Table 5.1 Outline of the IEEJ West 30-machine System Model

Items	Contents	Remarks
System Rated Capacity	1,000 MVA	
System Frequency	60 Hz	
The Number of Generators	30 machines	
The Number of Nodes (Bus)	115 nodes	
The Number of Branches (Transmission Lines) (Transformers)	129 branches (99) (30)	
The Total Sum of the Generator Rated Capacity and Output - Daytime (Heavy Load) - Nighttime (Light Load)	128,840 MVA (100,460MW) 66,720MVA (Generated : 46,550 MW) (Pumped : -2,620 MW)	
The Total Sum of the Loads - Daytime (Heavy Load) - Nighttime (Light Load)	100,200 MW 43,730 MW	
Generator Model	LGT = 4 in Y-method (All Generators)	
Generator Constants	Refer to Table 5.2	
Generator Inertia Constants	Refer to Table 5.2	
Excitation System Model	LAT = 1 (All Generators)	Refer to Fig. 1.1
Governor Model	LPT = 1 in Y-method (Thermal & Nuclear Gen.) LPT = 3 (Hydraulic)	Refer to Fig. 1.2, Fig. 1.3 Governor of the pumped generator is locked. (LPT = 0)
Step-up Transformer - Reactance (Self capacity base) - Tap Ratio	0.14 p.u. (for All Generators) Refer to Table 5.3	Transformer Capacity is the same as the Generator Rated Output.
Transmission Line Model	π Type Equivalent Circuit TACSR 810mm^2 4 conductors	
Load Characteristic Power Factor	NLT = 2 in Y-method (All Loads) Daytime : Q = 0.2 P (98 %) Nighttime : Q = 0.1 P (99.5 %)	Refer to Fig. 1.4 For reference, NLT = 107 (Fig.1.5) and the Constant Impedance Load are also considered.
Capacity of the static condenser (SC) & shunt reactor (ShR)	Daytime : (SC) 13,200 MVA Nighttime : (ShR) 2,400 MVA (SC) 1,400 MVA	
Governor Spinning Reserve (PLM) Load Frequency Characteristic - Active Power Load - Reactive Power Load	Refer to Table 5.3 3.33 % / Hz (All Loads) 0.0 % / Hz (All Loads)	Refer to Fig. 1.3