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

A dissertation submitted to the
Department of Electrical Engineering, University of Moratuwa
in partial fulfillment of the requirement for the
Degree of Master of Science
2003/2005

by

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December 2006

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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.

Acknowledgements

I would like to express my gratitude to the University of Moratuwa for providing me with opportunity of following the Master's Degree Programme in Electrical Engineering.

I am deeply indebted to my supervisor Professor H.Y.R. Perera, Department of Electrical Engineering, University of Moratuwa whose suggestions, supports and encouragements helped me in all the time of research and writing of this thesis.

I would extent my sincere gratitude to Mr. Hemantha Rajamanthri, Project Manger (Vavniya-Kilinochchi Transmission Project) of Ceylon Electricity Board who helped in numerous ways among others in selecting the research area and collecting materials needed to complete the research.

Also I would like to thank the Transmission Division of Ceylon Electricity Board for giving this opportunity to carryout the research which will also be benefited to the organization as well. I have furthermore to thank Mr R.J. Gunawardane AGM (Transmission), Mr. E.G. Abayasekara DGM (Generation & Transmission Planning), Mrs. Y.M. Samarasinghe DGM (Transmission Projects), Mr. L.A.S. Fernando DGM(O&MS) and Mr A.J. Sudurikku PM(Power Sector Development Transmission Project) who gave their support and encouragement for me to go ahead with my thesis.

I wish to acknowledge my heartfelt gratitude to my parents and teachers, who have brought me up, guided me, taught me and helped me in various ways to be knowledgeable to carry out the research work. Also, I am grateful to my wife Udayangani for the inspiration and moral support she provided throughout my research and my two sons, Sasandu and Bihadu for tolerating my long hours spent on research work and for their having managed with much less attention that I would have normally devoted to them and to my home.

Lastly, I should thank many individuals, friends and colleagues who have not been mentioned here personally in making this educational process a success.

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