APPENDIX

DIgSILENT PowerFactory is easy to use for all standard power system analysis needs, including high-end applications in new technologies such as generation system, the handling of very large power systems and also the distribution system. In this case study, the DIgSILENT PowerFactory will be used to analyze the reliability indices for each feeders. The Figure A.1 to Figure A.5 shows an example of the software overview:



Figure A. 1. Main window of DIgSILENT



Figure A. 2. The structure of Data Manager



Figure A. 3. The structure of User Folder

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Figure A. 4. The basic structure in the DIgSILENT



To assess the reliability indices the software needs the failure rate data, failure duration data and the number of customers connected to each point to input into the software. The example of reliability indices assessment can be completed by the procedure as shown in the Figure A.6 to Figure A.11

First step, the project must be created and it will be automatically saved in the data as shown in Figure A.6

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Figure A. 6. Creation of new project

Next, use the Drawing toolbar to select the bus or terminal, switch, source, line and load for drawing and completing the feeder model at the Workspace of software as shown in Figure A.7



Figure A. 7. Drawing of feeder model

Then, input the data of reliability for Bus / Terminal by double click on the Bus or Terminal for properties. Click on the Reliability tap and create a New Project Type of Element model. The Bar Type Failures dialog will be appeared and input the data of failure rate as shown in Figure A.8



Figure A. 8. Reliability data input for Bus / Terminal

For another Bus / Terminal can be easily completed by the copy of reliability data from the Bus that has the reliability data to another Bus as shown in Figure A.9



Figure A. 9. Reliability data input for Bus / Terminal

Next, input the data of reliability for Line by double click on the Line for properties. Click on the Reliability tap and create a New Project Type of Element model. The Line Type Failures dialog box will be appeared and input the data of failure rate as shown in Figure A.10



Figure A. 10. Reliability data input for Line

The reliability data to input to the load can be completed as the same procedure of Bus and Line. But the data must have the number of customers and the interruption duration for each interruption event. The Figure shows the reliability data input for Load.



Figure A. 11. Reliability data input for Load

After modeling the feeder, the reliability indices assessment can be calculated by click on Reliability Assessment icon on Toolbar. Then, the Reliability Assessment dialog box will appear for setting or modifying some option, which is corresponding to the case study. Finally, click on Execute button to finish the calculation as shown in Figure A.12

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Figure A. 12. Execution of reliability assessment

After execution of reliability assessment, the result of calculation will display in the Textbox that connected to each Load as shown in Figure A.13



Figure A. 13. Result of reliability indices calculation

To display the output result as system summary can be completed by maximize the output window as shown in Figure A.14



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