

| From | To | R(%) | X(%) | B(MVAr) |
|-------------|-----------|-------------|-------------|----------------|
| 1 | 14 | 0.15 | 1.94 | 237.00 |
| 1 | 15 | 0.11 | 1.33 | 163.70 |
| 2 | 3 | 1.58 | 8.10 | 55.60 |
| 2 | 12 | 1.53 | 5.83 | 54.00 |
| 3 | 4 | 0.86 | 4.27 | 28.60 |
| 4 | 5 | 2.31 | 11.89 | 81.60 |
| 5 | 6 | 3.86 | 19.86 | 34.00 |
| 5 | 13 | 0.79 | 4.12 | 27.50 |
| 6 | 7 | 0.48 | 5.00 | 16.80 |
| 7 | 8 | 1.62 | 8.25 | 57.30 |
| 7 | 19 | 2.06 | 10.69 | 183.60 |
| 7 | 20 | 8.24 | 11.82 | 0.00 |
| 8 | 9 | 0.77 | 4.25 | 25.00 |
| 8 | 10 | 0.65 | 8.23 | 37.00 |
| 8 | 19 | 2.82 | 14.60 | 250.90 |
| 9 | 25 | 0.20 | 3.16 | 0.00 |
| 9 | 10 | 0.81 | 4.65 | 32.20 |
| 10 | 11 | 2.04 | 10.46 | 18.00 |
| 10 | 12 | 4.68 | 23.94 | 41.30 |
| 10 | 16 | 0.00 | 0.62 | 0.00 |
| 11 | 12 | 3.53 | 18.09 | 31.20 |
| 12 | 15 | 0.00 | 1.25 | 0.00 |
| 13 | 18 | 0.00 | 0.62 | 0.00 |
| 14 | 15 | 0.16 | 2.00 | 245.80 |
| 15 | 16 | 0.16 | 2.05 | 250.20 |
| 15 | 17 | 0.11 | 1.42 | 697.00 |
| 17 | 18 | 0.25 | 3.08 | 377.70 |
| 19 | 21 | 1.17 | 12.50 | 0.00 |
| 20 | 21 | 6.60 | 26.83 | 72.80 |
| 21 | 22 | 0.29 | 1.17 | 6.50 |
| 22 | 23 | 2.46 | 10.48 | 25.00 |
| 23 | 24 | 2.69 | 11.80 | 27.40 |
| 24 | 25 | 4.61 | 18.72 | 50.90 |

Tabela 1: Branch Data - 25-bus test system