### Sequential Y-Busses and Z-Busses

Zero

|  |  |  |  |
| --- | --- | --- | --- |
| **Ybus\_z** |  |  |  |
| -16.6667i | 3.3333i | 3.3333i | 0 |
| 3.3333i | -6.6667i | 0 | 3.3333i |
| 3.3333i | 0 | -6.6667i | 3.3333i |
| 0 | 3.3333i | 3.3333i | -26.6667i |

|  |  |  |  |
| --- | --- | --- | --- |
| **Zbus\_z** |  |  |  |
| 0.0778i | 0.0444i | 0.0444i | 0.0111i |
| 0.0444i | 0.1861i | 0.0361i | 0.0278i |
| 0.0444i | 0.0361i | 0.1861i | 0.0278i |
| 0.0111i | 0.0278i | 0.0278i | 0.0444i |

Positive

|  |  |  |  |
| --- | --- | --- | --- |
| **Ybus\_p** |  |  |  |
| -24i | 10i | 10i | 0 |
| 10i | -20i | 0 | 10i |
| 10i | 0 | -20i | 10i |
| 0 | 10i | 10i | -24i |

|  |  |  |  |
| --- | --- | --- | --- |
| **Zbus\_p** |  |  |  |
| 0.1458i | 0.125i | 0.125i | 0.1042i |
| 0.125i | 0.175i | 0.125i | 0.125i |
| 0.125i | 0.125i | 0.175i | 0.125i |
| 0.1042i | 0.125i | 0.125i | 0.1458i |

Negative

|  |  |  |  |
| --- | --- | --- | --- |
| **Ybus\_n** |  |  |  |
| -24i | 10i | 10i | 0 |
| 10i | -20i | 0 | 10i |
| 10i | 0 | -20i | 10i |
| 0 | 10i | 10i | -24i |

|  |  |  |  |
| --- | --- | --- | --- |
| **Zbus\_n** |  |  |  |
| 0.1458i | 0.125i | 0.125i | 0.1042i |
| 0.125i | 0.175i | 0.125i | 0.125i |
| 0.125i | 0.125i | 0.175i | 0.125i |
| 0.1042i | 0.125i | 0.125i | 0.1458i |

### Detailed Fault Currents and Voltage Tables

3ph

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Bus** | **FaultAtBus1** | **FaultAtBus2** | **FaultAtBus3** | **FaultAtBus4** |
| **I\_f** | 6.8571i | 5.7143i | 5.7143i | 6.8571i |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Bus** | **FaultAtBus1** | **FaultAtBus2** | **FaultAtBus3** | **FaultAtBus4** |
| **V\_1** | 0.0000 | 0.1429 | 0.1429 | 0.2857 |
| **V\_2** | 0.2857 | 0.0000 | 0.2857 | 0.2857 |
| **V\_3** | 0.2857 | 0.2857 | 0.0000 | 0.2857 |
| **V\_4** | 0.2857 | 0.1429 | 0.1429 | 0.0000 |

SLG

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Bus** | **FaultAtBus1** | **FaultAtBus2** | **FaultAtBus3** | **FaultAtBus4** |
| **I\_af** | -8.1203i | -5.5959i | -5.5959i | -8.9256i |
| **I\_bf** | 0 | 0 | 0 | 0 |
| **I\_cf** | 0 | 0 | 0 | 0 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Bus** | **FaultAtBus1** | **FaultAtBus2** | **FaultAtBus3** | **FaultAtBus4** |
| **V1\_a** | 0 | 0.4508 | 0.4508 | 0.3471 |
| **V1\_b** | -0.3158-0.866i | -0.3497-0.866i | -0.3497-0.866i | -0.2231-0.866i |
| **V1\_c** | -0.3158+0.866i | -0.3497+0.866i | -0.3497+0.866i | -0.2231+0.866i |
| **V2\_a** | 0.203 | 0 | 0.4663 | 0.1736 |
| **V2\_b** | -0.282-0.866i | -0.5207-0.866i | -0.3342-0.866i | -0.2107-0.866i |
| **V2\_c** | -0.282+0.866i | -0.5207+0.866i | -0.3342+0.866i | -0.2107+0.866i |
| **V3\_a** | 0.203 | 0.4663 | 0 | 0.1736 |
| **V3\_b** | -0.282-0.866i | -0.3342-0.866i | -0.5207-0.866i | -0.2107-0.866i |
| **V3\_c** | -0.282+0.866i | -0.3342+0.866i | -0.5207+0.866i | -0.2107+0.866i |
| **V4\_a** | 0.406 | 0.4819 | 0.4819 | 0 |
| **V4\_b** | -0.2481-0.866i | -0.3187-0.866i | -0.3187-0.866i | -0.1983-0.866i |
| **V4\_c** | -0.2481+0.866i | -0.3187+0.866i | -0.3187+0.866i | -0.1983+0.866i |

LL

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Bus** | **FaultAtBus1** | **FaultAtBus2** | **FaultAtBus3** | **FaultAtBus4** |
| **I\_af** | 0 | 0 | 0 | 0 |
| **I\_bf** | -5.9385 | -4.9487 | -4.9487 | -5.9385 |
| **I\_cf** | 5.9385 | 4.9487 | 4.9487 | 5.9385 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Bus** | **FaultAtBus1** | **FaultAtBus2** | **FaultAtBus3** | **FaultAtBus4** |
| **V1\_a** | 1 | 1 | 1 | 1 |
| **V1\_b** | -0.5 | -0.5-0.2474i | -0.5-0.2474i | -0.5-0.2474i |
| **V1\_c** | -0.5 | -0.5+0.2474i | -0.5+0.2474i | -0.5+0.2474i |
| **V2\_a** | 1 | 1 | 1 | 1 |
| **V2\_b** | -0.5-0.1237i | -0.5 | -0.5-0.2474i | -0.5-0.1237i |
| **V2\_c** | -0.5+0.1237i | -0.5 | -0.5+0.2474i | -0.5+0.1237i |
| **V3\_a** | 1 | 1 | 1 | 1 |
| **V3\_b** | -0.5-0.1237i | -0.5-0.2474i | -0.5 | -0.5-0.1237i |
| **V3\_c** | -0.5+0.1237i | -0.5+0.2474i | -0.5 | -0.5+0.1237i |
| **V4\_a** | 1 | 1 | 1 | 1 |
| **V4\_b** | -0.5-0.2474i | -0.5-0.2474i | -0.5-0.2474i | -0.5 |
| **V4\_c** | -0.5+0.2474i | -0.5+0.2474i | -0.5+0.2474i | -0.5 |

DLG

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Bus** | **FaultAtBus1** | **FaultAtBus2** | **FaultAtBus3** | **FaultAtBus4** |
| **I\_af** | 0 | 0 | 0 | 0 |
| **I\_bf** | -5.9385+4.977i | -4.9487+2.7411i | -4.9487+2.7411i | -5.9385+6.3905i |
| **I\_cf** | 5.9385+4.977i | 4.9487+2.7411i | 4.9487+2.7411i | 5.9385+6.3905i |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Bus** | **FaultAtBus1** | **FaultAtBus2** | **FaultAtBus3** | **FaultAtBus4** |
| **V1\_a** | 0.7742 | 0.8528 | 0.8528 | 0.6036 |
| **V1\_b** | 0 | -0.3046-0.2474i | -0.3046-0.2474i | -0.2308-0.2474i |
| **V1\_c** | 0 | -0.3046+0.2474i | -0.3046+0.2474i | -0.2308+0.2474i |
| **V2\_a** | 0.7327 | 1.0203 | 0.8376 | 0.5858 |
| **V2\_b** | -0.1452-0.1237i | 0 | -0.3198-0.2474i | -0.1154-0.1237i |
| **V2\_c** | -0.1452+0.1237i | 0 | -0.3198+0.2474i | -0.1154+0.1237i |
| **V3\_a** | 0.7327 | 0.8376 | 1.0203 | 0.5858 |
| **V3\_b** | -0.1452-0.1237i | -0.3198-0.2474i | 0 | -0.1154-0.1237i |
| **V3\_c** | -0.1452+0.1237i | -0.3198+0.2474i | 0 | -0.1154+0.1237i |
| **V4\_a** | 0.6912 | 0.8223 | 0.8223 | 0.568 |
| **V4\_b** | -0.2903-0.2474i | -0.335-0.2474i | -0.335-0.2474i | 0 |
| **V4\_c** | -0.2903+0.2474i | -0.335+0.2474i | -0.335+0.2474i | 0 |