DESIGN NEW LOAD SHEDDING SCHEME CONSIDERING POSSIBLE ISLANDING OPERATIONS IN SRI LANKAN NETWORK

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DECLARATION

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ABSTRACT

Under frequency load shedding has been widely used to restore the power system frequency following a severe generation demand unbalance due to a disturbance. If system frequency is not counteracted properly system will be led to major blackouts. This frequency decline may be corrected by shedding certain amount of load so that system is back to stable state. This dissertation discusses on designing of new under frequency load shedding scheme align with the development of Sri Lankan power system. Further, due to present network configuration after certain power System failures some part of the system isolates from the main system and operates in islanding mode. This islanding operation fails at all the times due to unbalance of the generation and load. This dissertation also discusses in what way to overcome above situation by rearranging 33 kV Load Shedding Feeders in the Sri Lankan network.

Whole Sri Lankan power system has been modeled using the PSS®E (Power System Simulator for Engineers) software. PSS®E dynamic model was validated considering an actual generator tripping occurred in the system. The Existing Load Shedding scheme was simulated using this model and identified its drawbacks. Proposed a new Load Shedding scheme and discussed the system improvements with simulations. The observations and results obtained from the simulations comprise frequency plots before and after applying the proposed new load shedding scheme.

Further, identified possible islanding operations and analyzed the stability of them with proposed load shedding scheme. Finally rearrange the 33 kV load shedding feeders in the Sri Lankan network to facilitate islanding operation by analyzing the stability of the islands using simulation.

This new load shedding schemes with rearranged 33 kV load shedding feeders will improve the Power System reliability and have a definite positive effect on customers which in turn improve the wellbeing of the people and economy of the country.

Key words: Load Shedding, Islanding Operations, Simulations, Scheme, Feeders.

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