**Appendix:**

**Table SA1- Literature [13] Hydropower Unit Fault Diagnosis Data**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No | Sign | | | | | | | | | | | | Fault |
| 1 | 97.0 | 85.8 | 1.4 | 0.4 | 8.0 | 17.0 | 31 | 30 | 17 | 24 | 36.2 | 42.0 | 0 |
| 2 | 109.6 | 99.0 | 6.0 | 1.8 | 34.0 | 43.0 | 120.0 | 110 | 56.0 | 53.0 | 136.7 | 129.5 | 0 |
| 3 | 109.2 | 95.0 | 5.8 | 1.1 | 28.0 | 36.0 | 95.0 | 95.0 | 48.0 | 43.0 | 110.1 | 110.3 | 1 |
| 4 | 97.8 | 95.0 | 1.6 | 1.1 | 4.5 | 6.5 | 11.5 | 9.5 | 8.5 | 8.5 | 15.0 | 14.3 | 0 |
| 5 | 97.2 | 82.6 | 1.4 | 0.3 | 9.5 | 14.5 | 31.0 | 22.0 | 23.0 | 17.0 | 39.8 | 31.4 | 0 |
| 6 | 97.9 | 85.4 | 1.6 | 0.4 | 6.5 | 75.0 | 23.0 | 16.5 | 14.5 | 10.5 | 28.0 | 20.9 | 0 |
| 7 | 89.4 | 85.1 | 0.6 | 0.4 | 7.5 | 8.0 | 26.5 | 17.0 | 14.5 | 11.0 | 31.1 | 21.8 | 0 |
| 8 | 103.6 | 92.1 | 3.0 | 0.8 | 17.0 | 23.0 | 65.0 | 45.0 | 31.0 | 27.0 | 74.0 | 57.3 | 1 |
| 9 | 109.0 | 104.4 | 5.6 | 3.3 | 22.0 | 27.0 | 75.0 | 55.0 | 36.0 | 37.0 | 86.1 | 71.6 | 1 |
| 10 | 101.7 | 94.8 | 2.4 | 1.1 | 9.5 | 8.5 | 29.0 | 14.0 | 17.5 | 15.0 | 35.2 | 22.2 | 0 |
| 11 | 107.1 | 96.7 | 4.5 | 1.4 | 20.0 | 29.0 | 78.0 | 75.0 | 40.0 | 40.0 | 89.9 | 89.8 | 1 |
| 12 | 114.0 | 113.3 | 10.0 | 9.2 | 32.0 | 55.0 | 150.0 | 130.0 | 58.0 | 80.0 | 164.0 | 162.2 | 0 |
| 13 | 95.1 | 73.9 | 1.1 | 0.1 | 7.8 | 1.3 | 17.5 | 3.8 | 22.5 | 1.8 | 29.6 | 4.4 | 0 |
| 14 | 97.1 | 82.0 | 1.4 | 0.3 | 9.5 | 11.5 | 37.0 | 13.5 | 23.0 | 12.5 | 44.6 | 21.7 | 0 |
| 15 | 100.8 | 86.4 | 2.2 | 0.4 | 12.0 | 23.0 | 35.0 | 35.0 | 28.0 | 37.0 | 46.4 | 55.9 | 1 |
| 16 | 107.1 | 92.4 | 4.5 | 0.8 | 23.0 | 28.0 | 95.0 | 80.0 | 32.0 | 42.0 | 102.8 | 94.6 | 1 |
| 17 | 107.5 | 100.1 | 4.7 | 2.0 | 22.0 | 25.0 | 80.0 | 80.0 | 45.0 | 37.0 | 94.4 | 91.6 | 1 |
| 18 | 99.99 | 95.3 | 2.0 | 1.2 | 5.6 | 11.0 | 16.5 | 17.0 | 9.5 | 15.5 | 19.8 | 25.5 | 0 |
| 19 | 98.30 | 94.8 | 1.6 | 1.1 | 10.0 | 23.5 | 26.5 | 30.0 | 21.5 | 32.0 | 35.6 | 49.8 | 0 |
| 20 | 100.4 | 97.1 | 2.1 | 1.4 | 12.0 | 23.0 | 30.0 | 33.0 | 20.5 | 38.0 | 38.3 | 55.3 | 1 |
| 21 | 108.4 | 95.0 | 5.3 | 1.1 | 30.0 | 65.0 | 105.0 | 90.0 | 55.0 | 45.0 | 122.3 | 119.8 | 0 |
| 22 | 106.0 | 91.0 | 4.0 | 0.7 | 33.0 | 30.0 | 90.0 | 100.0 | 70.0 | 56.0 | 119.7 | 118.5 | 0 |
| 23 | 104.0 | 91.0 | 3.2 | 0.7 | 28.0 | 30.0 | 90.0 | 70.0 | 46.0 | 50.0 | 104.9 | 91.1 | 1 |
| 24 | 103.0 | 92.0 | 2.8 | 0.8 | 23.0 | 25.0 | 75.0 | 40.0 | 37.0 | 47.0 | 86.7 | 66.6 | 1 |
| 25 | 102.0 | 91.0 | 2.5 | 0.7 | 22.0 | 23.0 | 56.0 | 48.0 | 34.0 | 48.0 | 69.1 | 71.7 | 1 |
| 26 | 100.0 | 88.0 | 2.0 | 0.5 | 14.0 | 16.0 | 54.0 | 46.0 | 22.0 | 38.0 | 60.0 | 61.8 | 1 |
| 27 | 102.0 | 90.0 | 2.5 | 0.6 | 18.0 | 20.0 | 48.0 | 54.0 | 34.0 | 30.0 | 61.5 | 64.9 | 1 |
| 28 | 103.0 | 92.0 | 2.8 | 0.8 | 15.0 | 26.0 | 48.0 | 52.0 | 28.0 | 42.0 | 57.6 | 71.7 | 1 |
| 29 | 108.0 | 99.0 | 5.0 | 1.8 | 32.0 | 68.0 | 160.0 | 140.0 | 66.0 | 130.0 | 176.0 | 202.8 | 0 |
| 30 | 112.0 | 114.0 | 8.0 | 10 | 32.0 | 52.0 | 110.0 | 100.0 | 58.0 | 66.0 | 128.4 | 130.6 | 0 |
| 31 | 95.0 | 84.0 | 1.1 | 0.3 | 8.0 | 15.0 | 26.0 | 36.0 | 22.0 | 34.0 | 35.0 | 51.7 | 0 |
| 32 | 101.0 | 96.0 | 2.2 | 1.3 | 9.5 | 44.0 | 54.0 | 110.0 | 25.0 | 92.0 | 60.3 | 150.0 | 0 |
| 33 | 101.0 | 95.0 | 3.2 | 1.3 | 20.0 | 34.0 | 76.0 | 92.0 | 38.0 | 72.0 | 87.3 | 121.7 | 1 |
| 34 | 104.0 | 92.0 | 3.2 | 0.8 | 22.0 | 13.0 | 76.0 | 46.0 | 40.0 | 28.0 | 88.7 | 55.4 | 0 |
| 35 | 111.0 | 102.0 | 7.1 | 2.5 | 44.0 | 66.0 | 220.0 | 210.0 | 92.0 | 110.0 | 242.5 | 246.1 | 0 |
| 36 | 112.0 | 100.0 | 8.0 | 2.0 | 36.0 | 64.0 | 170.0 | 180.0 | 84.0 | 110.0 | 193.0 | 220.4 | 0 |
| 37 | 101.0 | 94.0 | 2.2 | 1.0 | 24.0 | 48.0 | 42.0 | 82.0 | 36.0 | 6.0 | 60.3 | 121.7 | 0 |
| 38 | 103.0 | 93.0 | 2.8 | 0.9 | 14.0 | 34.0 | 50.0 | 66.0 | 34.0 | 54.0 | 62.1 | 91.8 | 1 |
| 39 | 104.0 | 98.0 | 3.2 | 1.6 | 28.0 | 25.0 | 82.0 | 94.0 | 42.0 | 54.0 | 96.3 | 111.3 | 1 |