A STEADY STATE CONTINGENCY ANALYSIS FOR SABAH ELECTRICITY SDN. BHD. (SESB) SYSTEM

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ABSTRACT

A steady state contingency analysis is a method by which we can predict steady state transmission line loadings in a power system following the switching of lines or generators or buses. The steady state contingency analysis is conducted on system peak load. The contingencies study in Sabah Electricity Sdn. Bhd. grid interconnection systems is for the preparation to protect any incidents may occur that is not foreseeable. The steady state simulations of the Sabah Electricity Sdn. Bhd. system is carry out using PowerWorld Simulator. The simulation focuses on single transmission and double transmission lines contingencies. This result leads to the contingency ranking by referring to the list of contingencies at each transmission line according to the severity. The ranking shows that the single contingency outage of 66 kV line between Tanjung Lipat and Inanam is the worst case making the heaviest line with 153% overloading.

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INTRODUCTION

1.1 INTRODUCTION

1.1.1 SESB Grid Background

SESB generates, transmits and distributes electricity. It is the only power utility company in Sabah supplying electricity to 374,023 customers distributed over a wide area of 74,000 sq.km. 83.2% of the customers are domestic customers contributing only 32% of the sale. The total generation capacity is 785MW, 59% (2,004.8 GWh) of the total units generated are purchased from the independent power producers (IPP) [1].

The SESB installed capacity of the Sabah Grid which supplies electricity for major towns from Federal Territory Labuan to Tawau is 441.9 MW and the maximum demand is 624.9 MW. The East Coast Grid 132kV Transmission Line connecting the major towns in the East Coast has an installed capacity of 333.02MW and the maximum demand is 203.3MW [1].

The forecast demand growth of electricity is in a region of 7.7% per annum up to the year 2010. In order to support the growing demand, various generations, transmission and distribution projects will be implemented. A fully integrated grid connecting the West Coast Grid to the East Coast Grid was completed on 28 July 2007, and about 90% of the customers are now connected to this integrated grid [1].