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**TECHNICAL PRE-FEASIBILITY FOR
 DEVELOPING A TRANSMISSION SYSTEM
 INTERCONNECTION BETWEEN INDIA AND SRI
 LANKA – A CASE STUDY FOR MADURAI –
 VEYANGODA INTERCONNECTION**

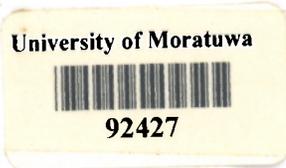
**A dissertation submitted to the Department of Electrical Engineering,
 University of Moratuwa in partial fulfillment of the requirements for
 the degree of Master of Science**



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S. W. A. D. N. WICKRAMASINGHE

Supervised by: Prof. J. R. Lucas



**Department of Electrical Engineering
 University of Moratuwa, Sri Lanka**

February 2009

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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 it also not being concurrently submitted for any other degree.

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S.W.A.D.N. Wickramasinghe

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Prof. J.R. Lucas

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Abstract

To cater to the growing demand of power in Sri Lanka, establishing a power transmission interconnection between India and Sri Lanka has become very important at present. The objective of this study is to do a technically pre-feasibility analysis of such an interconnection with the power system in 2008 and to propose a new interconnection option for the transmission of power.

Capability of the power transmission and the capacity of the link are decided by analyzing the present and future generation capacity in both countries. The locations for the potential terminus points for the interconnection are decided by examining the transmission systems. The most suitable power transmission method is selected by considering the technical and economic aspects. Finally the power transmission system of Sri Lanka is modeled with the selected interconnections and the power flow studies are carried out to analyze the performance of the system and to find the most suitable interconnection.

According to the present and future generation and transmission capacity in both countries there is enough opportunity to justify a transmission interconnection between India and Sri Lanka. The capacity of the link has been decided for 500MW in short term and for 1000MW in medium term. Since there are many advantages of using HVDC over HVAC, HVDC technology has been chosen and for the reliability the bipolar configuration was selected. And the selected voltage was HVDC 400kV. As for the forecasted loads of the grid substations and the locations (nearness to the major load centers) of them Veyangoda grid substation was taken as the terminus point for the power interconnection in Sri Lanka. The decided route for the interconnection is via Mannar.

Transmission system analyses were done for two cases as 500MW connected to Veyangoda and to New Anuradhapura. The observed low voltages at 220kV AC busses in both cases highlighted the requirement of reactive power addition to the system. The results of the studies confirmed that the transmission system around New Anuradhapura is fairly weak compared to the transmission system around Veyangoda. Also the losses of the system were high in New Anuradhapura case. Therefore Veyangoda grid substation was selected as the terminus point of the India – Sri Lanka power interconnection.

Acknowledgement

First and foremost I offer my sincerest gratitude to my supervisor, Professor Rohan Lucas, who has supported me by stimulating suggestions and encouraging throughout my thesis with his patience and knowledge. Also my thanks should go to Dr. J. P. Karunadasa, Head of the Department of Electrical Engineering, and the other members of the academic staff of the Department of Electrical Engineering, for their valuable suggestions and comments.

In addition I would like to thank the officers in Post Graduate Office of the Faculty of Engineering of University of Moratuwa for helping in various ways to clarify the things related to my academic works in time with excellent cooperation and guidance. Sincere gratitude is also extended to the people who serve in the Department of Electrical Engineering office.

Especially I must be thankful very much to my colleagues in the Transmission Planning branch of Ceylon Electricity Board for providing assistance in numerous ways to carry out the studies of the project.

I express my thanks and appreciation to my family for their understanding, motivation and patience. Lastly, but in no sense the least, I am thankful to all colleagues and friends for giving their fullest co-operation throughout the time of research and writing of this thesis.



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