

## **ABSTRACT**

Nowadays, everyone needs a smooth communication. In Ambon Island, wireless radio is a transmission media used for communication between island. The problem happens on the Island of Ambon, communication with Seram Island is often disconnected. Ambon Island and Seram Island separated by the sea and also the area consist of mountains and hill, so communication is often interrupt by the large noise due to the influence of weather and the signal sent was not accepted well effect of signal reflection. Therefor, we need to design more effective telecommunications network.

Communication network will be designed using a submarine cable to connecting Ambon Island and Seram Island. The goal is to connect directly of communication the two islands to solve the problem that caused the relationship of point to point on the transmission network, which is still used a wireless transmission medium is considered less effective. This plan discussed also on the conditions and the depth of the sea, sea cabling routing, forecasting of customer for five years, traffic forecasting and performance analysis of systems designed submarine cable network.

Suitable transmission medium for communication between Ambon island and Seram island is fiber optics. With using the Kruskal algorithm to be used in the cable length is 130 km, network requires an amplifier, EDFA, with maximum journey distance is 86 km, the total bandwidth required for five years is 0,474 Gbps, the transmission technology used is STM-4 with a bit rate of 0,622 Gbps. The power link budget calculation, the power receiver got is -25 dB, rise time of the calculation of the budget, the total rise time is 576,28 ps link, while the rise time systems with Gbps bit rate of 0,622 amounted to 1125 ps. So, this system of planning in terms of rise time budget compliance.

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