Kriengsak Junseng 2010: Neuro-Fuzzy Model for Condition Based Maintenance of Airbus A320: A Case Study of Thai AirAsia Airline. Master of Engineering (Aerospace Engineering), Major Field: Aerospace Engineering, Department of Aerospace Engineering. Thesis Advisor: Mr. Monchai Surarattanachai, Ph.D. 82 pages.

In this thesis, Neuro-Fuzzy Model for Condition Based Maintenance (CBM) is applied to the Airbus A320 aircraft maintenance program at Thai AirAsia Airline. The Neuro-Fuzzy model for CBM is a decision making method to select the most effective maintenance program. The maintenance activities and schedules are prioritized based on the severity of failure(s).

Derived requirements based on rules and regulations from aviation agencies, failure class, aircraft system (ATA chapter) and phase of failure are introduced as inputs to Neuro -Fuzzy model to developed this new aircraft maintenance program. Interruption records, equipment defects histories, outage and maintenance costs are used as comparable factors to the program, which currently used at Thai AirAsia Airline. The result shows that the cost of maintenance is significantly reduced by the use of the Neuro-Fuzzy model. In addition, the Neuro-Fuzzy model for CBM developed in this thesis could be further applied to other utilities of the maintenance department in other airlines as well.

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