

DEVELOPMENT OF COMPUTERISED MAINTENANCE MANAGEMENT SYSTEM TO ENHANCE RELIABILITY OF ELECTRICAL EQUIPMENT FOR AVIATION FUEL TERMINALS: A case of Puma Energy Tanzania, Aviation Fuel Terminal at Julius Nyerere International Airport.

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ABSTRACT

The aim of this dissertation was to develop a Computerized Maintenance Management System that will enhance reliability of electrical equipment for aviation fuel terminals.

Poor MMS will also result in poor reliability and availability performance of electrical equipment, which may, in turn, lower revenue of the company as well as the increase in the cost maintenance as the result of frequent breakdowns.

The study was conducted at Julius Nyerere International Airport, Puma Aviation fuel terminal that has a good number of electrical equipment including distribution transformer, standby generators, motors, uninterruptible power supply, electrical actuated valves, distribution boards and electrical powered cathodic protection system.

In order to accomplish the aim of the study, necessary information and data were collected through literature review, observation, documentary review and questionnaires. The data collected were analyzed using computer software: statistical package for the for the social sciences (SPSS) version 20 in which linear regression model were applied, and relative importance index were used to rank the identified factors which affect current maintenance management system of the equipment.

The study variables that are affecting reliability of the electrical equipment were identified and grouped into six main groups which are maintenance strategy and policy, organization and human resources, materials management, equipment and machinery, management and work planning and scheduling. More over, the broad range of factors used, the best predictors of reliability were found to be material management as well as organization and human resources.

The results of the study have identified 6 factors affecting current maintenance practice of electrical equipment at the JINIA. The study found that five among the identified factors have higher RII as compared to others which are: use of substandard spare parts (RII = 0.84), lack of spare parts (RII=0.82), lack of skilled personnel (RII = 0.78), LACK OF PROPER training for maintenance personnel (RII=0.76), lack of tools and supporting equipment(RII=0.70) and the others factors have RII 0.60 and below. From these factors the reliability performance model was developed to = 0.951.

The reliability of electrical equipment has been improved from current 0.554(55.4%) to 0.951(95.1%) base on the best predictors' variables. The model developed can be used for predicting and exploring opportunities toward improving reliability. Findings of this study can be used by other similar company to improve reliability of electrical equipment. Further more, the Maintenance Management System has been developed primarily based on the findings of the current maintenance practice obtained during this study for Puma aviation fuel terminal electrical equipment at JNIA. The research recommends the improvement of the developed system to include all other equipment of the terminal for the best practiced all to all maintenance activities

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