UPGRADING OF PANNIPITIYA – RATMALANA 132KV TRANSMISSION LINE TO IMPROVE THE CURRENT CARRYING CAPACITY

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by

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DECLARATION

The work submitted in this dissertation is the result of my own investigation, except where otherwise stated.

It has not already been accepted for any degree, and is also not being concurrently submitted for any other degree.

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Abstract

There is a constant increase in demand for electric energy both in industrial and domestic sectors. Meeting this demand encounters problems associated with construction of new transmission lines not only in urban areas but also in rural areas. In addition to the environmental clearance, obtaining of right of way for the power lines is becoming more and more difficult. It is therefore much advantageous if the power transmission capacity can be increased in the existing transmission lines.

The aim of this thesis is to examine the possibilities of using the new types of conductors with higher current carrying capacity in existing transmission lines with capacity restrictions. The replacement of conductors shall improve the line capacity while satisfying the other conditions such as ground clearance, transmission loss etc. Power interruptions necessary for the replacement work must be kept as low as possible and in order to achieve this, modifications required for the existing structures shall be minimized. The analysis is done for Pannipitiya - Ratmalana 132kV transmission line which is critical in transmission network.

Limits of the operation of the new conductor selected for the purpose are demarcated considering the design parameters of the existing line. Also the other components and structures of the line are checked for their sustainability for new loads due to the Gap type conductor and necessary modifications are identified for successful enhancement of the transmission capacity.

By re-conductoring and improving the current carrying capacity of transmission line it provides significant cost savings both in keeping transmission costs down, and differing or even eliminating the need for new transmission line.

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