

**TRANSIENT STABILITY ANALYSIS OF IEEE 57-BUS TEST
CASE SYSTEM BY USING DYNAMIC COMPUTATION IN
POWER SYSTEM (DCPS)**

**This thesis is presented in partial fulfilment for the award the
Bachelor of Electrical Engineering (Honors)**

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July 2012

Acknowledgement

Firstly, praise is to Allah, for finally this project has been completed and achieves its objectives. A highest appreciates to my supervisor, En. Norazlan Hashim because for his guidance, invaluable advice, supervision and suggestion upon completing this analysis.

I would like to thank to my family members, especially to my farther, En. Adnan B. Mohd Shamel and my mother for always support me from behind.

Abstract

This paper is about Transient Stability Analysis of IEEE 57-Bus Test Case System by using Dynamic Computation for Power System (DCPS). Basically, the program is capable for easy extension and able to managed system up to 1000 buses and 250 generators rather than the other expansive software. In this Power System Transient Stability analysis, there are several buses have been identified as a fault buses. All of these fault buses have been analyzed based on critical clearing time (T_{CCT}) on the stability of the system and the effect of the distance from swing bus (Bus 1) to faulty buses by using Modified Euler's method. The stability of the system has been obtained based plotted graphs obtained in term of terminal voltage, machine rotor angle, and machine speed.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND STUDY

The ability of synchronous machine to change from one steady-state within a disturbance to the other steady-state, without losing in synchronism is defined as Power System Stability. In the power system stability, the major of the stability are steady-state stability, dynamic stability, and transient stability. Generally, the gradual changes or slow in operating points is refer to steady-state stability [1].

This is also referring to the ability of the power system to remain in synchronism when small disturbances are occurred on the power system. Next, an extension of the steady-state stability is called by dynamic stability. Thus, it is concerned with small disturbances such as the sudden outage of a line, the occurrence of a fault or removal of loads [2]. Meanwhile, Transient stability is defined as major disturbances such as line-switching operations, faults and sudden load changes. The important of studying of these three types of the stability is the best ways to help us to determine the critical clearing time (t_{cct}) to clear the fault and voltage condition for the IEE 57-Buses Test Case System. The critical clearing time (t_{cct}) is defined as maximal fault duration for which the system remains transiently stable.

Theoretically, cct is a complex function of pre-fault system conditions fault structure and post fault condition that it's depend on the protective relaying plan employed [3].