TABLE I

Required Time to Repair the Damaged Electric Line

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Line | 1-3 | 7-8 | 13-34 | 18-19 | 25-26 | 35-36 |
| Time (min) | 98 | 53 | 75 | 91 | 107 | 112 |
| Line | 44-47 | 67-160 | 76-86 | 89-91 | 101-105 | 109-110 |
| Time (min) | 76 | 42 | 43 | 51 | 120 | 111 |

TABLE II

Required Time to Repair the Damaged Communication Link

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Link | 1-149 | 23-25 | 35-135 | 50-51 | 52-53 |
| Time (min) | 62 | 39 | 118 | 50 | 52 |
| Link | 62-63 | 67-72 | 76-77 | 93-94 | 105-108 |
| Time (min) | 97 | 37 | 84 | 83 | 58 |

TABLE III

Required Time to Close the RCS AND SWITCH THE VSC

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| RCS | 1-7 | 13-18 | | 18-135 | | 23-25 | | 76-77 |
| Time (min) | 2 | 3 | | 2 | | 5 | | 2 |
| RCS | 87-89 | | 149-150 | | 151-300 | | 149-150 | |
| Time (min) | 4 | | 1 | | 5 | | 1 | |
| VSC | 13-152 | | 54-94 | | 60-160 | | 61-610 | |
| Time (min) | 3 | | 3 | | 3 | | 3 | |

For the travel time of each journey of each type of maintenance resource, we used Matlab to generate random numbers of [15,60]. When the ECV arrives at the workplace, the time needed to start emergency communications is set to 5 min. The capacity of VSCs is set as 1.0 MVA