

Application Of New Reliability Assessment Framework And Value-Basedreliability Planning

Farag, A.S. Shwehdi, M.H. Belhadj, C.A. Beshir, M.J. Cheng, T.C.;King Fahd Univ. of
Pet.Miner., Dhahran;

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King Fahd University of Petroleum & Minerals

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Summary

A new reliability assessment framework is developed and classified into three power system performance phenomena, namely, angle stability, voltage and power balance. New power system states are developed to describe the success/failure conditions of performance phenomena and the normal operating condition of power systems. A new voltage stability analysis method was developed to meet the requirements of the new bulk power reliability assessment framework developed. Stability margin index calculation methodologies have been developed and presented in the paper. Indices based on reactive margin calculation of generator units provide a realistic measure of voltage stability. The objective of developing a new bulk power reliability assessment framework and the associated other methods is to provide an analysis tool for measuring the true sense of power system reliability. This will achieve the goal of an efficient allocation of electric power resources based on economic considerations; thus achieving value-based reliability planning

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