This final project describes about contingency that caused by transmission lines outages, that occurs on 500 kV Java-Bali interconnected electric power system. The effect of transmission line outages cause change voltage in the bus and overload in the transmission line, so that it is necessary to solve this problem with a contingency analysis simulation program for finding the solution of transmission line outages problems. The results show that contingency caused by outage of transmission line 500kV Java-Bali between Surabaya-Gandul making the current in Cilegon-Cibinong line increase of 2,583.18A, Paiton-Grati making current in Ungaran-Surabaya line increase of 2,101A, Mandirancan-Ungaran making current in Gandul-Depok line increase of 1,989.49A and the lowest bus voltage occur in bus of bandung that is 0.775 pu when occur contingency in transmission line of Saguling-Bandung. The contingency analysis calculation results can be used to optimally anticipate the operation planning for electrical power system operation. Thus, the system planning can influence the reliability and security of the interconnection system.

Keywords : Contingency, Overload, Interconnection System of Java-Bali.