

## ABSTRACT

Fiber In The Loop (FITL) using fiber optic as its transmission medium arose because there are limitations of the copper based local network. Fiber optic as a new alternative of transmission medium has better transmissions characteristics. Because of that advantages, fiber optic is then used in the local network replacing copper cable to support increasing demand of telecommunication services.

The technology development of FITL is contributed by other technology which goal is to support the development of FITL. But the technology like DLC, PON and AON have not fulfilled yet to bigger capacity, bit rate, flexibility, and efficiency. By this time it is needed a technology that could provide the fulfillment. SDH is an alternative because its technology is prepared to be a solution of the migration from narrowband network to broadband network in future. Besides, SDH is useful to increase the network's quality, performance, and capacity, and usually deployed to a group of customers with high bit rate and high demand.

In this final project we perform a calculation of reliability and availability of FITL on SDH ring using PON technology at STO Gambir. The calculation is performed using Markov theory based on failure rate ( $\lambda$ ) and recovery rate ( $\nu$ ) of a FITL component.

From the calculation on reliability and availability of FITL system at STO Gambir, it is concluded that reliability of SDH ring is better than the reliability of PON and FITL average availability at STO Gambir is 99,98 %, this value is higher than PT Telkom's availability standard of 99,78 %.