

Analisis Reliability Fuel System untuk Pesawat TM-13

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Abstrak

Fuel system merupakan suatu sistem penting pada pesawat terbang yang digunakan untuk mengalirkan bahan bakar dari tanki menuju *engine*. Kegagalan pada *fuel system* dapat menyebabkan pesawat jatuh sehingga dimungkinkan pesawat mengalami kecelakaan dan korban jiwa.

Penelitian ini membahas keandalan *fuel system* pada pesawat TM-13 yang mencakup tentang proses keandalan *fuel system*. Regulasi penerbangan pesawat terbang mencakup keselamatan dan keandalan pesawat yang diproduksi. Penilaian keandalan dimulai dengan identifikasi fungsi sistem, kondisi kegagalan dan efek kegagalan. Ada dua metode yang digunakan; metode kuantitatif *fault tree analysis* dan metode kualitatif *functional hazard assessment*.

Hasil penelitian menunjukkan probabilitas kegagalan total kemampuan *fuel system* pada pesawat TM-13 sebesar $6,6580 \times 10^{-10}$. Probabilitas kegagalan ini lebih kecil dari Functional Hazard Assessment 1×10^{-9} . Karena probabilitas kegagalan yang didapat *fuel system* pada pesawat TM-13 tersebut telah memenuhi persyaratan, dengan demikian arsitektur *fuel system* pesawat TM-13 tersebut aman digunakan.

Kata kunci: *fuel system*, *Functional Hazard Assessment* (FHA), *Fault Tree Analysis* (FTA).

Fuel System Reliability Analysis for TM-13 Aircraft

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Abstract

Fuel system is an essential system in aircraft used to drain fuel from the tank to the engine. The failure of the fuel system can cause the plane to have an accident, such as crash and death.

This research discussed the reliability of the fuel system on the TM-13 aircraft which included the process of fuel system reliability. In flight regulations airplanes included the safety and reliability of aircraft produced. The reliability assessment began by identifying the system functions, the failure conditions, and the lack of success. There were two methods used; quantitative methods in the form of fault tree analysis and qualitative methods in the form of functional hazard assessment.

The results showed the probability of the total failure of the fuel system capability on the TM-13 aircraft was 6.6580×10^{-10} . The probability of this failure was smaller than functional hazard assessment, 1×10^{-9} . Because of the probability of the failure, the fuel system on the TM-13 aircraft has met the requirements. Thus, the architecture of the TM-13 aircraft fuel system is safe to use.

Keywords: *fuel systems, Functional Hazard Assessment (FHA), Fault Tree Analysis (FTA).*