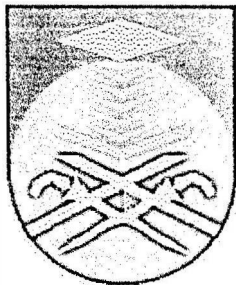


**DEVELOPMENT OF GENERATOR OUTAGE PERFORMANCE
INDEX FOR POWER SYSTEM**

**This Project Ilmiah is presented in partial fulfillment for the award of the
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ABSTRACT

Many utilities in the world are limited with regard to security in their routine operation. Moreover, it can be safely stated that security at any utility becomes a limiting factor during cascaded of transmission line relief events and extreme contingencies such generator outage. Generator outage performance index is therefore an important operating function, which is currently performed to identify the severity of the power system during the outage at the certain point of generator. So that the power system will be operated in a secure situation responsive to the awareness of generator outage at certain bus. Therefore the severity of the system during the occurrence of generator outage can be determined using generator outage performance index.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Nowadays, power system security monitoring and analysis forms an integral part of the modern energy management system but its real time implementation is still a challenging task to power system engineers [1]. Outage of a generator may lead to overloading of other healthy lines and generator and/or cause sudden change in the system bus voltage. For secure operation of the system, the operating personal must know which generator outage will cause flows or voltage to fall outside limits and must plan for on-line preventive actions. Therefore, fast and accurate methods are necessary to predict the post-outage effects in the system.

Security may be defined as the probability of the system operating point remaining in a viable state space, given the probabilities changes in the system contingencies and its environment [2]. The operation of a power system is the desire to maintain system security by keeping the electrical flows and bus voltage magnitudes and angles within acceptable limits despite during the outage of electrical components. System security involves practices designed to keep the system operating when component fail. For example, a generating unit may have to be taken off-line because of auxiliary equipment failure. By maintaining proper amounts of spinning reserve precautions due to the power system reliability, then the remaining units must not drop lower than the total amount of load or else this requires to shed any of the load. The system must be operate at all times in such a way that the system will not be left in a dangerous condition especially during the occurrence of generator outage that could cause any ambiguous event occur [3]. Since the power system equipment is designed to be operated within certain