP - KIMA     |  |              | -35.96         | -14.65       | -0.93   | 0.16    | 24.96           | Pv: 339.63 kW | cLod: 0.00 | Mvar L: 36.60 | km |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  | DIS1-PNKEP-20MVA |  |              | 9.71           | 2.61         | 0.97    | 0.04    | 53.56           | Tap: 6.00     | Min: 1     | Max: 18       |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  | DIS2-PNKEP-30MVA |  |              | 13.37          | 3.28         | 0.97    | 0.06    | 48.90           | Tap: 6.00     | Min: 1     | Max: 18       |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  | DIS3-PNKEP 30MVA |  |              |                |              |         |         |                 | Tap: 1        | Min: 1     | Max: 18       |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  | IBT1-PNKEP       |  |              | 23.54          | -0.36        | 1.00    | 0.10    | 79.62           | Tap: 7.00     | Min: 1     | Max: 18       |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  | IBT2-PNKEP       |  |              | 44.83          | -0.68        | 1.00    | 0.18    | 79.62           | Tap: 7.00     | Min: 1     | Max: 18       |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  | IBT3-PNKEP       |  |              | 44.83          | -0.68        | 1.00    | 0.18    | 79.62           | Tap: 7.00     | Min: 1     | Max: 18       |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| PANGKEP1 20KV |  |                  |  |              |                |              |         |         |                 |               |            |               |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| PANGKEP1 2.00 |  | 1.00 20.01       |  | -9.78        |                |              |         |         |                 |               |            |               |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lod    |  | LOAD-PNKEP1      |  |              | 9.71           | 2.00         | 0.98    | 0.29    |                 | P10: 9.70 MW  | Q10: 2.00  | Mvar          |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cubicle/Coup  |  | CBS              |  |              |                |              |         |         |                 |               |            |               |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  | DIS1-PNKEP-20MVA |  |              | -9.71          | -2.00        | -0.98   | 0.29    | 53.56           | Tap: 6.00     | Min: 1     | Max: 18       |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| PANGKEP2 2.00 |  | 1.00 20.05       |  | -9.54        |                |              |         |         |                 |               |            |               |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lod    |  | LOAD-PNKEP2      |  |              | 13.37          | 2.51         | 0.98    | 0.39    |                 | P10: 13.30 MW | Q10: 2.50  | Mvar          |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cubicle/Coup  |  | CBS              |  |              |                |              |         |         |                 |               |            |               |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_5 /Coup   |  | CBS(1)           |  |              |                |              |         |         |                 |               |            |               |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  | DIS2-PNKEP-30MVA |  |              | -13.37         | -2.51        | -0.98   | 0.39    | 48.90           | Tap: 6.00     | Min: 1     | Max: 18       |    |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |

| Grid: Grid    |                          | System Stage: Grid         |       |                         | Study Case: Case 01         |                        |                 |                | Annex:          |           | / 22  |                        |  |
|---------------|--------------------------|----------------------------|-------|-------------------------|-----------------------------|------------------------|-----------------|----------------|-----------------|-----------|-------|------------------------|--|
|               | rated<br>Voltage<br>[kV] | Bus-voltage<br>[p.u.] [kV] | [deg] | Active<br>Power<br>[MW] | Reactive<br>Power<br>[Mvar] | Power<br>Factor<br>[-] | Current<br>[kA] | Loading<br>[%] | Additional Data |           |       |                        |  |
| PANGKEP2 20KV |                          |                            |       |                         |                             |                        |                 |                |                 |           |       |                        |  |
| PANGKEP2 2.00 |                          |                            |       |                         |                             |                        |                 |                |                 |           |       |                        |  |
| Cub_1         | /Lod                     | LOAD-PNKEP3                |       |                         |                             |                        |                 |                | P10:            | 0.00 MW   | Q10:  | 0.00 Mvar              |  |
| Cub_4         | /Coup                    | CBS(1)                     |       |                         |                             |                        |                 |                |                 |           |       |                        |  |
| Cub_1         | /Tr2                     | DIS3-PNKEP 30MVA           |       |                         |                             |                        |                 |                | Tap:            | 1         | Min:  | 1 Max: 18              |  |
| PPARE PARE    |                          |                            |       |                         |                             |                        |                 |                |                 |           |       |                        |  |
| PPARE         | 150.00                   | 0.96 143.65                | 0.31  |                         |                             |                        |                 |                |                 |           |       |                        |  |
| Cub_1         | /Lne                     | PPARE - BLUSU1             |       | 54.78                   | -2.20                       | 1.00                   | 0.22            | 34.54          | Pv:             | 783.71 kW | cLod: | -0.00 Mvar L: 44.84 km |  |
| Cub_1         | /Lne                     | PPARE - BLUSU2             |       | 54.78                   | -2.20                       | 1.00                   | 0.22            | 34.54          | Pv:             | 783.71 kW | cLod: | -0.00 Mvar L: 44.84 km |  |
| Cub_1         | /Lne                     | PPARE - PLMAS              |       | -34.30                  | 8.33                        | -0.97                  | 0.14            | 22.24          | Pv:             | 649.15 kW | cLod: | -0.00 Mvar L: 91.10 km |  |
| Cub_1         | /Lne                     | PPARE - SDRAP1             |       | -3.34                   | -1.51                       | -0.91                  | 0.01            | 2.31           | Pv:             | 1.53 kW   | cLod: | -0.00 Mvar L: 17.50 km |  |
| Cub_1         | /Lne                     | PPARE - SDRAP2             |       | -58.47                  | -26.41                      | -0.91                  | 0.26            | 40.42          | Pv:             | 26.73 kW  | cLod: | -0.00 Mvar L: 1.00 km  |  |
| Cub_1         | /Lne                     | PPARE - SUPPA1             |       | -21.00                  | 1.66                        | -1.00                  | 0.08            | 13.27          | Pv:             | 18.87 kW  | cLod: | -0.00 Mvar L: 7.50 km  |  |
| Cub_1         | /Lne                     | PPARE - SUPPA2             |       | -21.00                  | 1.66                        | -1.00                  | 0.08            | 13.27          | Pv:             | 18.87 kW  | cLod: | -0.00 Mvar L: 7.50 km  |  |
| Cub_1         | /Lne                     | PPARE - PRANG              |       | 6.71                    | 14.59                       | 0.42                   | 0.06            | 10.12          | Pv:             | 40.39 kW  | cLod: | -0.00 Mvar L: 26.06 km |  |
| Cub_1         | /Tr2                     | DIS-PPARE1-30MVA           |       | 16.59                   | 4.91                        | 0.96                   | 0.07            | 60.22          | Tap:            | 7.00      | Min:  | 1 Max: 18              |  |
| Cub_1         | /Tr2                     | DIS-PPARE2-16MVA           |       |                         |                             |                        |                 |                | Tap:            | 1         | Min:  | 1 Max: 18              |  |
| Cub_1         | /Tr2                     | DIS-PPARE3-30MVA           |       | 5.26                    | 1.17                        | 0.98                   | 0.02            | 18.75          | Tap:            | 8.00      | Min:  | 1 Max: 18              |  |
| PARIGI        |                          |                            |       |                         |                             |                        |                 |                |                 |           |       |                        |  |
| PARIGI        | 70.00                    | 0.96 66.89                 | -0.61 |                         |                             |                        |                 |                |                 |           |       |                        |  |
| Cub_1         | /Lne                     | TLISE-PRIGI2               |       | -8.83                   | -2.12                       | -0.97                  | 0.08            | 10.11          | Pv:             | 85.26 kW  | cLod: | 0.00 Mvar L: 17.60 km  |  |
| Cub_1         | /Lne                     | TLISE-PRIGI1               |       | -8.83                   | -2.12                       | -0.97                  | 0.08            | 10.11          | Pv:             | 85.26 kW  | cLod: | 0.00 Mvar L: 17.60 km  |  |
| Cub_1         | /Tr2                     | DIS-PRIGI-20MVA            |       | 7.86                    | 0.38                        | 1.00                   | 0.07            | 41.17          | Tap:            | 8.00      | Min:  | 1 Max: 18              |  |
| Cub_1         | /Tr2                     | DIS-PRIGI2-20MVA           |       | 9.80                    | 3.85                        | 0.93                   | 0.09            | 55.08          | Tap:            | 7.00      | Min:  | 1 Max: 18              |  |
| PARIGI1 20KV  |                          |                            |       |                         |                             |                        |                 |                |                 |           |       |                        |  |
| PARIGI1       | 20.00                    | 0.98 19.58                 | -3.39 |                         |                             |                        |                 |                |                 |           |       |                        |  |
| Cub_1         | /Lod                     | LOAD-PRIGI1                |       | 7.86                    | 0.00                        | 1.00                   | 0.23            |                | P10:            | 8.20 MW   | Q10:  | 0.00 Mvar              |  |
| Cub_1         | /Tr2                     | DIS-PRIGI-20MVA            |       | -7.86                   | 0.00                        | -1.00                  | 0.23            | 41.17          | Tap:            | 8.00      | Min:  | 1 Max: 18              |  |
| PARIGI2 20KV  |                          |                            |       |                         |                             |                        |                 |                |                 |           |       |                        |  |
| PARIGI2       | 20.00                    | 0.98 19.70                 | -3.97 |                         |                             |                        |                 |                |                 |           |       |                        |  |
| Cub_1         | /Lod                     | LOAD-PRIGI2                |       | 9.80                    | 3.20                        | 0.95                   | 0.30            |                | P10:            | 10.10 MW  | Q10:  | 3.30 Mvar              |  |
| Cub_1         | /Tr2                     | DIS-PRIGI2-20MVA           |       | -9.80                   | -3.20                       | -0.95                  | 0.30            | 55.08          | Tap:            | 7.00      | Min:  | 1 Max: 18              |  |

| Grid: Grid     |                   | System Stage: Grid |        |          | Study Case: Case 01 |         |        |         | Annex:  |                 | / 23 |            |
|----------------|-------------------|--------------------|--------|----------|---------------------|---------|--------|---------|---------|-----------------|------|------------|
|                | rated             | Bus-voltage        | Active | Reactive | Power               | Power   | Factor | Current | Loading | Additional Data |      |            |
|                | Voltage           | [p.u.]             | [deg]  | [MW]     | [Mvar]              | [ - ]   | [kA]   | [ % ]   |         |                 |      |            |
|                | [KV]              | [KV]               |        |          |                     |         |        |         |         |                 |      |            |
| PGAYA          |                   |                    |        |          |                     |         |        |         |         |                 |      |            |
| Cub_1 /Lne     | PGAYA - JNPTOE1   | 150.00             | 1.00   | 149.98   | -0.06               | -74.48  | -35.69 | -0.90   | 0.32    | 17.32           | Pv:  | 10.46 kW   |
| Cub_1 /Lne     | PGARA - JNPTOE2   |                    |        |          |                     | -132.85 | -30.44 | -0.97   | 0.52    | 28.58           | Pv:  | 28.49 kW   |
| Cub_1 /Lne     | PNGAYA - JNPTOE1  |                    |        |          |                     | 32.98   | 21.81  | 0.83    | 0.15    | 11.93           | Pv:  | 107.27 kW  |
| Cub_1 /Lne     | PNGAYA - JNPTOE2  |                    |        |          |                     | 32.98   | 21.81  | 0.83    | 0.15    | 11.93           | Pv:  | 107.27 kW  |
| Cub_1 /Lne     | TBNGA-PGAYAL      |                    |        |          |                     | 94.18   | 34.83  | 0.94    | 0.39    | 21.05           | Pv:  | 918.41 kW  |
| Cub_1 /Lne     | TBNGA-PGAYA2      |                    |        |          |                     | 94.18   | 34.83  | 0.94    | 0.39    | 21.05           | Pv:  | 918.41 kW  |
| Cub_1 /Lne     | TLASA - PGAYA     |                    |        |          |                     | 117.82  | 42.55  | 0.94    | 0.48    | 26.29           | Pv:  | 622.60 kW  |
| Cub_1 /Tr2     | DIS-PGAYA-30MVA   |                    |        |          |                     | 4.71    | 0.09   | 1.00    | 0.02    | 15.69           | Tap: | 9.00       |
| Cub_1 /Tr2     | TG PGAYAL         |                    |        |          |                     | -85.74  | -63.54 | -0.80   | 0.41    | 87.95           | Tap: | 7.00       |
| Cub_1 /Tr2     | TG PGAYA2         |                    |        |          |                     | -83.76  | -26.54 | -0.95   | 0.34    | 72.42           | Tap: | 7.00       |
| PINRANG(1)     |                   |                    |        |          |                     |         |        |         |         |                 |      |            |
| PINRANG3 2.00  | 0.98              | 19.53              | -3.68  |          |                     |         |        |         |         |                 |      |            |
| Cub_1 /Lod     | LOAD-PINRANG3     |                    |        |          |                     | 16.01   | 4.86   | 0.96    | 0.49    |                 | P10: | 16.80 MW   |
| Cub_1 /Tr2     | DIS-PINRANG-30MVA |                    |        |          |                     | -16.01  | -4.86  | -0.96   | 0.49    | 60.15           | Tap: | 7.00       |
| PINRANG        |                   |                    |        |          |                     |         |        |         |         |                 |      |            |
| PINRANG150.00  | 0.95              | 142.42             | 0.24   |          |                     |         |        |         |         |                 |      |            |
| Cub_1 /Lne     | FRANG - BANGRU    |                    |        |          |                     | -28.49  | 0.03   | -1.00   | 0.12    | 18.11           | Pv:  | 1133.71 kW |
| Cub_1 /Lne     | FRANG - FPARE     |                    |        |          |                     | -6.67   | -14.46 | -0.42   | 0.06    | 10.12           | Pv:  | 40.39 kW   |
| Cub_1 /Tr2     | DIS-PINRANG-16MVA |                    |        |          |                     | -0.48   | 0.00   | -1.00   | 0.00    | 3.15            | Tap: | 7.00       |
| Cub_1 /Tr2     | DIS-PINRANG-30MVA |                    |        |          |                     | 19.63   | 8.34   | 0.92    | 0.09    | 74.89           | Tap: | 6.00       |
| Cub_1 /Tr2     | DIS-PINRANG-30MVA |                    |        |          |                     | 16.01   | 6.09   | 0.93    | 0.07    | 60.15           | Tap: | 7.00       |
| PKANG1         |                   |                    |        |          |                     |         |        |         |         |                 |      |            |
| PKANG1-20K.00  | 0.99              | 19.84              | -9.09  |          |                     |         |        |         |         |                 |      |            |
| Cub_1 /Lod     | LOAD PKANG1       |                    |        |          |                     | 34.16   | 7.68   | 0.98    | 1.02    |                 | P10: | 34.70 MW   |
| Cub_1 /Tr2     | DIS-PKANG1 60MVA  |                    |        |          |                     | -34.16  | -7.68  | -0.98   | 1.02    | 61.91           | Tap: | 7.00       |
| PLOPO(1)       |                   |                    |        |          |                     |         |        |         |         |                 |      |            |
| BB1 20.00      |                   |                    |        |          |                     |         |        |         |         |                 |      |            |
| Cub_1 /Lod     | LOAD-PALOPO3      |                    |        |          |                     |         |        |         |         |                 | P10: | 0.00 MW    |
| Cubicle/Coup   | CBS               |                    |        |          |                     |         |        |         |         |                 | Tap: | 1          |
| Cub_1 /Tr2     | DIS-PALOPO1-30MVA |                    |        |          |                     |         |        |         |         |                 | Min: | 1          |
| PALOPO1 20.00  | 0.97              | 19.42              | 5.74   |          |                     |         |        |         |         |                 | Max: | 18         |
| Cub_1 /Lod     | LOAD-PALOPO4      |                    |        |          |                     | 8.01    | 1.32   | 0.99    | 0.24    |                 | P10: | 8.50 MW    |
| Cub_1 /Sym     | FLTM SIMBUANG 3MW |                    |        |          |                     |         |        |         |         |                 | Typ: | PQ         |
| Cub_1 /Sym     | FLTM SITEBA       |                    |        |          |                     | 1.69    | 0.04   | 1.00    | 0.05    | 22.54           | Typ: | PQ         |
| Cubicle/Coup   | CBS               |                    |        |          |                     |         |        |         |         |                 |      |            |
| Cub_1 /Tr2     | DIS-PALOPO2-30MVA |                    |        |          |                     | -6.32   | -1.28  | -0.98   | 0.19    | 22.14           | Tap: | 9.00       |
|                |                   |                    |        |          |                     |         |        |         |         |                 | Min: | 1          |
|                |                   |                    |        |          |                     |         |        |         |         |                 | Max: | 18         |
| D              |                   |                    |        |          |                     |         |        |         |         |                 |      |            |
| Grid: Grid     |                   | System Stage: Grid |        |          | Study Case: Case 01 |         |        |         | Annex:  |                 | / 24 |            |
|                | rated             | Bus-voltage        | Active | Reactive | Power               | Power   | Factor | Current | Loading | Additional Data |      |            |
|                | Voltage           | [p.u.]             | [deg]  | [MW]     | [Mvar]              | [ - ]   | [kA]   | [ % ]   |         |                 |      |            |
|                | [KV]              | [KV]               |        |          |                     |         |        |         |         |                 |      |            |
| PLOPO          |                   |                    |        |          |                     |         |        |         |         |                 |      |            |
| PALOPO4 20.00  | 0.98              | 19.61              | 3.21   |          |                     |         |        |         |         |                 |      |            |
| Cub_1 /Lod     | LOAD-PALOPO1      |                    |        |          |                     | 11.44   | 2.98   | 0.97    | 0.35    |                 | P10: | 11.90 MW   |
| Cubicle/Coup   | CBS               |                    |        |          |                     |         |        |         |         |                 | Q10: | 3.10 Mvar  |
| Cub_1 /Tr2     | DIS-PALOPO1-20MVA |                    |        |          |                     | -11.44  | -2.98  | -0.97   | 0.35    | 61.82           | Tap: | 8.00       |
| BE2 20.00      | 0.97              | 19.40              | 5.33   |          |                     |         |        |         |         |                 | Min: | 1          |
| Cub_1 /Lod     | LOAD-PALOPO2      |                    |        |          |                     | 5.36    | 0.94   | 0.98    | 0.16    |                 | P10: | 5.70 MW    |
| Cubicle/Coup   | CBS               |                    |        |          |                     |         |        |         |         |                 | Q10: | 1.00 Mvar  |
| Cub_1 /Tr2     | DIS-PALOPO2-20MVA |                    |        |          |                     | -5.36   | -0.94  | -0.98   | 0.16    | 28.07           | Tap: | 9.00       |
|                |                   |                    |        |          |                     |         |        |         |         |                 | Min: | 1          |
|                |                   |                    |        |          |                     |         |        |         |         |                 | Max: | 18         |
| ELTA POSO      |                   |                    |        |          |                     |         |        |         |         |                 |      |            |
| BAR 1POSO#4.00 | 1.00              | 11.00              | 20.65  |          |                     |         |        |         |         |                 |      |            |
| Cub_1 /Sym     | POSO 1 #4         |                    |        |          |                     | 25.05   | -9.30  | 0.94    | 1.40    | 66.81           | Typ: | FV         |
| Cub_1 /Tr2     | TG POSO 1 #4      |                    |        |          |                     | 25.05   | -9.30  | 0.94    | 1.40    | 34.26           | Tap: | 2.00       |
|                |                   |                    |        |          |                     |         |        |         |         |                 | Min: | 1          |
|                |                   |                    |        |          |                     |         |        |         |         |                 | Max: | 5          |
| ELTA POSO(1)   |                   |                    |        |          |                     |         |        |         |         |                 |      |            |
| BAR 2B POS.00  | 1.00              | 11.00              | 22.32  |          |                     |         |        |         |         |                 |      |            |
| Cub_1 /Sym     | POSO 2B #1        |                    |        |          |                     | 41.95   | 23.35  | 0.87    | 2.52    | 96.03           | Typ: | FV         |
| Cub_1 /Tr2     | TG POSO 2B #1     |                    |        |          |                     | 41.95   | 23.35  | 0.87    | 2.52    | 60.02           | Tap: | 4.00       |
|                |                   |                    |        |          |                     |         |        |         |         |                 | Min: | 1          |
|                |                   |                    |        |          |                     |         |        |         |         |                 | Max: | 5          |
| ELTA POSO(2)   |                   |                    |        |          |                     |         |        |         |         |                 |      |            |
| BAR 2B POS.00  | 1.00              | 11.00              | 22.23  |          |                     |         |        |         |         |                 |      |            |
| Cub_1 /Sym     | POSO 2B #2        |                    |        |          |                     | 40.94   | 23.28  | 0.87    | 2.47    | 94.20           | Typ: | FV         |
| Cub_1 /Tr2     | TG POSO 2B #2     |                    |        |          |                     | 40.94   | 23.28  | 0.87    | 2.47    | 58.88           | Tap: | 4.00       |
|                |                   |                    |        |          |                     |         |        |         |         |                 | Min: | 1          |
|                |                   |                    |        |          |                     |         |        |         |         |                 | Max: | 5          |
| ELTA POSO(3)   |                   |                    |        |          |                     |         |        |         |         |                 |      |            |
| BAR 2B POS.00  | 1.00              | 11.00              | 22.34  |          |                     |         |        |         |         |                 |      |            |
| Cub_1 /Sym     | POSO 2B #3        |                    |        |          |                     | 42.12   | 23.36  | 0.87    | 2.53    | 96.33           | Typ: | FV         |
| Cub_1 /Tr2     | TG POSO 2B #3     |                    |        |          |                     | 42.12   | 23.36  | 0.87    | 2.53    | 60.21           | Tap: | 4.00       |
|                |                   |                    |        |          |                     |         |        |         |         |                 | Min: | 1          |
|                |                   |                    |        |          |                     |         |        |         |         |                 | Max: | 5          |
| ELTA POSO(4)   |                   |                    |        |          |                     |         |        |         |         |                 |      |            |
| BAR 2B POS.00  | 1.00              | 11.00              | 22.34  |          |                     |         |        |         |         |                 |      |            |
| Cub_1 /Sym     | POSO 2B #4        |                    |        |          |                     | 42.21   | 23.37  | 0.87    | 2.53    | 96.49           | Typ: | FV         |
| Cub_1 /Tr2     | TG POSO 2B #4     |                    |        |          |                     | 42.21   | 23.37  | 0.87    | 2.53    | 60.30           | Tap: | 4.00       |
|                |                   |                    |        |          |                     |         |        |         |         |                 | Min: | 1          |
|                |                   |                    |        |          |                     |         |        |         |         |                 | Max: | 5          |
| ELTA POSO1     |                   |                    |        |          |                     |         |        |         |         |                 |      |            |
| BAR 1POSO#4.00 | 1.00              | 11.00              | 20.52  |          |                     |         |        |         |         |                 |      |            |
| Cub_1 /Sym     | POSO 1 #1         |                    |        |          |                     | 0.00    | 0.00   | 1.00    | 0.00    | 0.00            | Typ: | FV         |
| Cub_1 /Tr2     | TG POSO 1 #1      |                    |        |          |                     |         |        |         |         |                 | 3    | Min:       |
|                |                   |                    |        |          |                     |         |        |         |         |                 | 1    | Max:       |
|                |                   |                    |        |          |                     |         |        |         |         |                 | 5    |            |
| ELTA POSO2     |                   |                    |        |          |                     |         |        |         |         |                 |      |            |
| BAR 1POSO#4.00 | 1.00              | 11.00              | 20.52  |          |                     |         |        |         |         |                 |      |            |
| Cub_1 /Sym     | POSO 1 #2         |                    |        |          |                     | 22.45   | 22.32  | 0.71    | 1.66    | 79.15           | Typ: | FV         |
| Cub_1 /Tr2     | TG POSO 1 #2      |                    |        |          |                     | 22.45   | 22.32  | 0.71    | 1.66    | 39.57           | Tap: | 4.00       |
|                |                   |                    |        |          |                     |         |        |         |         |                 | Min: | 1          |
|                |                   |                    |        |          |                     |         |        |         |         |                 | Max: | 5          |

| Grid: Grid       |                          | System Stage: Grid    |                     |       | Study Case: Case 01     |                             |                 |                 |                | Annex:                 |                  | / 25        |  |
|------------------|--------------------------|-----------------------|---------------------|-------|-------------------------|-----------------------------|-----------------|-----------------|----------------|------------------------|------------------|-------------|--|
|                  | rated<br>Voltage<br>[KV] | Bus-voltage<br>[p.u.] | Bus-voltage<br>[KV] | [deg] | Active<br>Power<br>[MW] | Reactive<br>Power<br>[Mvar] | Power<br>Factor | Current<br>[kA] | Loading<br>[%] | Additional Data        |                  |             |  |
| PLTA POSO3       |                          |                       |                     |       |                         |                             |                 |                 |                |                        |                  |             |  |
| BAR 1POSO#0.00   | 1.00                     | 11.00                 | 20.66               |       |                         |                             |                 |                 |                |                        |                  |             |  |
| Cub_1 /Sym       |                          |                       | POSO 1 #3           |       | 25.22                   | -9.29                       | 0.94            | 1.41            | 67.20          | Typ: FV                |                  |             |  |
| Cub_1 /Tr2       |                          |                       | TG POSO 1 #3        |       | 25.22                   | -9.29                       | 0.94            | 1.41            | 34.46          | Tap: 2.00              | Min: 1           | Max: 5      |  |
| PLTA TANGKA      |                          |                       |                     |       |                         |                             |                 |                 |                |                        |                  |             |  |
| PLTA TANGK#0.00  |                          |                       |                     |       |                         |                             |                 |                 |                |                        |                  |             |  |
| Cub_1 /Sym       |                          |                       | PLTA TANGKA#1       |       |                         |                             |                 |                 |                | Typ: PQ                |                  |             |  |
| Cub_1 /Sym       |                          |                       | PLTA TANGKA#2       |       |                         |                             |                 |                 |                | Typ: FV                |                  |             |  |
| Cub_1 /Line      |                          |                       | SINJAI-TANGKA       |       |                         |                             |                 |                 |                | Prv: cLod: L: 40.00 km |                  |             |  |
| PLTB SDRP(1)     |                          |                       |                     |       |                         |                             |                 |                 |                |                        |                  |             |  |
| PLTB SDRP0.00    | 0.96                     | 144.63                | 0.26                |       |                         |                             |                 |                 |                |                        |                  |             |  |
| Cub_1 /Line      |                          |                       | BARRRU EXT-SIDRAP   |       | 16.08                   | -24.26                      | 0.55            | 0.12            | 6.33           | Pv: 51.88 kW           | cLod: -0.00 Mvar | L: 37.67 km |  |
| Cub_1 /Line      |                          |                       | BARRRU EXT-SIDRAP   |       | 16.08                   | -24.26                      | 0.55            | 0.12            | 6.33           | Pv: 51.88 kW           | cLod: -0.00 Mvar | L: 37.67 km |  |
| Cub_1 /Line      |                          |                       | SDRAP - PLTB SDRAP  |       | -6.33                   | 34.44                       | -0.18           | 0.14            | 7.61           | Pv: 26.97 kW           | cLod: -0.00 Mvar | L: 11.80 km |  |
| Cub_1 /Line      |                          |                       | SDRAP - PLTB SDRAP  |       | -6.33                   | 34.44                       | -0.18           | 0.14            | 7.61           | Pv: 26.97 kW           | cLod: -0.00 Mvar | L: 11.80 km |  |
| Cub_1 /Tr2       |                          |                       | TG PLTB SDRP1       |       | -19.51                  | -20.36                      | -0.69           | 0.11            | 65.50          | Tap: 1.00              | Min: 1           | Max: 18     |  |
| Cub_1 /Tr2       |                          |                       | TG PLTB SDRP2       |       |                         |                             |                 |                 |                | Tap: 9                 | Min: 1           | Max: 18     |  |
| PLTB SDRP        |                          |                       |                     |       |                         |                             |                 |                 |                |                        |                  |             |  |
| PLTB SDRP3.00    | 0.88                     | 28.88                 | 1.15                |       |                         |                             |                 |                 |                |                        |                  |             |  |
| Cub_1 /Asm       |                          |                       | VRR Sidrap          |       |                         |                             |                 |                 |                | Slip: xm:              |                  |             |  |
| Cub_1 /Genstat   |                          |                       | PLTB SIDRAP         |       | 19.51                   | 21.00                       | 0.68            | 0.57            | 136.50         |                        |                  |             |  |
| Cub_1 /Genstat   |                          |                       | PLTB SIDRAP(1)      |       |                         |                             |                 |                 |                |                        |                  |             |  |
| Cub_1 /Tr2       |                          |                       | TG PLTB SDRP1       |       | 19.51                   | 21.00                       | 0.68            | 0.57            | 65.50          | Tap: 1.00              | Min: 1           | Max: 18     |  |
| Cub_1 /Tr2       |                          |                       | TG PLTB SDRP2       |       |                         |                             |                 |                 |                | Tap: 9                 | Min: 1           | Max: 18     |  |
| PLTB TL          |                          |                       |                     |       |                         |                             |                 |                 |                |                        |                  |             |  |
| BAR PLTB T.00    | 0.92                     | 30.50                 | 1.77                |       |                         |                             |                 |                 |                |                        |                  |             |  |
| Cub_1 /Asm       |                          |                       | VRR Tolo            |       |                         |                             |                 |                 |                | Slip: xm:              |                  |             |  |
| Cub_1 /Genstat   |                          |                       | PLTB TOL0           |       | 37.80                   | 0.06                        | 1.00            | 0.72            | 52.50          |                        |                  |             |  |
| Cub_1 /Tr2       |                          |                       | TG PLTB TOL01       |       | 37.80                   | 0.06                        | 1.00            | 0.72            | 90.89          | Tap: 4.00              | Min: 1           | Max: 18     |  |
| Cub_1 /Tr2       |                          |                       | TG PLTB TOL02       |       |                         |                             |                 |                 |                | Tap: 1                 | Min: 1           | Max: 18     |  |
| PLTMS NINSA      |                          |                       |                     |       |                         |                             |                 |                 |                |                        |                  |             |  |
| PLTMS NINSA0.00  | 1.15                     | 12.63                 | 22.13               |       |                         |                             |                 |                 |                |                        |                  |             |  |
| Cub_1 /Sym       |                          |                       | NII TANASA#4        |       | 7.40                    | -0.00                       | 1.00            | 0.34            | 75.50          | Typ: PQ                |                  |             |  |
| Cub_1 /Sym       |                          |                       | NII TANASA#5        |       | 7.57                    | -0.00                       | 1.00            | 0.35            | 77.21          | Typ: PQ                |                  |             |  |
| Cub_1 /Sym       |                          |                       | NII TANASA#6        |       | 7.57                    | -0.00                       | 1.00            | 0.35            | 77.21          | Typ: PQ                |                  |             |  |
| Cub_1 /Tr2       |                          |                       | TG PLTU NINASA2     |       | 22.53                   | -0.00                       | 1.00            | 1.03            | 18.59          | Tap: 1.00              | Min: 1           | Max: 18     |  |
|                  |                          |                       | Total               |       |                         |                             |                 |                 |                |                        |                  |             |  |
|                  |                          |                       | Generation:         |       | 22.53                   | -0.00                       |                 |                 |                |                        |                  |             |  |
| D                |                          |                       |                     |       |                         |                             |                 |                 |                |                        |                  |             |  |
| Grid: Grid       |                          | System Stage: Grid    |                     |       | Study Case: Case 01     |                             |                 |                 |                | Annex:                 |                  | / 26        |  |
|                  | rated<br>Voltage<br>[KV] | Bus-voltage<br>[p.u.] | Bus-voltage<br>[KV] | [deg] | Active<br>Power<br>[MW] | Reactive<br>Power<br>[Mvar] | Power<br>Factor | Current<br>[kA] | Loading<br>[%] | Additional Data        |                  |             |  |
| PLTMS NINSA1     |                          |                       |                     |       |                         |                             |                 |                 |                |                        |                  |             |  |
| PLTMS NINSA0.00  | 1.00                     | 11.00                 | 21.93               |       |                         |                             |                 |                 |                |                        |                  |             |  |
| Cub_1 /Sym       |                          |                       | NII TANASA#1        |       | 7.57                    | -0.00                       | 1.00            | 0.40            | 77.21          | Typ: PQ                |                  |             |  |
| Cub_1 /Sym       |                          |                       | NII TANASA#2        |       |                         |                             |                 |                 |                | Typ: PQ                |                  |             |  |
| Cub_1 /Sym       |                          |                       | NII TANASA#3        |       | 7.57                    | -6.10                       | 0.78            | 0.51            | 99.19          | Typ: PV                |                  |             |  |
| Cub_1 /Tr2       |                          |                       | TG PLTMS NINSA1     |       | 15.13                   | -6.10                       | 0.93            | 0.86            | 13.60          | Tap: 9.00              | Min: 1           | Max: 18     |  |
|                  |                          |                       | Total               |       |                         |                             |                 |                 |                |                        |                  |             |  |
|                  |                          |                       | Generation:         |       | 15.13                   | -6.10                       |                 |                 |                |                        |                  |             |  |
| PLTU JENEPONTO   |                          |                       |                     |       |                         |                             |                 |                 |                |                        |                  |             |  |
| PLTU JENEP0.00   | 1.00                     | 150.14                | -0.00               |       |                         |                             |                 |                 |                |                        |                  |             |  |
| Cub_1 /Line      |                          |                       | LINE-T1             |       | 16.09                   | 41.00                       | 0.37            | 0.17            | 9.22           | Pv: 2.97 kW            | cLod: 0.00 Mvar  | L: 1.00 km  |  |
| Cub_1 /Line      |                          |                       | TLASA - JNPTO       |       | 121.21                  | 45.78                       | 0.94            | 0.50            | 27.14          | Pv: 670.90 kW          | cLod: 0.00 Mvar  | L: 25.74 km |  |
| Cub_1 /Tr2       |                          |                       | TG JNPTOE 125MVA    |       | -65.23                  | -33.18                      | -0.89           | 0.28            | 59.37          | Tap: 8.00              | Min: 1           | Max: 18     |  |
| Cub_1 /Tr2       |                          |                       | TG JNPTOE 125MVA(1  |       | -72.08                  | -53.59                      | -0.80           | 0.35            | 72.86          | Tap: 8.00              | Min: 1           | Max: 18     |  |
| PLTU JNPTOE EXPN |                          |                       |                     |       |                         |                             |                 |                 |                |                        |                  |             |  |
| BAR PLTU J.00    | 1.00                     | 11.00                 | 4.93                |       |                         |                             |                 |                 |                |                        |                  |             |  |
| Cub_1 /Sym       |                          |                       | PLTU JNPTOE#1 EXPN  |       | 99.44                   | 21.20                       | 0.98            | 5.34            | 75.32          | Typ: FV                |                  |             |  |
| Cub_1 /Tr2       |                          |                       | TG PLTU JNPTOE EXP  |       | 99.44                   | 21.20                       | 0.98            | 5.34            | 72.63          | Tap: 8.00              | Min: 1           | Max: 18     |  |
| PLTU MRAMO       |                          |                       |                     |       |                         |                             |                 |                 |                |                        |                  |             |  |
| PLTU MRAMO0.00   | 1.00                     | 150.33                | 16.94               |       |                         |                             |                 |                 |                |                        |                  |             |  |
| Cub_1 /Line      |                          |                       | KENDARI - MRAMO1    |       | 37.51                   | 28.31                       | 0.80            | 0.18            | 14.14          | Pv: 138.96 kW          | cLod: -0.00 Mvar | L: 23.70 km |  |
| Cub_1 /Line      |                          |                       | KENDARI - MRAMO2    |       | 37.51                   | 28.31                       | 0.80            | 0.18            | 14.14          | Pv: 138.96 kW          | cLod: -0.00 Mvar | L: 23.70 km |  |
| Cub_1 /Tr2       |                          |                       | DIS-MRAMO-60MVA     |       | 9.56                    | 2.06                        | 0.98            | 0.04            | 16.26          | Tap: 9.00              | Min: 1           | Max: 18     |  |
| Cub_1 /Tr2       |                          |                       | TG MRAMO 75MVA      |       | -41.87                  | -29.37                      | -0.82           | 0.20            | 72.13          | Tap: 5.00              | Min: 1           | Max: 18     |  |
| Cub_1 /Tr2       |                          |                       | TG MRAMO2           |       | -42.71                  | -29.31                      | -0.82           | 0.20            | 73.05          | Tap: 5.00              | Min: 1           | Max: 18     |  |
| PLTU NINSA1      |                          |                       |                     |       |                         |                             |                 |                 |                |                        |                  |             |  |
| PLTU NI TA.00    | 1.00                     | 20.00                 | 23.33               |       |                         |                             |                 |                 |                |                        |                  |             |  |
| Cub_1 /Sym       |                          |                       | PLTU NII TNASA#1    |       | 6.00                    | -1.11                       | 0.98            | 0.18            | 50.85          | Typ: FV                |                  |             |  |
| Cub_1 /Tr2       |                          |                       | TG PLTU NINSA1      |       | 6.00                    | -1.11                       | 0.98            | 0.18            | 50.85          | Tap: 9.00              | Min: 1           | Max: 18     |  |
| PLTU NINSA3      |                          |                       |                     |       |                         |                             |                 |                 |                |                        |                  |             |  |
| PLTU NI TA.00    |                          |                       |                     |       |                         |                             |                 |                 |                |                        |                  |             |  |
| Cub_1 /Sym       |                          |                       | PLTU NII TNASA#3    |       |                         |                             |                 |                 |                | Typ: FV                |                  |             |  |
| Cub_1 /Tr2       |                          |                       | TG PLTU NINSA3      |       |                         |                             |                 |                 |                | Tap: 9                 | Min: 1           | Max: 18     |  |
| PMONA 20KV       |                          |                       |                     |       |                         |                             |                 |                 |                |                        |                  |             |  |
| PMONA 20KV.00    | 0.98                     | 19.68                 | 16.08               |       |                         |                             |                 |                 |                |                        |                  |             |  |
| Cub_1 /Lod       |                          |                       | DIS-PMONA           |       | -1.09                   | 2.08                        | -0.47           | 0.07            |                | P10: -1.13 MW          | Q10: 2.15 Mvar   |             |  |
| Cub_1 /Tr2       |                          |                       | DIS-PMONA-10MVA     |       | 1.09                    | -2.08                       | 0.47            | 0.07            | 24.51          | Tap: 8.00              | Min: 1           | Max: 18     |  |

| Grid: Grid     |              |                    |                    |                  |       |                   |                       |                  |              |             |                 |            |                  | System Stage: Grid |  |  |  | Study Case: Case 01 |  |  |  | Annex: |  |  |  | / 27 |  |
|----------------|--------------|--------------------|--------------------|------------------|-------|-------------------|-----------------------|------------------|--------------|-------------|-----------------|------------|------------------|--------------------|--|--|--|---------------------|--|--|--|--------|--|--|--|------|--|
|                |              | rated Voltage [kV] | Bus-voltage [p.u.] | Bus-voltage [kV] | [deg] | Active Power [MW] | Reactive Power [Mvar] | Power Factor [-] | Current [kA] | Loading [%] | Additional Data |            |                  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| PMONA 275KV    |              |                    |                    |                  |       |                   |                       |                  |              |             |                 |            |                  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lne         | PANOMA 275.00      | 0.99               | 272.22           | 18.43 | 103.48            | 21.71                 | 0.98             | 0.22         | 12.21       | Pv:             | 1103.42 kW | cLod: -0.00 Mvar | L: 212.00 km       |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lne         | PMONA-SLWNA1       |                    |                  |       | -36.36            | 0.04                  | -1.00            | 0.08         | 4.20        | Pv:             | 0.62 kW    | cLod: -0.00 Mvar | L: 1.00 km         |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lne         | PMONA-SLWNA2       |                    |                  |       | -36.36            | 0.04                  | -1.00            | 0.08         | 4.20        | Pv:             | 0.62 kW    | cLod: -0.00 Mvar | L: 1.00 km         |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lne         | WOTU-PMONA275      |                    |                  |       | 113.80            | 28.82                 | 0.97             | 0.25         | 13.56       | Pv:             | 739.01 kW  | cLod: -0.00 Mvar | L: 115.18 km       |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | IBT1 275KV         |                    |                  |       | 34.16             | -65.85                | 0.46             | 0.16         | 93.68       | Tap:            | 14.00      | Min: 1           | Max: 18            |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | IBT2 275KV         |                    |                  |       | 83.09             | 132.99                | 0.53             | 0.33         | 88.01       | Tap:            | 6.00       | Min: 1           | Max: 18            |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | TG POSO 2A #1      |                    |                  |       | 0.00              | 0.00                  | 1.00             | 0.00         | 0.00        | Tap:            | 4.00       | Min: 1           | Max: 5             |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | TG POSO 2A #2      |                    |                  |       | -46.41            | -19.43                | -0.92            | 0.11         | 65.12       | Tap:            | 4.00       | Min: 1           | Max: 5             |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | TG POSO 2A #3      |                    |                  |       | -48.18            | -19.29                | -0.93            | 0.11         | 67.17       | Tap:            | 4.00       | Min: 1           | Max: 5             |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | TG POSO 2B #1      |                    |                  |       | -41.95            | -19.75                | -0.90            | 0.10         | 60.02       | Tap:            | 4.00       | Min: 1           | Max: 5             |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | TG POSO 2B #2      |                    |                  |       | -40.94            | -19.82                | -0.90            | 0.10         | 58.88       | Tap:            | 4.00       | Min: 1           | Max: 5             |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | TG POSO 2B #3      |                    |                  |       | -42.12            | -19.74                | -0.91            | 0.10         | 60.21       | Tap:            | 4.00       | Min: 1           | Max: 5             |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | TG POSO 2B #4      |                    |                  |       | -42.21            | -19.73                | -0.91            | 0.10         | 60.30       | Tap:            | 4.00       | Min: 1           | Max: 5             |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| POLMAS         |              |                    |                    |                  |       |                   |                       |                  |              |             |                 |            |                  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lne         | POLMAS 150.00      | 0.96               | 144.32           | 4.22  |                   |                       |                  |              |             |                 |            |                  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lne         | BHARU - PIMAS      |                    |                  |       | -71.36            | -12.78                | -0.98            | 0.29         | 45.46       | Pv:             | 1489.25 kW | cLod: -0.00 Mvar | L: 50.02 km        |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lne         | POLMAS-MJENE1      |                    |                  |       | 8.99              | 7.72                  | 0.76             | 0.05         | 7.43        | Pv:             | 40.92 kW   | cLod: -0.00 Mvar | L: 50.16 km        |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lne         | POLMAS-MJENE2      |                    |                  |       | 8.99              | 7.72                  | 0.76             | 0.05         | 7.43        | Pv:             | 40.92 kW   | cLod: -0.00 Mvar | L: 50.16 km        |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lne         | PPARE - PIMAS      |                    |                  |       | 34.95             | -6.00                 | 0.99             | 0.14         | 22.24       | Pv:             | 649.15 kW  | cLod: -0.00 Mvar | L: 91.10 km        |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | DIS-POLMAS-20MVA   |                    |                  |       | 10.56             | 2.80                  | 0.97             | 0.04         | 56.75       | Tap:            | 7.00       | Min: 1           | Max: 18            |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | DIS-POLMAS-30MVA   |                    |                  |       | 7.86              | 0.55                  | 1.00             | 0.03         | 27.30       | Tap:            | 8.00       | Min: 1           | Max: 18            |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| POLMAS2        |              |                    |                    |                  |       |                   |                       |                  |              |             |                 |            |                  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lod         | POLMAS1 20.00      | 1.00               | 19.96            | 0.57  |                   |                       |                  |              |             |                 |            |                  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cubicle/Coup   | LOAD-POLMAS2 |                    |                    |                  |       | 10.56             | 2.09                  | 0.98             | 0.31         |             | P10:            | 10.60 MW   | Q10: 2.10 Mvar   |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | DIS-POLMAS-20MVA   |                    |                  |       | -10.56            | -2.09                 | -0.98            | 0.31         | 56.75       | Tap:            | 7.00       | Min: 1           | Max: 18            |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lod         | POLMAS2 20.00      | 0.99               | 19.70            | 2.34  |                   |                       |                  |              |             |                 |            |                  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cubicle/Coup   | LOAD-POLMAS1 |                    |                    |                  |       | 7.86              | 0.29                  | 1.00             | 0.23         |             | P10:            | 8.10 MW    | Q10: 0.30 Mvar   |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | DIS-POLMAS-30MVA   |                    |                  |       | -7.86             | -0.29                 | -1.00            | 0.23         | 27.30       | Tap:            | 8.00       | Min: 1           | Max: 18            |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| POSO           |              |                    |                    |                  |       |                   |                       |                  |              |             |                 |            |                  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lne         | POSO 150KV.00      | 0.96               | 143.47           | 12.79 |                   |                       |                  |              |             |                 |            |                  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lne         | POSO-PMONA1        |                    |                  |       | -58.24            | -16.99                | -0.96            | 0.24         | 38.26       | Pv:             | 934.82 kW  | cLod: -0.00 Mvar | L: 43.57 km        |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lne         | POSO-PMONA2        |                    |                  |       | -58.24            | -16.99                | -0.96            | 0.24         | 38.26       | Pv:             | 934.82 kW  | cLod: -0.00 Mvar | L: 43.57 km        |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lne         | SIDERA-POSO1       |                    |                  |       | 53.89             | 15.95                 | 0.96             | 0.23         | 35.45       | Pv:             | 2605.20 kW | cLod: -0.00 Mvar | L: 141.50 km       |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lne         | SIDERA-POSO2       |                    |                  |       | 53.89             | 15.95                 | 0.96             | 0.23         | 35.45       | Pv:             | 2605.20 kW | cLod: -0.00 Mvar | L: 141.50 km       |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | DIS-POSO1          |                    |                  |       | 8.71              | 2.06                  | 0.97             | 0.04         | 31.19       | Tap:            | 8.00       | Min: 1           | Max: 18            |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| POSO1 20KV     |              |                    |                    |                  |       |                   |                       |                  |              |             |                 |            |                  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lod         | POSO1 20KV.00      | 0.97               | 19.46            | 10.61 |                   |                       |                  |              |             |                 |            |                  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | LOAD-POSO1         |                    |                  |       | 8.71              | 1.71                  | 0.98             | 0.26         |             | P10:            | 9.20 MW    | Q10: 1.81 Mvar   |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | DIS-POSO1          |                    |                  |       | -8.71             | -1.71                 | -0.98            | 0.26         | 31.19       | Tap:            | 8.00       | Min: 1           | Max: 18            |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| PPARE3 20KV(1) |              |                    |                    |                  |       |                   |                       |                  |              |             |                 |            |                  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lod         | PPARE3 20K.00      | 0.98               | 19.55            | -0.94 |                   |                       |                  |              |             |                 |            |                  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cubicle/Coup   | LOAD-PPARE3  |                    |                    |                  |       | 5.26              | 1.05                  | 0.98             | 0.16         |             | P10:            | 5.50 MW    | Q10: 1.10 Mvar   |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | DIS-PPARE3-30MVA   |                    |                  |       | -5.26             | -1.05                 | -0.98            | 0.16         | 18.75       | Tap:            | 8.00       | Min: 1           | Max: 18            |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| PPARE2 20KV    |              |                    |                    |                  |       |                   |                       |                  |              |             |                 |            |                  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lod         | PPARE1 20K.00      | 0.99               | 19.82            | -3.49 |                   |                       |                  |              |             |                 |            |                  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cubicle/Coup   | LOAD-PPARE1  |                    |                    |                  |       | 16.59             | 3.73                  | 0.98             | 0.50         |             | P10:            | 16.90 MW   | Q10: 3.80 Mvar   |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | DIS-PPARE1-30MVA   |                    |                  |       | -16.59            | -3.73                 | -0.98            | 0.50         | 60.22       | Tap:            | 7.00       | Min: 1           | Max: 18            |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lod         | PPARE2 20K.00      |                    |                  |       |                   |                       |                  |              |             | P10:            | 0.00 MW    | Q10: 0.00 Mvar   |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cubicle/Coup   | LOAD-PPARE2  |                    |                    |                  |       |                   |                       |                  |              |             |                 |            |                  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_5          | /Coup        | CBS                |                    |                  |       |                   |                       |                  |              |             |                 |            |                  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | DIS-PPARE2-16MVA   |                    |                  |       |                   |                       |                  |              |             | Tap:            | 1          | Min: 1           | Max: 18            |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| PSG KYU 20KV   |              |                    |                    |                  |       |                   |                       |                  |              |             |                 |            |                  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lod         | PSG KYU 2.00       | 0.98               | 19.62            | -0.01 |                   |                       |                  |              |             |                 |            |                  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | LOAD-PSKYU         |                    |                  |       | 13.58             | 2.21                  | 0.99             | 0.40         |             | P10:            | 14.10 MW   | Q10: 2.30 Mvar   |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | DIS-PSKYU-30MVA    |                    |                  |       | -13.58            | -2.21                 | -0.99            | 0.40         | 51.92       | Tap:            | 5.00       | Min: 1           | Max: 18            |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| PSG KYU        |              |                    |                    |                  |       |                   |                       |                  |              |             |                 |            |                  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lne         | PSG KYU150.00      | 0.89               | 133.96           | 3.32  |                   |                       |                  |              |             |                 |            |                  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lne         | PSKYU-SILA1        |                    |                  |       | -0.93             | 7.60                  | -0.12            | 0.03         | 5.17        | Pv:             | 34.45 kW   | cLod: -0.00 Mvar | L: 87.96 km        |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lne         | PSKYU-SILA2        |                    |                  |       | -0.93             | 7.60                  | -0.12            | 0.03         | 5.17        | Pv:             | 34.45 kW   | cLod: -0.00 Mvar | L: 87.96 km        |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lne         | TPOYO-PSKYU1       |                    |                  |       | -5.86             | -9.11                 | -0.54            | 0.05         | 7.32        | Pv:             | 71.23 kW   | cLod: -0.00 Mvar | L: 90.75 km        |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lne         | TPOYO-PSKYU2       |                    |                  |       | -5.86             | -9.11                 | -0.54            | 0.05         | 7.32        | Pv:             | 71.23 kW   | cLod: -0.00 Mvar | L: 90.75 km        |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | DIS-PSKYU-30MVA    |                    |                  |       | 13.58             | 3.03                  | 0.98             | 0.06         | 51.92       | Tap:            | 5.00       | Min: 1           | Max: 18            |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| PWATU 150KV    |              |                    |                    |                  |       |                   |                       |                  |              |             |                 |            |                  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lne         | PWATU 150KV - REND | 0.99               | 148.53           | 16.57 |                   |                       |                  |              |             |                 |            |                  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lne         | PWATU 150KV - REND |                    |                  |       | 11.97             | -10.98                | 0.74             | 0.06         | 5.26        | Pv:             | 10.35 kW   | cLod: -0.00 Mvar | L: 14.18 km        |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Lne         | PWATU 150KV - REND |                    |                  |       | 11.97             | -10.98                | 0.74             | 0.06         | 5.26        | Pv:             | 10.35 kW   | cLod: -0.00 Mvar | L: 14.18 km        |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | PWATU1-PWATU150/70 |                    |                  |       | -11.97            | 10.98                 | -0.74            | 0.06         | 54.69       | Tap:            | 7.00       | Min: 1           | Max: 18            |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1          | /Tr2         | PWATU2-PWATU150/70 |                    |                  |       | -11.97            | 10.98                 | -0.74            | 0.06         | 54.69       | Tap:            | 7.00       | Min: 1           | Max: 18            |  |  |  |                     |  |  |  |        |  |  |  |      |  |

| Grid: Grid    |  |                    |             |       |                 |                   |                 |         |         |                 |           |       |            | System Stage: Grid |          |  |  | Study Case: Case 01 |  |  |  | Annex: |  |  |  | / 29 |  |
|---------------|--|--------------------|-------------|-------|-----------------|-------------------|-----------------|---------|---------|-----------------|-----------|-------|------------|--------------------|----------|--|--|---------------------|--|--|--|--------|--|--|--|------|--|
|               |  | rated<br>Voltage   | Bus-voltage |       | Active<br>Power | Reactive<br>Power | Power<br>Factor | Current | Loading | Additional Data |           |       |            |                    |          |  |  |                     |  |  |  |        |  |  |  |      |  |
|               |  | [kV]               | [p.u.]      | [kV]  | [deg]           | [MW]              | [Mvar]          | [-]     | [kA]    | [%]             |           |       |            |                    |          |  |  |                     |  |  |  |        |  |  |  |      |  |
| PWATU-20KV(1) |  |                    |             |       |                 |                   |                 |         |         |                 |           |       |            |                    |          |  |  |                     |  |  |  |        |  |  |  |      |  |
| PWATU2-20K.00 |  | 0.98               | 19.69       | 16.28 |                 |                   |                 |         |         |                 |           |       |            |                    |          |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lod    |  | LOAD-PWATU3        |             |       | 8.43            | 3.39              | 0.93            | 0.27    |         | P10:            | 8.70 MW   | Q10:  | 3.50 Mvar  |                    |          |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  | DIS-PWATU3-20MVA   |             |       | -8.43           | -3.39             | -0.93           | 0.27    | 46.16   | Tap:            | 9.00      | Min:  | 1          | Max:               | 18       |  |  |                     |  |  |  |        |  |  |  |      |  |
| PWATU-20KV(2) |  |                    |             |       |                 |                   |                 |         |         |                 |           |       |            |                    |          |  |  |                     |  |  |  |        |  |  |  |      |  |
| PWATU3-20K.00 |  | 1.00               | 20.05       | 18.68 |                 |                   |                 |         |         |                 |           |       |            |                    |          |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lod    |  | LOAD-PWATU3        |             |       | 1.41            | 0.60              | 0.92            | 0.04    |         | P10:            | 1.40 MW   | Q10:  | 0.60 Mvar  |                    |          |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  | DIS-PWATU3-30MVA   |             |       | -1.41           | -0.60             | -0.92           | 0.04    | 5.09    | Tap:            | 9.00      | Min:  | 1          | Max:               | 18       |  |  |                     |  |  |  |        |  |  |  |      |  |
| PWATU-20KV    |  |                    |             |       |                 |                   |                 |         |         |                 |           |       |            |                    |          |  |  |                     |  |  |  |        |  |  |  |      |  |
| PWATU1-20K.00 |  | 0.99               | 19.80       | 16.55 |                 |                   |                 |         |         |                 |           |       |            |                    |          |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lod    |  | LOAD-PWATU1        |             |       | 11.46           | 3.72              | 0.95            | 0.35    |         | P10:            | 11.70 MW  | Q10:  | 3.80 Mvar  |                    |          |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  | DIS-PWATU1-30MVA   |             |       | -11.46          | -3.72             | -0.95           | 0.35    | 40.59   | Tap:            | 9.00      | Min:  | 1          | Max:               | 18       |  |  |                     |  |  |  |        |  |  |  |      |  |
| PWATU         |  |                    |             |       |                 |                   |                 |         |         |                 |           |       |            |                    |          |  |  |                     |  |  |  |        |  |  |  |      |  |
| PWATU 70.00   |  | 1.00               | 70.32       | 18.97 |                 |                   |                 |         |         |                 |           |       |            |                    |          |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lne    |  | NII TANASA - PWATU |             |       | -22.62          | 5.72              | -0.97           | 0.19    | 24.72   | Pv:             | 279.66 kW | cLod: | -0.00 Mvar | L:                 | 12.70 km |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lne    |  | NII TANASA - PWATU |             |       | -22.62          | 5.72              | -0.97           | 0.19    | 24.72   | Pv:             | 279.66 kW | cLod: | -0.00 Mvar | L:                 | 12.70 km |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  | DIS-PWATU3-20MVA   |             |       | 8.43            | 3.86              | 0.91            | 0.08    | 46.16   | Tap:            | 9.00      | Min:  | 1          | Max:               | 18       |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  | DIS-PWATU1-30MVA   |             |       | 11.46           | 4.27              | 0.94            | 0.10    | 40.59   | Tap:            | 9.00      | Min:  | 1          | Max:               | 18       |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  | DIS-PWATU3-30MVA   |             |       | 1.41            | 0.61              | 0.92            | 0.01    | 5.09    | Tap:            | 9.00      | Min:  | 1          | Max:               | 18       |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  | PWATU1-PWATU150/70 |             |       | 11.97           | -10.09            | 0.76            | 0.13    | 54.69   | Tap:            | 7.00      | Min:  | 1          | Max:               | 18       |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  | PWATU2-PWATU150/70 |             |       | 11.97           | -10.09            | 0.76            | 0.13    | 54.69   | Tap:            | 7.00      | Min:  | 1          | Max:               | 18       |  |  |                     |  |  |  |        |  |  |  |      |  |
| SAWITTO1 20KV |  |                    |             |       |                 |                   |                 |         |         |                 |           |       |            |                    |          |  |  |                     |  |  |  |        |  |  |  |      |  |
| SAWITTO1 2.00 |  | 1.00               | 19.91       | -4.35 |                 |                   |                 |         |         |                 |           |       |            |                    |          |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lod    |  | LOAD-PINRANG1      |             |       | 19.63           | 6.54              | 0.95            | 0.60    |         | P10:            | 19.80 MW  | Q10:  | 6.60 Mvar  |                    |          |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cubicle/Coup  |  | CBS                |             |       |                 |                   |                 |         |         |                 |           |       |            |                    |          |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  | DIS-PINRANG-30MVA  |             |       | -19.63          | -6.54             | -0.95           | 0.60    | 74.89   | Tap:            | 6.00      | Min:  | 1          | Max:               | 18       |  |  |                     |  |  |  |        |  |  |  |      |  |
| SAWITTO2 2.00 |  |                    |             |       |                 |                   |                 |         |         |                 |           |       |            |                    |          |  |  |                     |  |  |  |        |  |  |  |      |  |
| SAWITTO2 2.00 |  | 1.00               | 19.99       | 0.42  |                 |                   |                 |         |         |                 |           |       |            |                    |          |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lod    |  | LOAD-PINRANG2      |             |       |                 |                   |                 |         |         | P10:            | 0.00 MW   | Q10:  | 0.00 Mvar  |                    |          |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Sym    |  | PLTM SAWITTO       |             |       | 0.48            | -0.00             | 1.00            | 0.01    | 29.58   | Typ:            | PQ        |       |            |                    |          |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cubicle/Coup  |  | CBS                |             |       |                 |                   |                 |         |         |                 |           |       |            |                    |          |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  | DIS-PINRANG-16MVA  |             |       | 0.48            | -0.00             | 1.00            | 0.01    | 3.15    | Tap:            | 7.00      | Min:  | 1          | Max:               | 18       |  |  |                     |  |  |  |        |  |  |  |      |  |

| Grid: Grid    |                          | System Stage: Grid         |        |                         | Study Case: Case 01         |                        |                 |                | Annex:          |           | / 30  |            |             |
|---------------|--------------------------|----------------------------|--------|-------------------------|-----------------------------|------------------------|-----------------|----------------|-----------------|-----------|-------|------------|-------------|
|               | rated<br>Voltage<br>[kV] | Bus-voltage<br>[p.u.] [kV] |        | Active<br>Power<br>[MW] | Reactive<br>Power<br>[Mvar] | Power<br>Factor<br>[-] | Current<br>[kA] | Loading<br>[%] | Additional Data |           |       |            |             |
| SENGKANG      |                          |                            |        |                         |                             |                        |                 |                |                 |           |       |            |             |
| SENGKANGS0.00 |                          | 0.95                       | 142.99 | 1.05                    |                             |                        |                 |                |                 |           |       |            |             |
| Cub_1 /Lne    | SIWA-SKANG1              |                            |        | -56.18                  | 4.76                        | -1.00                  | 0.23            | 17.84          | Pv:             | 868.57 kW | cLod: | -0.00 Mvar | L: 66.52 km |
| Cub_1 /Lne    | SIWA-SKANG2              |                            |        | -56.18                  | 4.76                        | -1.00                  | 0.23            | 17.84          | Pv:             | 868.57 kW | cLod: | -0.00 Mvar | L: 66.52 km |
| Cub_1 /Lne    | SKANG - SDRAP1           |                            |        | 12.65                   | -7.78                       | 0.85                   | 0.06            | 3.27           | Pv:             | 23.53 kW  | cLod: | -0.00 Mvar | L: 62.33 km |
| Cub_1 /Lne    | SKANG - SDRAP2           |                            |        | 12.65                   | -7.78                       | 0.85                   | 0.06            | 3.27           | Pv:             | 23.53 kW  | cLod: | -0.00 Mvar | L: 62.33 km |
| Cub_1 /Lne    | SPENG - SKANG1           |                            |        | 29.50                   | 0.80                        | 1.00                   | 0.12            | 14.19          | Pv:             | 109.12 kW | cLod: | -0.00 Mvar | L: 35.58 km |
| Cub_1 /Lne    | SPENG - SKANG2           |                            |        | 29.50                   | 0.80                        | 1.00                   | 0.12            | 14.19          | Pv:             | 109.12 kW | cLod: | -0.00 Mvar | L: 35.58 km |
| Cub_1 /Tr2    | DIS-SENGKANG-60MVA       |                            |        | 11.95                   | 0.07                        | 1.00                   | 0.05            | 20.89          | Tap:            | 8.00      | Min:  | 1          | Max: 18     |
| Cub_1 /Tr2    | DIS-SKANG-20MVA          |                            |        | 0.00                    | 0.00                        | 1.00                   | 0.00            | 0.00           | Tap:            | 8.00      | Min:  | 1          | Max: 18     |
| Cub_1 /Tr2    | DIS-SKANG-30MVA          |                            |        | 16.10                   | 4.36                        | 0.97                   | 0.07            | 58.32          | Tap:            | 7.00      | Min:  | 1          | Max: 18     |
| Cub_1 /Tr2    | TG GT11                  |                            |        |                         |                             |                        |                 |                | Tap:            | 1         | Min:  | 1          | Max: 18     |
| Cub_1 /Tr2    | TG GT12                  |                            |        |                         |                             |                        |                 |                | Tap:            | 1         | Min:  | 1          | Max: 18     |
| Cub_1 /Tr2    | TG GT18                  |                            |        |                         |                             |                        |                 |                | Tap:            | 1         | Min:  | 1          | Max: 18     |
| Cub_1 /Tr2    | TG GT21                  |                            |        |                         |                             |                        |                 |                | Tap:            | 1         | Min:  | 1          | Max: 18     |
| Cub_1 /Tr2    | TG GT22                  |                            |        |                         |                             |                        |                 |                | Tap:            | 1         | Min:  | 1          | Max: 18     |
| Cub_1 /Tr2    | TG GT28                  |                            |        |                         |                             |                        |                 |                | Tap:            | 1         | Min:  | 1          | Max: 18     |
| SGMSA         |                          |                            |        |                         |                             |                        |                 |                |                 |           |       |            |             |
| SGMSA 150.00  |                          | 0.97                       | 145.09 | -3.98                   |                             |                        |                 |                |                 |           |       |            |             |
| Cub_1 /Lne    | SGMHASA-LANNA            |                            |        | 0.93                    | 0.00                        | 1.00                   | 0.00            | 0.31           | Pv:             | 0.06 kW   | cLod: | 0.00 Mvar  | L: 22.60 km |
| Cub_1 /Lne    | SGMHASA-LANNA(1)         |                            |        | 0.93                    | 0.00                        | 1.00                   | 0.00            | 0.31           | Pv:             | 0.06 kW   | cLod: | 0.00 Mvar  | L: 22.60 km |
| Cub_1 /Lne    | SGMSA - BINGI            |                            |        | -8.24                   | 8.84                        | -0.68                  | 0.05            | 2.62           | Pv:             | 2.38 kW   | cLod: | 0.00 Mvar  | L: 10.70 km |
| Cub_1 /Lne    | SGMSA - BINGI(1)         |                            |        | -6.55                   | 7.07                        | -0.68                  | 0.04            | 2.09           | Pv:             | 1.94 kW   | cLod: | 0.00 Mvar  | L: 10.70 km |
| Cub_1 /Lne    | SGMSA - TBNGA1           |                            |        | 9.96                    | -1.61                       | 0.99                   | 0.04            | 2.19           | Pv:             | 3.91 kW   | cLod: | 0.00 Mvar  | L: 11.90 km |
| Cub_1 /Lne    | SGMSA - TBNGA2           |                            |        | 9.96                    | -1.61                       | 0.99                   | 0.04            | 2.19           | Pv:             | 3.91 kW   | cLod: | 0.00 Mvar  | L: 11.90 km |
| Cub_1 /Lne    | SGMSA - TLASA1           |                            |        | -105.35                 | -31.21                      | -0.96                  | 0.44            | 23.81          | Pv:             | 560.83 kW | cLod: | 0.00 Mvar  | L: 26.43 km |
| Cub_1 /Lne    | SGMSA - TLASA2           |                            |        | -105.35                 | -31.21                      | -0.96                  | 0.44            | 23.81          | Pv:             | 560.83 kW | cLod: | 0.00 Mvar  | L: 26.43 km |
| Cub_1 /Lne    | TELLO - SGMSA1           |                            |        | 78.63                   | 19.05                       | 0.97                   | 0.32            | 17.54          | Pv:             | 125.81 kW | cLod: | 0.00 Mvar  | L: 10.93 km |
| Cub_1 /Lne    | TELLO - SGMSA2           |                            |        | 78.63                   | 19.05                       | 0.97                   | 0.32            | 17.54          | Pv:             | 125.81 kW | cLod: | 0.00 Mvar  | L: 10.93 km |
| Cub_1 /Tr2    | DIS-SGMSA1               |                            |        | 16.92                   | 4.26                        | 0.97                   | 0.07            | 30.07          | Tap:            | 8.00      | Min:  | 1          | Max: 18     |
| Cub_1 /Tr2    | DIS-SGMSA2               |                            |        | 29.52                   | 7.35                        | 0.97                   | 0.12            | 52.41          | Tap:            | 7.00      | Min:  | 1          | Max: 18     |
| SGMSA2 20KV   |                          |                            |        |                         |                             |                        |                 |                |                 |           |       |            |             |
| SGMSA2 20K.00 |                          | 0.98                       | 19.67  | -6.16                   |                             |                        |                 |                |                 |           |       |            |             |
| Cub_1 /Lod    | LOAD-SGMSA1              |                            |        | 16.92                   | 3.58                        | 0.98                   | 0.51            | 30.07          | P10:            | 17.50 MW  | Q10:  | 3.70 Mvar  |             |
| Cubicle/Coup  | CBS                      |                            |        |                         |                             |                        |                 |                |                 |           |       |            |             |
| Cub_1 /Tr2    | DIS-SGMSA1               |                            |        | -16.92                  | -3.58                       | -0.98                  | 0.51            | 30.07          | Tap:            | 8.00      | Min:  | 1          | Max: 18     |
| SGMSA2 20K.00 |                          | 1.01                       | 20.11  | -7.29                   |                             |                        |                 |                |                 |           |       |            |             |
| Cub_1 /Lod    | LOAD-SGMSA2              |                            |        | 29.52                   | 5.56                        | 0.98                   | 0.86            | 52.41          | P10:            | 29.20 MW  | Q10:  | 5.50 Mvar  |             |
| Cubicle/Coup  | CBS                      |                            |        |                         |                             |                        |                 |                |                 |           |       |            |             |
| Cub_1 /Tr2    | DIS-SGMSA2               |                            |        | -29.52                  | -5.56                       | -0.98                  | 0.86            | 52.41          | Tap:            | 7.00      | Min:  | 1          | Max: 18     |



| Grid: Grid |  |  |  |  |  |  |  |  |  |  |  |  |  | System Stage: Grid |  |  |  | Study Case: Case 01 |  |  |  | Annex: |  |  |  | / 33 |  |
|------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--------------------|--|--|--|---------------------|--|--|--|--------|--|--|--|------|--|
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|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |
|            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |  |                     |  |  |  |        |  |  |  |      |  |

| Grid: Grid        |  |  |  |  |  |  |  |  |  |  |  |  |  | System Stage: Grid |  |              |  | Study Case: Case 01 |  |              |  | Annex:          |  |                 |  | / 35 |  |          |  |       |  |            |  |            |  |    |  |
|-------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--------------------|--|--------------|--|---------------------|--|--------------|--|-----------------|--|-----------------|--|------|--|----------|--|-------|--|------------|--|------------|--|----|--|
| rated Voltage     |  |  |  |  |  |  |  |  |  |  |  |  |  | Bus-voltage        |  | Active Power |  | Reactive Power      |  | Power Factor |  | Current Loading |  | Additional Data |  |      |  |          |  |       |  |            |  |            |  |    |  |
| [kV]              |  |  |  |  |  |  |  |  |  |  |  |  |  | [p.u.]             |  | [kW]         |  | [Mvar]              |  | [-]          |  | [kA]            |  |                 |  |      |  |          |  |       |  |            |  |            |  |    |  |
| [deg]             |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |              |  |                     |  |              |  |                 |  |                 |  |      |  |          |  |       |  |            |  |            |  |    |  |
| SUPPA 11KV        |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |              |  |                     |  |              |  |                 |  |                 |  |      |  |          |  |       |  |            |  |            |  |    |  |
| SUPPA 11KV.00     |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.95               |  | 9.38         |  | 4.84                |  |              |  |                 |  |                 |  |      |  |          |  |       |  |            |  |            |  |    |  |
| Cub_1 /Sym        |  |  |  |  |  |  |  |  |  |  |  |  |  | GE SUPPA#1         |  | 8.41         |  | -0.00               |  | 1.00         |  | 0.52            |  | 80.71           |  | Typ: |  | PQ       |  |       |  |            |  |            |  |    |  |
| Cub_1 /Sym        |  |  |  |  |  |  |  |  |  |  |  |  |  | GE SUPPA#2         |  | 8.41         |  | -0.00               |  | 1.00         |  | 0.52            |  | 80.71           |  | Typ: |  | PQ       |  |       |  |            |  |            |  |    |  |
| Cub_1 /Sym        |  |  |  |  |  |  |  |  |  |  |  |  |  | GE SUPPA#3         |  | 8.41         |  | -0.00               |  | 1.00         |  | 0.52            |  | 80.71           |  | Typ: |  | PQ       |  |       |  |            |  |            |  |    |  |
| Cub_1 /Sym        |  |  |  |  |  |  |  |  |  |  |  |  |  | GE SUPPA#4         |  | 8.41         |  | -0.00               |  | 1.00         |  | 0.52            |  | 80.71           |  | Typ: |  | PQ       |  |       |  |            |  |            |  |    |  |
| Cub_1 /Sym        |  |  |  |  |  |  |  |  |  |  |  |  |  | GE SUPPA#5         |  | 8.41         |  | -0.00               |  | 1.00         |  | 0.52            |  | 80.71           |  | Typ: |  | PQ       |  |       |  |            |  |            |  |    |  |
| Cub_1 /Sym        |  |  |  |  |  |  |  |  |  |  |  |  |  | GE SUPPA#6         |  | 8.41         |  | -0.00               |  | 1.00         |  | 0.52            |  | 80.71           |  | Typ: |  | PQ       |  |       |  |            |  |            |  |    |  |
| Cub_1 /Tr2        |  |  |  |  |  |  |  |  |  |  |  |  |  | TG-SUPPA2          |  | 21.02        |  | -0.00               |  | 1.00         |  | 1.29            |  | 54.75           |  | Tap: |  | 1.00     |  | Min:  |  | 1          |  | Max:       |  | 18 |  |
| Total             |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  | 42.04        |  | -0.00               |  |              |  |                 |  |                 |  |      |  |          |  |       |  |            |  |            |  |    |  |
| Generation:       |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  | 42.04        |  | -0.00               |  |              |  |                 |  |                 |  |      |  |          |  |       |  |            |  |            |  |    |  |
| SUPPA             |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |              |  |                     |  |              |  |                 |  |                 |  |      |  |          |  |       |  |            |  |            |  |    |  |
| SUPPA 150.00      |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.96               |  | 143.75       |  | 0.49                |  |              |  |                 |  |                 |  |      |  |          |  |       |  |            |  |            |  |    |  |
| Cub_1 /Lne        |  |  |  |  |  |  |  |  |  |  |  |  |  | PFARE - SUPPA1     |  | 21.02        |  | -1.60               |  | 1.00         |  | 0.08            |  | 13.27           |  | Pv:  |  | 18.87 kW |  | cLod: |  | -0.00 Mvar |  | L: 7.50 km |  |    |  |
| Cub_1 /Lne        |  |  |  |  |  |  |  |  |  |  |  |  |  | PFARE - SUPPA2     |  | 21.02        |  | -1.60               |  | 1.00         |  | 0.08            |  | 13.27           |  | Pv:  |  | 18.87 kW |  | cLod: |  | -0.00 Mvar |  | L: 7.50 km |  |    |  |
| Cub_1 /Tr2        |  |  |  |  |  |  |  |  |  |  |  |  |  | TG-SUPPA1          |  | -21.02       |  | 1.60                |  | -1.00        |  | 0.08            |  | 54.75           |  | Tap: |  | 1.00     |  | Min:  |  | 1          |  | Max:       |  | 18 |  |
| Cub_1 /Tr2        |  |  |  |  |  |  |  |  |  |  |  |  |  | TG-SUPPA2          |  | -21.02       |  | 1.60                |  | -1.00        |  | 0.08            |  | 54.75           |  | Tap: |  | 1.00     |  | Min:  |  | 1          |  | Max:       |  | 18 |  |
| SWD1              |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |              |  |                     |  |              |  |                 |  |                 |  |      |  |          |  |       |  |            |  |            |  |    |  |
| BAR-SWD1 6.30     |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.96               |  | 6.06         |  | -1.72               |  |              |  |                 |  |                 |  |      |  |          |  |       |  |            |  |            |  |    |  |
| Cub_1 /Sym        |  |  |  |  |  |  |  |  |  |  |  |  |  | PLTD-SWD-1         |  | 6.73         |  | -0.00               |  | 1.00         |  | 0.64            |  | 54.26           |  | Typ: |  | PQ       |  |       |  |            |  |            |  |    |  |
| Cub_1 /Tr2        |  |  |  |  |  |  |  |  |  |  |  |  |  | TG SWD1            |  | 6.73         |  | -0.00               |  | 1.00         |  | 0.64            |  | 46.61           |  | Tap: |  | 0.00     |  | Min:  |  | 0          |  | Max:       |  | 0  |  |
| SWD2              |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |              |  |                     |  |              |  |                 |  |                 |  |      |  |          |  |       |  |            |  |            |  |    |  |
| BAR-SWD2 6.30     |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.96               |  | 6.06         |  | -1.72               |  |              |  |                 |  |                 |  |      |  |          |  |       |  |            |  |            |  |    |  |
| Cub_1 /Sym        |  |  |  |  |  |  |  |  |  |  |  |  |  | PLTD-SWD-2         |  | 6.73         |  | -0.00               |  | 1.00         |  | 0.64            |  | 54.26           |  | Typ: |  | PQ       |  |       |  |            |  |            |  |    |  |
| Cub_1 /Tr2        |  |  |  |  |  |  |  |  |  |  |  |  |  | TG SWD2            |  | 6.73         |  | -0.00               |  | 1.00         |  | 0.64            |  | 46.61           |  | Tap: |  | 0.00     |  | Min:  |  | 0          |  | Max:       |  | 0  |  |
| Single Busbar(1)  |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |              |  |                     |  |              |  |                 |  |                 |  |      |  |          |  |       |  |            |  |            |  |    |  |
| PKANG3-20K.00     |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.99               |  | 19.90        |  | -6.11               |  |              |  |                 |  |                 |  |      |  |          |  |       |  |            |  |            |  |    |  |
| Cub_1 /Lod        |  |  |  |  |  |  |  |  |  |  |  |  |  | LOAD DAYA BARU     |  | 17.45        |  | -0.00               |  | 1.00         |  | 0.51            |  |                 |  | P10: |  | 17.80 MW |  | Q10:  |  | 0.00 Mvar  |  |            |  |    |  |
| Cub_1 /Tr2        |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-DAYA BARU 60MV |  | -17.45       |  | 0.00                |  | -1.00        |  | 0.51            |  | 30.13           |  | Tap: |  | 8.00     |  | Min:  |  | 1          |  | Max:       |  | 18 |  |
| Single Busbar(12) |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |              |  |                     |  |              |  |                 |  |                 |  |      |  |          |  |       |  |            |  |            |  |    |  |
| PKANG2-20K.00     |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.99               |  | 19.90        |  | -6.11               |  |              |  |                 |  |                 |  |      |  |          |  |       |  |            |  |            |  |    |  |
| Cub_1 /Lod        |  |  |  |  |  |  |  |  |  |  |  |  |  | LOAD PKANG2        |  |              |  |                     |  |              |  |                 |  |                 |  | P10: |  | 0.00 MW  |  | Q10:  |  | 0.00 Mvar  |  |            |  |    |  |
| Cub_1 /Tr2        |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-PKANG2 30MVA   |  |              |  |                     |  |              |  |                 |  |                 |  | Tap: |  | 1        |  | Min:  |  | 1          |  | Max:       |  | 18 |  |
| Single Busbar(13) |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |              |  |                     |  |              |  |                 |  |                 |  |      |  |          |  |       |  |            |  |            |  |    |  |
| PKANG3-20K.00     |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.99               |  | 19.76        |  | -10.40              |  |              |  |                 |  |                 |  |      |  |          |  |       |  |            |  |            |  |    |  |
| Cub_1 /Lod        |  |  |  |  |  |  |  |  |  |  |  |  |  | LOAD PKANG3        |  | 44.31        |  | 8.69                |  | 0.98         |  | 1.32            |  |                 |  | P10: |  | 45.40 MW |  | Q10:  |  | 8.90 Mvar  |  |            |  |    |  |
| Cub_1 /Tr2        |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-PKANG3 60MVA   |  | -44.31       |  | -8.69               |  | -0.98        |  | 1.32            |  | 80.18           |  | Tap: |  | 7.00     |  | Min:  |  | 1          |  | Max:       |  | 18 |  |

| Grid: Grid        |  |  |  |  |  |  |  |  |  |  |  |  |  | System Stage: Grid |  |              |  | Study Case: Case 01 |  |              |  | Annex:          |  |                 |  | / 36 |  |           |  |       |  |            |  |             |  |    |  |
|-------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--------------------|--|--------------|--|---------------------|--|--------------|--|-----------------|--|-----------------|--|------|--|-----------|--|-------|--|------------|--|-------------|--|----|--|
| rated Voltage     |  |  |  |  |  |  |  |  |  |  |  |  |  | Bus-voltage        |  | Active Power |  | Reactive Power      |  | Power Factor |  | Current Loading |  | Additional Data |  |      |  |           |  |       |  |            |  |             |  |    |  |
| [kV]              |  |  |  |  |  |  |  |  |  |  |  |  |  | [p.u.]             |  | [kW]         |  | [Mvar]              |  | [-]          |  | [kA]            |  |                 |  |      |  |           |  |       |  |            |  |             |  |    |  |
| [deg]             |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |              |  |                     |  |              |  |                 |  |                 |  |      |  |           |  |       |  |            |  |             |  |    |  |
| Single Busbar(48) |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |              |  |                     |  |              |  |                 |  |                 |  |      |  |           |  |       |  |            |  |             |  |    |  |
| BB 11.00          |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.84               |  | 9.24         |  | 6.10                |  |              |  |                 |  |                 |  |      |  |           |  |       |  |            |  |             |  |    |  |
| Cub_1 /Sym        |  |  |  |  |  |  |  |  |  |  |  |  |  | PLTU MMUJU#1       |  | 21.03        |  | 4.56                |  | 0.98         |  | 1.35            |  | 86.06           |  | Typ: |  | PQ        |  |       |  |            |  |             |  |    |  |
| Cub_1 /Tr2        |  |  |  |  |  |  |  |  |  |  |  |  |  | TG MMUJU1          |  | 21.03        |  | 4.56                |  | 0.98         |  | 1.35            |  | 82.01           |  | Tap: |  | 1.00      |  | Min:  |  | 1          |  | Max:        |  | 18 |  |
| Single Busbar(49) |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |              |  |                     |  |              |  |                 |  |                 |  |      |  |           |  |       |  |            |  |             |  |    |  |
| BB 11.00          |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.84               |  | 9.24         |  | 5.97                |  |              |  |                 |  |                 |  |      |  |           |  |       |  |            |  |             |  |    |  |
| Cub_1 /Sym        |  |  |  |  |  |  |  |  |  |  |  |  |  | PLTU MMUJU#2       |  | 19.36        |  | 4.99                |  | 0.97         |  | 1.25            |  | 79.98           |  | Typ: |  | PQ        |  |       |  |            |  |             |  |    |  |
| Cub_1 /Tr2        |  |  |  |  |  |  |  |  |  |  |  |  |  | TG MMUJU2          |  | 19.36        |  | 4.99                |  | 0.97         |  | 1.25            |  | 76.16           |  | Tap: |  | 1.00      |  | Min:  |  | 1          |  | Max:        |  | 18 |  |
| Single Busbar     |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |              |  |                     |  |              |  |                 |  |                 |  |      |  |           |  |       |  |            |  |             |  |    |  |
| BAR LOAD M.00     |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.98               |  | 19.68        |  | 2.66                |  |              |  |                 |  |                 |  |      |  |           |  |       |  |            |  |             |  |    |  |
| Cub_1 /Lod        |  |  |  |  |  |  |  |  |  |  |  |  |  | LOAD MMUJU BARU    |  | 7.26         |  | -0.14               |  | 1.00         |  | 0.21            |  |                 |  | P10: |  | 7.50 MW   |  | Q10:  |  | -0.14 Mvar |  |             |  |    |  |
| Cub_1 /Tr2        |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-MMUJU BARU     |  | -7.26        |  | 0.14                |  | -1.00        |  | 0.21            |  | 25.90           |  | Tap: |  | 7.00      |  | Min:  |  | 1          |  | Max:        |  | 18 |  |
| TALLISE 70KV      |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |              |  |                     |  |              |  |                 |  |                 |  |      |  |           |  |       |  |            |  |             |  |    |  |
| TALLISE 70.00     |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.97               |  | 67.67        |  | -0.14               |  |              |  |                 |  |                 |  |      |  |           |  |       |  |            |  |             |  |    |  |
| Cub_1 /Lne        |  |  |  |  |  |  |  |  |  |  |  |  |  | SDERA-TLISE1       |  | -15.03       |  | -3.73               |  | -0.97        |  | 0.13            |  | 17.04           |  | Pv:  |  | 278.04 kW |  | cLod: |  | -0.00 Mvar |  | L: 20.20 km |  |    |  |
| Cub_1 /Lne        |  |  |  |  |  |  |  |  |  |  |  |  |  | SDERA-TLISE2       |  | -15.03       |  | -3.73               |  | -0.97        |  | 0.13            |  | 17.04           |  | Pv:  |  | 278.04 kW |  | cLod: |  | -0.00 Mvar |  | L: 20.20 km |  |    |  |
| Cub_1 /Lne        |  |  |  |  |  |  |  |  |  |  |  |  |  | TLISE-PRIGI2       |  | 8.91         |  | 2.21                |  | 0.97         |  | 0.08            |  | 10.11           |  | Pv:  |  | 85.26 kW  |  | cLod: |  | 0.00 Mvar  |  | L: 17.60 km |  |    |  |
| Cub_1 /Lne        |  |  |  |  |  |  |  |  |  |  |  |  |  | TLISE-PRIGI1       |  | 8.91         |  | 2.21                |  | 0.97         |  | 0.08            |  | 10.11           |  | Pv:  |  | 85.26 kW  |  | cLod: |  | 0.00 Mvar  |  | L: 17.60 km |  |    |  |
| Cub_1 /Tr2        |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-SILAE1-30MVA   |  | 13.71        |  | 3.02                |  | 0.98         |  | 0.12            |  | 48.42           |  | Tap: |  | 11.00     |  | Min:  |  | 1          |  | Max:        |  | 18 |  |
| Cub_1 /Tr2        |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-SILAE2-30MVA   |  | -1.49        |  | 0.01                |  | -1.00        |  | 0.01            |  | 5.13            |  | Tap: |  | 10.00     |  | Min:  |  | 1          |  | Max:        |  | 18 |  |
| TALLISE           |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |              |  |                     |  |              |  |                 |  |                 |  |      |  |           |  |       |  |            |  |             |  |    |  |
| TALLISE 20.00     |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.99               |  | 19.86        |  | 1.69                |  |              |  |                 |  |                 |  |      |  |           |  |       |  |            |  |             |  |    |  |
| Cub_1 /Lod        |  |  |  |  |  |  |  |  |  |  |  |  |  | LOAD-TALLISE 150KV |  | 22.39        |  | 6.31                |  | 0.96         |  | 0.68            |  |                 |  | P10: |  | 22.70 MW  |  | Q10:  |  | 6.40 Mvar  |  |             |  |    |  |
| Cub_1 /Tr2        |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-TALLISE 150KV  |  | -22.39       |  | -6.31               |  | -0.96        |  | 0.68            |  | 44.61           |  | Tap: |  | 4.00      |  | Min:  |  | 1          |  | Max:        |  | 18 |  |
| TANETE(1)         |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |              |  |                     |  |              |  |                 |  |                 |  |      |  |           |  |       |  |            |  |             |  |    |  |
| TANETE 20K.00     |  |  |  |  |  |  |  |  |  |  |  |  |  | 1.00               |  | 19.97        |  | -4.03               |  |              |  |                 |  |                 |  |      |  |           |  |       |  |            |  |             |  |    |  |
| Cub_1 /Lod        |  |  |  |  |  |  |  |  |  |  |  |  |  | LOAD-TANETE        |  | 5.22         |  | 0.47                |  | 1.00         |  | 0.15            |  |                 |  | P10: |  | 5.24 MW   |  | Q10:  |  | 0.47 Mvar  |  |             |  |    |  |
| Cub_1 /Tr2        |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-TANETE-30MVA   |  | -5.22        |  | -0.47               |  | -1.00        |  | 0.15            |  | 18.43           |  | Tap: |  | 7.00      |  | Min:  |  | 1          |  | Max:        |  | 18 |  |
| TANETE            |  |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |              |  |                     |  |              |  |                 |  |                 |  |      |  |           |  |       |  |            |  |             |  |    |  |
| TANETE 150.00     |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.95               |  | 142.57       |  | -2.81               |  |              |  |                 |  |                 |  |      |  |           |  |       |  |            |  |             |  |    |  |
| Cub_1 /Lne        |  |  |  |  |  |  |  |  |  |  |  |  |  | SINJAI - BLKMBR    |  | -13.53       |  | -10.02              |  | -0.80        |  | 0.07            |  | 10.69           |  | Pv:  |  | 111.34 kW |  | cLod: |  | 0.00 Mvar  |  | L: 63.87 km |  |    |  |
| Cub_1 /Lne        |  |  |  |  |  |  |  |  |  |  |  |  |  | SINJAI - BLKMBR(1) |  | 8.31         |  | 9.44                |  | 0.66         |  | 0.05            |  | 7.98            |  | Pv:  |  | 62.10 kW  |  | cLod: |  | 0.00 Mvar  |  | L: 63.87 km |  |    |  |
| Cub_1 /Tr2        |  |  |  |  |  |  |  |  |  |  |  |  |  | DIS-TANETE-30MVA   |  | 5.22         |  | 0.58                |  | 0.99         |  | 0.02            |  | 18.43           |  | Tap: |  | 7.00      |  | Min:  |  | 1          |  | Max:        |  | 18 |  |

| Grid: Grid     |                    | System Stage: Grid |       |              | Study Case: Case 01 |              |         |         | Annex:          |           | / 37   |                       |  |
|----------------|--------------------|--------------------|-------|--------------|---------------------|--------------|---------|---------|-----------------|-----------|--------|-----------------------|--|
|                | rated Voltage      | Bus-voltage        |       | Active Power | Reactive Power      | Power Factor | Current | Loading | Additional Data |           |        |                       |  |
|                | [KV]               | [p.u.]             | [deg] | [MW]         | [Mvar]              | [-]          | [kA]    | [%]     |                 |           |        |                       |  |
| TBNGA          |                    |                    |       |              |                     |              |         |         |                 |           |        |                       |  |
| TANJUNG BU.00  | 0.97               | 145.09             | -4.11 |              |                     |              |         |         |                 |           |        |                       |  |
| Cub_1 /Lne     | SGMSA - TBNGA1     |                    |       | -9.95        | 1.63                | -0.99        | 0.04    | 2.19    | Pv:             | 3.91 kW   | cLod:  | 0.00 Mvar L: 11.90 km |  |
| Cub_1 /Lne     | SGMSA - TBNGA2     |                    |       | -9.95        | 1.63                | -0.99        | 0.04    | 2.19    | Pv:             | 3.91 kW   | cLod:  | 0.00 Mvar L: 11.90 km |  |
| Cub_1 /Lne     | TBNGA - GIS BNTLA  |                    |       | 72.91        | 17.58               | 0.97         | 0.30    | 29.17   | Pv:             | 87.59 kW  | cLod:  | 0.00 Mvar L: 11.00 km |  |
| Cub_1 /Lne     | TBNGA - GIS BNTLA  |                    |       | 72.91        | 17.58               | 0.97         | 0.30    | 29.17   | Pv:             | 87.59 kW  | cLod:  | 0.00 Mvar L: 11.00 km |  |
| Cub_1 /Lne     | TBNGA-PGAYAI       |                    |       | -93.26       | -27.17              | -0.96        | 0.39    | 21.05   | Pv:             | 918.41 kW | cLod:  | 0.00 Mvar L: 59.39 km |  |
| Cub_1 /Lne     | TBNGA-PGAYAI       |                    |       | -93.26       | -27.17              | -0.96        | 0.39    | 21.05   | Pv:             | 918.41 kW | cLod:  | 0.00 Mvar L: 59.39 km |  |
| Cub_1 /Tr2     | DIS-TBNGA1-60MVA   |                    |       | 30.30        | 7.83                | 0.97         | 0.12    | 53.92   | Tap:            | 7.00      | Min: 1 | Max: 18               |  |
| Cub_1 /Tr2     | DIS-TBNGA2-60MVA   |                    |       | 15.91        | 5.03                | 0.95         | 0.07    | 28.76   | Tap:            | 8.00      | Min: 1 | Max: 18               |  |
| Cub_1 /Tr2     | DIS-TBNGA3-60MVA   |                    |       | 14.40        | 3.07                | 0.98         | 0.06    | 25.36   | Tap:            | 8.00      | Min: 1 | Max: 18               |  |
| TBNGA2 20KV(1) |                    |                    |       |              |                     |              |         |         |                 |           |        |                       |  |
| TBNGA2 20K.00  | 1.00               | 20.07              | -7.87 |              |                     |              |         |         |                 |           |        |                       |  |
| Cub_1 /Lod     | LOAD-TBNGA1        |                    |       | 30.30        | 5.74                | 0.98         | 0.89    |         | P10:            | 30.10 MW  | Q10:   | 5.70 Mvar             |  |
| Cubicle/Coup   | CBS                |                    |       |              |                     |              |         |         |                 |           |        |                       |  |
| Cub_1 /Tr2     | DIS-TBNGA1-60MVA   |                    |       | -30.30       | -5.74               | -0.98        | 0.89    | 53.92   | Tap:            | 7.00      | Min: 1 | Max: 18               |  |
| TBNGA2 20KV    |                    |                    |       |              |                     |              |         |         |                 |           |        |                       |  |
| TBNGA2 20K.00  | 0.99               | 19.72              | -5.81 |              |                     |              |         |         |                 |           |        |                       |  |
| Cub_1 /Lod     | LOAD-TBNGA3        |                    |       | 14.40        | 2.63                | 0.98         | 0.43    |         | P10:            | 14.80 MW  | Q10:   | 2.70 Mvar             |  |
| Cubicle/Coup   | CBS                |                    |       |              |                     |              |         |         |                 |           |        |                       |  |
| Cub_1 /Tr2     | DIS-TBNGA3-60MVA   |                    |       | -14.40       | -2.63               | -0.98        | 0.43    | 25.36   | Tap:            | 8.00      | Min: 1 | Max: 18               |  |
| TBNGA2 20K.00  | 0.98               | 19.64              | -6.06 |              |                     |              |         |         |                 |           |        |                       |  |
| Cub_1 /Lod     | LOAD-TBNGA2        |                    |       | 15.91        | 4.44                | 0.96         | 0.49    |         | P10:            | 16.50 MW  | Q10:   | 4.60 Mvar             |  |
| Cubicle/Coup   | CBS                |                    |       |              |                     |              |         |         |                 |           |        |                       |  |
| Cub_5 /Coup    | CBS                |                    |       |              |                     |              |         |         |                 |           |        |                       |  |
| Cub_1 /Tr2     | DIS-TBNGA2-60MVA   |                    |       | -15.91       | -4.44               | -0.96        | 0.49    | 28.76   | Tap:            | 8.00      | Min: 1 | Max: 18               |  |
| TELLO LAMA     |                    |                    |       |              |                     |              |         |         |                 |           |        |                       |  |
| TELLO LAMA.00  | 0.96               | 144.64             | -4.43 |              |                     |              |         |         |                 |           |        |                       |  |
| Cub_1 /Lne     | TLAMA - GIS BONTQA |                    |       | -48.81       | -9.05               | -0.98        | 0.20    | 33.03   | Pv:             | 27.71 kW  | cLod:  | 0.00 Mvar L: 4.20 km  |  |
| Cub_1 /Lne     | TLAMA - GIS BONTQA |                    |       | -48.81       | -9.05               | -0.98        | 0.20    | 33.03   | Pv:             | 27.71 kW  | cLod:  | 0.00 Mvar L: 4.20 km  |  |
| Cub_1 /Lne     | TLAMA-TELLO1 150 K |                    |       | 28.60        | 3.15                | 0.99         | 0.11    | 10.17   | Pv:             | 23.05 kW  | cLod:  | 0.00 Mvar L: 6.40 km  |  |
| Cub_1 /Lne     | TLAMA-TELLO2 150 K |                    |       | 26.92        | 2.96                | 0.99         | 0.11    | 9.58    | Pv:             | 21.70 kW  | cLod:  | 0.00 Mvar L: 6.80 km  |  |
| Cub_1 /Tr2     | DIS-TLAMA1         |                    |       | 0.00         | 0.00                | 1.00         | 0.00    | 0.00    | Tap:            | 8.00      | Min: 1 | Max: 18               |  |
| Cub_1 /Tr2     | DIS-TLAMA2         |                    |       | 14.76        | 5.17                | 0.94         | 0.06    | 54.07   | Tap:            | 7.00      | Min: 1 | Max: 18               |  |
| Cub_1 /Tr2     | DIS-TLAMA3         |                    |       | 27.34        | 6.83                | 0.97         | 0.11    | 48.71   | Tap:            | 7.00      | Min: 1 | Max: 18               |  |
| Cub_1 /Tr2     | IBT1 - TLAMA 31.5M |                    |       |              |                     |              |         |         | Tap:            | 0         | Min: 0 | Max: 0                |  |
| Cub_1 /Tr2     | IBT2 - TLAMA 31.5M |                    |       |              |                     |              |         |         | Tap:            | 0         | Min: 0 | Max: 0                |  |

| Grid: Grid    |                    | System Stage: Grid |        |              |                | Study Case: Case 01 |         |         |                 | Annex:    |       | / 38      |             |  |
|---------------|--------------------|--------------------|--------|--------------|----------------|---------------------|---------|---------|-----------------|-----------|-------|-----------|-------------|--|
|               | rated Voltage      | Bus-voltage        |        | Active Power | Reactive Power | Power Factor        | Current | Loading | Additional Data |           |       |           |             |  |
|               | [KV]               | [p.u.]             | [KV]   | [deg]        | [MW]           | [Mvar]              | [-]     | [kA]    | [%]             |           |       |           |             |  |
| TELLO         |                    |                    |        |              |                |                     |         |         |                 |           |       |           |             |  |
| TELLO 150K.00 | 0.96               | 144.48             | -4.61  |              |                |                     |         |         |                 |           |       |           |             |  |
| Cub_1 /Lne    | KIMA - TELLO       |                    |        | 64.33        | 26.91          | 0.92                | 0.28    | 43.67   | Pv:             | 222.74 kW | cLod: | 0.00 Mvar | L: 7.65 km  |  |
| Cub_1 /Lne    | TELLO - BSWA       |                    |        | 49.19        | 19.34          | 0.93                | 0.21    | 33.10   | Pv:             | 509.03 kW | cLod: | 0.00 Mvar | L: 20.90 km |  |
| Cub_1 /Lne    | TELLO - SGMSA1     |                    |        | -78.51       | -18.10         | -0.97               | 0.32    | 17.54   | Pv:             | 125.81 kW | cLod: | 0.00 Mvar | L: 10.93 km |  |
| Cub_1 /Lne    | TELLO - SGMSA2     |                    |        | -78.51       | -18.10         | -0.97               | 0.32    | 17.54   | Pv:             | 125.81 kW | cLod: | 0.00 Mvar | L: 10.93 km |  |
| Cub_1 /Lne    | TELLO-PKANG1 150KV |                    |        | 39.27        | 12.00          | 0.96                | 0.16    | 14.24   | Pv:             | 31.55 kW  | cLod: | 0.00 Mvar | L: 4.20 km  |  |
| Cub_1 /Lne    | TELLO-PKANG2 150KV |                    |        | 39.27        | 12.00          | 0.96                | 0.16    | 14.24   | Pv:             | 31.55 kW  | cLod: | 0.00 Mvar | L: 4.20 km  |  |
| Cub_1 /Lne    | TLAMA-TELLO1 150 K |                    |        | -28.58       | -3.05          | -0.99               | 0.11    | 10.17   | Pv:             | 23.05 kW  | cLod: | 0.00 Mvar | L: 6.40 km  |  |
| Cub_1 /Lne    | TLAMA-TELLO2 150 K |                    |        | -26.90       | -2.87          | -0.99               | 0.11    | 9.58    | Pv:             | 21.70 kW  | cLod: | 0.00 Mvar | L: 6.80 km  |  |
| Cub_1 /Tr2    | DIS-TELLO1         |                    |        |              |                |                     |         |         | Tap:            | 1         | Min:  | 1         | Max: 18     |  |
| Cub_1 /Tr2    | DIS-TELLO2         |                    |        | 44.84        | 13.42          | 0.96                | 0.19    | 80.99   | Tap:            | 7.00      | Min:  | 1         | Max: 18     |  |
| Cub_1 /Tr2    | IBT1-TELLO         |                    |        |              |                |                     |         |         | Tap:            | 1         | Min:  | 1         | Max: 18     |  |
| Cub_1 /Tr2    | IBT3-TELLO         |                    |        | 23.54        | -7.53          | 0.95                | 0.10    | 81.45   | Tap:            | 9.00      | Min:  | 1         | Max: 18     |  |
| Cub_1 /Tr2    | IBT5-TELLO         |                    |        | 23.54        | -7.53          | 0.95                | 0.10    | 81.45   | Tap:            | 9.00      | Min:  | 1         | Max: 18     |  |
| Cub_1 /Tr2    | TG GE1             |                    |        | -21.02       | -20.56         | -0.71               | 0.12    | 43.61   | Tap:            | 0.00      | Min:  | 0         | Max: 0      |  |
| Cub_1 /Tr2    | TG GE2             |                    |        | -23.54       | -7.29          | -0.96               | 0.10    | 96.55   | Tap:            | 0.00      | Min:  | 0         | Max: 0      |  |
| Cub_1 /Tr2    | TG MITS1           |                    |        | -6.73        | 0.34           | -1.00               | 0.03    | 46.61   | Tap:            | 0.00      | Min:  | 0         | Max: 0      |  |
| Cub_1 /Tr2    | TG MITS2           |                    |        | -6.73        | 0.34           | -1.00               | 0.03    | 46.61   | Tap:            | 0.00      | Min:  | 0         | Max: 0      |  |
| Cub_1 /Tr2    | TG SWD1            |                    |        | -6.73        | 0.34           | -1.00               | 0.03    | 46.61   | Tap:            | 0.00      | Min:  | 0         | Max: 0      |  |
| Cub_1 /Tr2    | TG SWD2            |                    |        | -6.73        | 0.34           | -1.00               | 0.03    | 46.61   | Tap:            | 0.00      | Min:  | 0         | Max: 0      |  |
| TELLO1        |                    |                    |        |              |                |                     |         |         |                 |           |       |           |             |  |
| TELLO1 20K.00 | 0.99               | 19.79              | -10.28 |              |                |                     |         |         |                 |           |       |           |             |  |
| Cub_1 /Lod    | LOAD TELLO1        |                    |        | 44.84        | 8.71           | 0.98                | 1.33    |         | P10:            | 45.80 MW  | Q10:  | 8.90 Mvar |             |  |
| Cubicle/Coup  | CBS                |                    |        |              |                |                     |         |         |                 |           |       |           |             |  |
| Cub_1 /Tr2    | DIS-TELLO2         |                    |        | -44.84       | -8.71          | -0.98               | 1.33    | 80.99   | Tap:            | 7.00      | Min:  | 1         | Max: 18     |  |
| BB2 20.00     |                    |                    |        |              |                |                     |         |         |                 |           |       |           |             |  |
| Cub_1 /Lod    | LOAD TELLO2        |                    |        |              |                |                     |         |         | P10:            | 0.00 MW   | Q10:  | 0.00 Mvar |             |  |
| Cubicle/Coup  | CBS                |                    |        |              |                |                     |         |         |                 |           |       |           |             |  |
| Cub_1 /Tr2    | DIS-TELLO1         |                    |        |              |                |                     |         |         | Tap:            | 1         | Min:  | 1         | Max: 18     |  |
| TELLO3        |                    |                    |        |              |                |                     |         |         |                 |           |       |           |             |  |
| TELLO 30KV.00 |                    |                    |        |              |                |                     |         |         |                 |           |       |           |             |  |
| Cub_1 /Tr2    | IBT1-TELLO         |                    |        |              |                |                     |         |         | Tap:            | 1         | Min:  | 1         | Max: 18     |  |
| TELLO7        |                    |                    |        |              |                |                     |         |         |                 |           |       |           |             |  |
| TELLO 70KV.00 | 1.00               | 70.06              | -10.44 |              |                |                     |         |         |                 |           |       |           |             |  |
| Cub_1 /Shnt   | C-TELLO            |                    |        | -0.00        | -10.02         | -0.00               | 0.08    |         |                 |           |       |           |             |  |
| Cub_1 /Lne    | DAYA - TELLO       |                    |        | 9.58         | -9.45          | 0.71                | 0.11    | 14.00   | Pv:             | 48.47 kW  | cLod: | 0.00 Mvar | L: 7.30 km  |  |
| Cub_1 /Lne    | TELLO - BRLOE      |                    |        | -0.68        | 1.04           | -0.55               | 0.01    | 2.40    | Pv:             | 0.94 kW   | cLod: | 0.00 Mvar | L: 12.40 km |  |
| Cub_1 /Lne    | TELLO - MANDAI     |                    |        | 38.18        | -2.11          | 1.00                | 0.32    | 59.78   | Pv:             | 69.09 kW  | cLod: | 0.00 Mvar | L: 1.00 km  |  |
| Cub_1 /Tr2    | IBT3-TELLO         |                    |        | -23.54       | 10.27          | -0.92               | 0.21    | 81.45   | Tap:            | 9.00      | Min:  | 1         | Max: 18     |  |
| Cub_1 /Tr2    | IBT5-TELLO         |                    |        | -23.54       | 10.27          | -0.92               | 0.21    | 81.45   | Tap:            | 9.00      | Min:  | 1         | Max: 18     |  |

| D-Grid: Grid  |  |                    |                    |                    |        |                   |                       |                  |              |             |                 |           |       |            | System Stage: Grid |          |  |  | Study Case: Case 01 |  |  |  | Annex:              |  |  |  | / 39   |  |  |  |      |  |
|---------------|--|--------------------|--------------------|--------------------|--------|-------------------|-----------------------|------------------|--------------|-------------|-----------------|-----------|-------|------------|--------------------|----------|--|--|---------------------|--|--|--|---------------------|--|--|--|--------|--|--|--|------|--|
|               |  | rated Voltage [kV] | Bus-voltage [p.u.] | Bus-voltage [kV]   | [deg]  | Active Power [MW] | Reactive Power [Mvar] | Power Factor [-] | Current [kA] | Loading [%] | Additional Data |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| TLAMA         |  |                    |                    |                    |        |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| TLAMA1        |  | 20.00              | 1.00               | 20.05              | -7.64  |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lod    |  |                    |                    | LOAD TLAMA1        |        | 27.34             | 5.23                  | 0.98             | 0.80         |             | P10:            | 27.20 MW  | Q10:  | 5.20 Mvar  |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  |                    |                    | DIS-TLAMA3         |        | -27.34            | -5.23                 | -0.98            | 0.80         | 48.71       | Tap:            | 7.00      | Min:  | 1          | Max:               | 18       |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| TLAMA2        |  |                    |                    |                    |        |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| TLAMA2        |  | 20.00              | 1.00               | 19.91              | -7.99  |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lod    |  |                    |                    | LOAD TLAMA2        |        | 14.76             | 4.16                  | 0.96             | 0.44         |             | P10:            | 14.90 MW  | Q10:  | 4.20 Mvar  |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  |                    |                    | DIS-TLAMA2         |        | -14.76            | -4.16                 | -0.96            | 0.44         | 54.07       | Tap:            | 7.00      | Min:  | 1          | Max:               | 18       |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| TLAMA3        |  |                    |                    |                    |        |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| TLAMA3        |  | 20.00              | 0.99               | 19.78              | -4.43  |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lod    |  |                    |                    | LOAD TLAMA3        |        |                   |                       |                  |              |             | P10:            | 0.00 MW   | Q10:  | 0.00 Mvar  |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  |                    |                    | DIS-TLAMA1         |        | -0.00             | -0.00                 | -1.00            | 0.00         | 0.00        | Tap:            | 8.00      | Min:  | 1          | Max:               | 18       |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| TLAMA7        |  |                    |                    |                    |        |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| TELLO LAMA.00 |  |                    |                    |                    |        |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lne    |  |                    |                    | TLAMA-BNTLAL 70KV  |        |                   |                       |                  |              |             | Pv:             |           | cLod: |            | L:                 | 4.20 km  |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lne    |  |                    |                    | TLAMA-BNTLA2 70KV  |        |                   |                       |                  |              |             | Pv:             |           | cLod: |            | L:                 | 4.20 km  |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  |                    |                    | IBT1 - TLAMA 31.SM |        |                   |                       |                  |              |             | Tap:            | 0         | Min:  | 0          | Max:               | 0        |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  |                    |                    | IBT2 - TLAMA 31.SM |        |                   |                       |                  |              |             | Tap:            | 0         | Min:  | 0          | Max:               | 0        |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| TLASA         |  |                    |                    |                    |        |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| TLASA         |  | 150.00             | 0.98               | 147.27             | -2.22  |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lne    |  |                    |                    | SGMSA - TLASA1     |        | 105.91            | 34.94                 | 0.95             | 0.44         | 23.81       | Pv:             | 560.83 kW | cLod: | 0.00 Mvar  | L:                 | 26.43 km |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lne    |  |                    |                    | SGMSA - TLASA2     |        | 105.91            | 34.94                 | 0.95             | 0.44         | 23.81       | Pv:             | 560.83 kW | cLod: | 0.00 Mvar  | L:                 | 26.43 km |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lne    |  |                    |                    | TLASA - JNPTO      |        | -120.54           | -40.26                | -0.95            | 0.50         | 27.14       | Pv:             | 670.90 kW | cLod: | 0.00 Mvar  | L:                 | 25.74 km |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lne    |  |                    |                    | TLASA - PGAYA      |        | -117.19           | -37.68                | -0.95            | 0.48         | 26.29       | Pv:             | 622.60 kW | cLod: | 0.00 Mvar  | L:                 | 27.00 km |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  |                    |                    | DIS-TLASA-30MVA    |        | 8.53              | 2.72                  | 0.95             | 0.04         | 30.41       | Tap:            | 8.00      | Min:  | 1          | Max:               | 18       |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  |                    |                    | DIS-TLASA-60MVA    |        | 17.38             | 5.35                  | 0.96             | 0.07         | 30.87       | Tap:            | 8.00      | Min:  | 1          | Max:               | 18       |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| TLASA2 20KV   |  |                    |                    |                    |        |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| TLASA1 20K.00 |  |                    | 1.00               | 19.92              | -4.29  |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lod    |  |                    |                    | LOAD-TLASA2        |        | 8.53              | 2.38                  | 0.96             | 0.26         |             | P10:            | 8.60 MW   | Q10:  | 2.40 Mvar  |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cubicle/Coup  |  |                    |                    | CBS                |        |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  |                    |                    | DIS-TLASA-30MVA    |        | -8.53             | -2.38                 | -0.96            | 0.26         | 30.41       | Tap:            | 8.00      | Min:  | 1          | Max:               | 18       |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| TLASA2 20K.00 |  |                    | 1.00               | 19.93              | -4.29  |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lod    |  |                    |                    | LOAD-TLASA1        |        | 17.38             | 4.67                  | 0.97             | 0.52         |             | P10:            | 17.50 MW  | Q10:  | 4.70 Mvar  |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cubicle/Coup  |  |                    |                    | CBS                |        |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  |                    |                    | DIS-TLASA-60MVA    |        | -17.38            | -4.67                 | -0.97            | 0.52         | 30.87       | Tap:            | 8.00      | Min:  | 1          | Max:               | 18       |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| D-Grid: Grid  |  |                    |                    |                    |        |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  | System Stage: Grid  |  |  |  | Study Case: Case 01 |  |  |  | Annex: |  |  |  | / 40 |  |
|               |  | rated Voltage [kV] | Bus-voltage [p.u.] | Bus-voltage [kV]   | [deg]  | Active Power [MW] | Reactive Power [Mvar] | Power Factor [-] | Current [kA] | Loading [%] | Additional Data |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| TLILSE (1)    |  |                    |                    |                    |        |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| TALLISE       |  | 20.00              | 0.98               | 19.63              | 0.21   |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lod    |  |                    |                    | LOAD-TALLISE70KV(1 |        | 7.13              | 0.00                  | 1.00             | 0.21         |             | P10:            | 7.40 MW   | Q10:  | 0.00 Mvar  |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Sym    |  |                    |                    | PLTD SILAE#2       |        | 8.62              | 0.00                  | 1.00             | 0.25         | 47.88       | Typ:            | PQ        |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  |                    |                    | DIS-SILAE2-30MVA   |        | 1.49              | 0.00                  | 1.00             | 0.04         | 5.13        | Tap:            | 10.00     | Min:  | 1          | Max:               | 18       |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| TLISE         |  |                    |                    |                    |        |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| TALLISE1      |  | 2.00               | 0.99               | 19.72              | -3.30  |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lod    |  |                    |                    | LOAD-TALLISE70KV   |        | 13.71             | 2.24                  | 0.99             | 0.41         |             | P10:            | 14.10 MW  | Q10:  | 2.30 Mvar  |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Sym    |  |                    |                    | PLTD SILAE#1       |        |                   |                       |                  |              |             | Typ:            | PQ        |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  |                    |                    | DIS-SILAE1-30MVA   |        | -13.71            | -2.24                 | -0.99            | 0.41         | 48.42       | Tap:            | 11.00     | Min:  | 1          | Max:               | 18       |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| TONASA        |  |                    |                    |                    |        |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| TONASA        |  | 70.00              | 0.97               | 68.09              | -13.91 |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lod    |  |                    |                    | LOAD-TNASE         |        | 82.04             | 18.93                 | 0.97             | 0.71         |             | P10:            | 86.70 MW  | Q10:  | 20.00 Mvar |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lod    |  |                    |                    | LOAD-TNASE 3 4     |        | 40.78             | 9.46                  | 0.97             | 0.35         |             | P10:            | 43.10 MW  | Q10:  | 10.00 Mvar |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lod    |  |                    |                    | LOAD-TNASE 5       |        |                   |                       |                  |              |             | P10:            | 43.60 MW  | Q10:  | 10.00 Mvar |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lne    |  |                    |                    | FNKEP - TNSA1      |        | -61.41            | -14.19                | -0.97            | 0.53         | 124.87      | Pv:             | 760.90 kW | cLod: | 0.00 Mvar  | L:                 | 3.70 km  |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lne    |  |                    |                    | FNKEP - TNSA2      |        | -61.41            | -14.19                | -0.97            | 0.53         | 124.87      | Pv:             | 760.90 kW | cLod: | 0.00 Mvar  | L:                 | 3.70 km  |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Total Load:   |  |                    |                    |                    |        | 122.83            | 28.39                 |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| TPOYO 20KV    |  |                    |                    |                    |        |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| TPOYO 20KV.00 |  |                    | 0.99               | 19.72              | 1.70   |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lod    |  |                    |                    | LOAD-TPOYO         |        | 8.07              | 0.00                  | 1.00             | 0.24         |             | P10:            | 8.30 MW   | Q10:  | 0.00 Mvar  |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  |                    |                    | DIS-TPOYO-30MVA    |        | -8.07             | -0.00                 | -1.00            | 0.24         | 29.50       | Tap:            | 6.00      | Min:  | 1          | Max:               | 18       |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| TPOYO         |  |                    |                    |                    |        |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| TPOYO         |  | 150.00             | 0.91               | 136.91             | 3.68   |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lne    |  |                    |                    | TPOYO-PLTU1        |        | -9.97             | -9.49                 | -0.72            | 0.06         | 9.10        | Pv:             | 110.02 kW | cLod: | -0.00 Mvar | L:                 | 90.75 km |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lne    |  |                    |                    | TPOYO-PLTU2        |        | -9.97             | -9.49                 | -0.72            | 0.06         | 9.10        | Pv:             | 110.02 kW | cLod: | -0.00 Mvar | L:                 | 90.75 km |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lne    |  |                    |                    | TPOYO-PSKYU1       |        | 5.93              | 9.35                  | 0.54             | 0.05         | 7.32        | Pv:             | 71.23 kW  | cLod: | -0.00 Mvar | L:                 | 90.75 km |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lne    |  |                    |                    | TPOYO-PSKYU2       |        | 5.93              | 9.35                  | 0.54             | 0.05         | 7.32        | Pv:             | 71.23 kW  | cLod: | -0.00 Mvar | L:                 | 90.75 km |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  |                    |                    | DIS-TPOYO-30MVA    |        | 8.07              | 0.28                  | 1.00             | 0.03         | 29.50       | Tap:            | 6.00      | Min:  | 1          | Max:               | 18       |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| UNHHA 20KV    |  |                    |                    |                    |        |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| UNHHA 20KV.00 |  |                    | 0.99               | 19.78              | 11.67  |                   |                       |                  |              |             |                 |           |       |            |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Lod    |  |                    |                    | LOAD-UNHHA         |        | 16.87             | 4.51                  | 0.97             | 0.51         |             | P10:            | 17.24 MW  | Q10:  | 4.61 Mvar  |                    |          |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |
| Cub_1 /Tr2    |  |                    |                    | DIS-UNHHA-30MVA    |        | -16.87            | -4.51                 | -0.97            | 0.51         | 60.35       | Tap:            | 8.00      | Min:  | 1          | Max:               | 18       |  |  |                     |  |  |  |                     |  |  |  |        |  |  |  |      |  |

| Grid: Grid    |                          | System Stage: Grid    |                     |       |                         | Study Case: Case 01         |                        |                 |                | Annex:          |           |       |               | / 41      |  |
|---------------|--------------------------|-----------------------|---------------------|-------|-------------------------|-----------------------------|------------------------|-----------------|----------------|-----------------|-----------|-------|---------------|-----------|--|
|               | rated<br>Voltage<br>[kV] | Bus-voltage<br>[p.u.] | Bus-voltage<br>[kV] | [deg] | Active<br>Power<br>[MW] | Reactive<br>Power<br>[Mvar] | Power<br>Factor<br>[-] | Current<br>[kA] | Loading<br>[%] | Additional Data |           |       |               |           |  |
| UNHHA         |                          |                       |                     |       |                         |                             |                        |                 |                |                 |           |       |               |           |  |
| UNHHA         | 150.00                   | 0.99                  | 147.81              | 15.71 |                         |                             |                        |                 |                |                 |           |       |               |           |  |
| Cub_1 /Lne    | UNHHA - KENDARI1         |                       |                     |       | -20.04                  | -5.11                       | -0.97                  | 0.08            | 6.33           | Pv:             | 62.82 kW  | cLod: | -0.00 Mvar L: | 50.91 km  |  |
| Cub_1 /Lne    | UNHHA - KENDARI2         |                       |                     |       | -20.04                  | -5.11                       | -0.97                  | 0.08            | 6.33           | Pv:             | 62.82 kW  | cLod: | -0.00 Mvar L: | 50.91 km  |  |
| Cub_1 /Lne    | UNHHA - KOLAKA1          |                       |                     |       | 11.61                   | 2.21                        | 0.98                   | 0.05            | 3.62           | Pv:             | 30.23 kW  | cLod: | -0.00 Mvar L: | 73.88 km  |  |
| Cub_1 /Lne    | UNHHA - KOLAKA2          |                       |                     |       | 11.61                   | 2.21                        | 0.98                   | 0.05            | 3.62           | Pv:             | 30.23 kW  | cLod: | -0.00 Mvar L: | 73.88 km  |  |
| Cub_1 /Lne    | UNHHA - KONANE           |                       |                     |       |                         |                             |                        |                 |                | Pv:             |           | cLod: | L:            | 50.00 km  |  |
| Cub_1 /Lne    | UNHHA - KONANE (1)       |                       |                     |       |                         |                             |                        |                 |                | Pv:             |           | cLod: | L:            | 50.00 km  |  |
| Cub_1 /Tr2    | DIS-UNHHA-30MVA          |                       |                     |       | 16.87                   | 5.81                        | 0.95                   | 0.07            | 60.35          | Tap:            | 8.00      | Min:  | 1             | Max: 18   |  |
| WOLO(1)       |                          |                       |                     |       |                         |                             |                        |                 |                |                 |           |       |               |           |  |
| KOLAKA SME.00 | 0.99                     | 19.70                 | 14.36               |       |                         |                             |                        |                 |                | P10:            | 2.74 MW   | Q10:  | 5.00 Mvar     |           |  |
| Cub_1 /Lod    | LOAD-KOLAKA SMELTER      |                       |                     |       | 2.66                    | 4.85                        | 0.48                   | 0.16            |                |                 |           | Min:  | 1             | Max: 18   |  |
| Cub_1 /Tr2    | DIS-KOLAKA SMELTER       |                       |                     |       | -2.66                   | -4.85                       | -0.48                  | 0.16            | 19.20          | Tap:            | 8.00      | Min:  | 1             | Max: 18   |  |
| WOLO          |                          |                       |                     |       |                         |                             |                        |                 |                |                 |           |       |               |           |  |
| KOLAKA SME.00 | 0.98                     | 147.07                | 15.00               |       |                         |                             |                        |                 |                |                 |           |       |               |           |  |
| Cub_1 /Lne    | KOLAKA - LSUSUAL1        |                       |                     |       | 4.18                    | -2.40                       | 0.87                   | 0.02            | 1.48           | Pv:             | 5.80 kW   | cLod: | -0.00 Mvar L: | 110.20 km |  |
| Cub_1 /Lne    | KOLAKA - LSUSUAL2        |                       |                     |       | 4.19                    | -2.40                       | 0.87                   | 0.02            | 1.48           | Pv:             | 5.81 kW   | cLod: | -0.00 Mvar L: | 110.02 km |  |
| Cub_1 /Lne    | KOLAKA-WOLO              |                       |                     |       | -5.51                   | -0.09                       | -1.00                  | 0.02            | 1.70           | Pv:             | 2.07 kW   | cLod: | -0.00 Mvar L: | 30.00 km  |  |
| Cub_1 /Lne    | KOLAKA-WOLO(1)           |                       |                     |       | -5.51                   | -0.09                       | -1.00                  | 0.02            | 1.70           | Pv:             | 2.07 kW   | cLod: | -0.00 Mvar L: | 30.00 km  |  |
| Cub_1 /Tr2    | DIS-KOLAKA SMELTER       |                       |                     |       | 2.66                    | 4.98                        | 0.47                   | 0.02            | 19.20          | Tap:            | 8.00      | Min:  | 1             | Max: 18   |  |
| WOTU 20KV(1)  |                          |                       |                     |       |                         |                             |                        |                 |                |                 |           |       |               |           |  |
| WOTU 20KV0.00 | 0.99                     | 19.70                 | 11.29               |       |                         |                             |                        |                 |                |                 |           |       |               |           |  |
| Cub_1 /Lod    | LOAD-WOTU(1)             |                       |                     |       | 12.22                   | 4.78                        | 0.93                   | 0.38            |                | P10:            | 12.59 MW  | Q10:  | 4.92 Mvar     |           |  |
| Cub_1 /Tr2    | DIS-WOTU-30MVA(1)        |                       |                     |       | -12.22                  | -4.78                       | -0.93                  | 0.38            | 45.53          | Tap:            | 8.00      | Min:  | 1             | Max: 18   |  |
| WOTU 275KV    |                          |                       |                     |       |                         |                             |                        |                 |                |                 |           |       |               |           |  |
| WOTU 275KV.00 | 0.97                     | 267.39                | 15.55               |       |                         |                             |                        |                 |                |                 |           |       |               |           |  |
| Cub_1 /Lne    | LTUPA-WOTU275KV          |                       |                     |       | 89.96                   | 8.48                        | 1.00                   | 0.20            | 10.63          | Pv:             | 382.13 kW | cLod: | -0.00 Mvar L: | 97.00 km  |  |
| Cub_1 /Lne    | WOTU-PMONA275            |                       |                     |       | -113.06                 | -22.66                      | -0.99                  | 0.25            | 13.56          | Pv:             | 739.01 kW | cLod: | -0.00 Mvar L: | 115.18 km |  |
| Cub_1 /Tr2    | IBT1-WOTU-90MVA          |                       |                     |       | 11.55                   | 7.09                        | 0.85                   | 0.03            | 15.49          | Tap:            | 8.00      | Min:  | 1             | Max: 18   |  |
| Cub_1 /Tr2    | IBT2-WOTU-90MVA          |                       |                     |       | 11.55                   | 7.09                        | 0.85                   | 0.03            | 15.49          | Tap:            | 8.00      | Min:  | 1             | Max: 18   |  |
| WOTU          |                          |                       |                     |       |                         |                             |                        |                 |                |                 |           |       |               |           |  |
| WOTU          | 150.00                   | 0.99                  | 148.13              | 14.62 |                         |                             |                        |                 |                |                 |           |       |               |           |  |
| Cub_1 /Lne    | WOTU-MASAMBA             |                       |                     |       | 6.13                    | 2.81                        | 0.91                   | 0.03            | 4.12           | Pv:             | 18.72 kW  | cLod: | -0.00 Mvar L: | 70.00 km  |  |
| Cub_1 /Lne    | WOTU-MLIL1               |                       |                     |       | 1.15                    | 3.15                        | 0.34                   | 0.01            | 1.02           | Pv:             | 1.17 kW   | cLod: | -0.00 Mvar L: | 46.54 km  |  |
| Cub_1 /Lne    | WOTU-MLIL2               |                       |                     |       | 1.15                    | 3.15                        | 0.34                   | 0.01            | 1.02           | Pv:             | 1.17 kW   | cLod: | -0.00 Mvar L: | 46.54 km  |  |
| Cub_1 /Tr2    | DIS-MASAMBA-30MVA        |                       |                     |       | 8.55                    | 1.75                        | 0.98                   | 0.03            | 29.46          | Tap:            | 9.00      | Min:  | 1             | Max: 18   |  |
| Cub_1 /Tr2    | IBT1-WOTU-90MVA          |                       |                     |       | -11.55                  | -6.84                       | -0.86                  | 0.05            | 15.49          | Tap:            | 8.00      | Min:  | 1             | Max: 18   |  |
| Cub_1 /Tr2    | IBT2-WOTU-90MVA          |                       |                     |       | -11.55                  | -6.84                       | -0.86                  | 0.05            | 15.49          | Tap:            | 8.00      | Min:  | 1             | Max: 18   |  |

| Grid: Grid |                          | System Stage: Grid    |                     |       |                         | Study Case: Case 01         |                        |                 |                | Annex:          |          |       |               | / 42    |  |
|------------|--------------------------|-----------------------|---------------------|-------|-------------------------|-----------------------------|------------------------|-----------------|----------------|-----------------|----------|-------|---------------|---------|--|
|            | rated<br>Voltage<br>[kV] | Bus-voltage<br>[p.u.] | Bus-voltage<br>[kV] | [deg] | Active<br>Power<br>[MW] | Reactive<br>Power<br>[Mvar] | Power<br>Factor<br>[-] | Current<br>[kA] | Loading<br>[%] | Additional Data |          |       |               |         |  |
| TER-JNPTOE |                          |                       |                     |       |                         |                             |                        |                 |                |                 |          |       |               |         |  |
|            | 150.00                   | 1.00                  | 150.06              | -0.01 |                         |                             |                        |                 |                |                 |          |       |               |         |  |
| Cub_1      | /Lne                     | LINE-T1               |                     |       | -16.09                  | -40.97                      | -0.37                  | 0.17            | 9.22           | Pv:             | 2.97 kW  | cLod: | 0.00 Mvar L:  | 1.00 km |  |
| Cub_2      | /Lne                     | LINE-T2               |                     |       | -58.41                  | 5.20                        | -1.00                  | 0.23            | 12.29          | Pv:             | 5.27 kW  | cLod: | -0.00 Mvar L: | 1.00 km |  |
| Cub_3      | /Lne                     | PGAYA - JNPTOE1       |                     |       | 74.49                   | 35.77                       | 0.90                   | 0.32            | 17.32          | Pv:             | 10.46 kW | cLod: | 0.00 Mvar L:  | 1.00 km |  |