ANALISIS KEANDALAN MAIN ROTOR EC 155B1 PADA KOMPONEN PIN BLADE DAN ATTACH BEAMS MENGGUNAKAN MARKOV ANALYSIS

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ABSTRAK

Keandalan digunakan untuk memperkirakan kondisi sistem atau komponen kedepan berdasarkan kondisi sebelumnya. Pada model keandalan, keadaan suatu sistem ditunjukan oleh berbagai kondisi ketika sistem bekerja maupun mengalami kegagalan. Sehingga diperlukan analisis keandalan pada pesawat terbang untuk menjaga kelaikan serta dapat mempersiapkan program perawatan kedepan.

Obyek dari penelitian ini adalah EC 155B1 milik PT. Indonesia Air Transport & Infrastructure (IAT), dan metode yang digunakan untuk analisis menggunakan markov analysis. Markov analysis secara luas digunakan sebagai teknik menganalisa keadaan sistem yang memiliki keterbatasan informasi (memoryless). Penentuan ATA chapter yang digunakan untuk analisis menggunakan data berupa Airworthiness Limitation Section (ALS), defect monitoring dari penelitian sebelumnya, history report, serta Aircraft Maintenance Manual (AMM). Defect monitoring yang digunakan dibatasi antara bulan September 2017 s.d. Agustus 2019.

Dari penelitian ini, ATA chapter 62 main rotor yang memenuhi persyaratan untuk dilakukan analisis keandalan. Komponen penyusun dari state main rotor antara lain Pin Blade, Lower Attach Beam, dan Upper Attach beam. Hasil markov analysis dari sistem main rotor, state yang dapat bekerja yaitu state 1, state 3, dan state 4. Probabilitas state 1 menunjukan bahwa state mengalami penurunan dari kondisi awal, sedangkan state 3 dan 4 mengalami peningkatan dari kondisi awal dan selanjutnya mengalami penurunan. Tingkat keandalan dari sistem main rotor mengalami penurunan seiring bertambahnya flight hours dengan Mean Time To Failure (MTTF) 2340.22 flight hours.

Kata kunci : EC 155B1, Markov Analysis, Probabilitas, Keandalan

RELIABILITY ANALYSIS OF MAIN ROTOR EC 155B1
ON PIN BLADE AND ATTACH BEAMS COMPONENTS
USING MARKOV ANALYSIS

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ABSTRACT

Reliability is used to estimate the conditions of systems or components in the future based on previous conditions. On the reliability model, the states of system indicated by various condition when the system worked or had failed. Then reliability analysis is needed for aircraft to maintained airworthiness and organized the maintenance program further.

The objects of this research are EC 155B1 aircrafts owned by Indonesia Air Transport & Infrastrucure (IAT), and the method used for analysis is markov analysis. Markov analysis is widely used as an analyzing technique the states of the system that has limited information (memoryless). The determination of the ATA chapter used for analysis are using Airworthiness Limitation Section (ALS), defect monitoring from previous research, history report, and Aircraft maintenance Manual (AMM). The defect monitoring used are limited between September 2017 to August 2019.

From this research, ATA chapter 62 Main Rotor that meets the requirements of reliability analysis. The constituent components of main rotor states are Pin Blade, Lower Attach Beam, and Upper Attach Beam. The results of the markov analysis of main rotor system, the states that worked properly are state 1, state 3, and state 4. The probability of the state 1 showed that state has decreased from initial condition, while the state 3 and state 4 have increased from initial condition and subsequently have decreased. The reliability of main rotor system has decreased along with increasing of flight hours with the Mean Time To Failure (MTTF) is 2340.22 flight hours.

Keywords : EC 155B1, Markov Analysis, Probability, Reliability.