

## ABSTRAK

Pesawat Boeing 737-500 dilengkapi dengan sistem hidraulik untuk pengoperasian *landing gear* baik pada *nose landing gear* maupun *main landing gear*. Sistem *Hydraulic system A* merupakan sistem hidraulik utama yang digunakan untuk melakukan pengoperasian *retraction* dan juga *extension nose landing gear*. Apabila terjadi kebocoran pada salah satu bagian komponen *supply* hidraulik sistem ke *retract actuator* seperti pada sambungan *hydraulic up hose* dan *reducer* tidak boleh ditunda perbaikannya, karena dapat berdampak pada terjadinya perlambatan *nose landing gear* saat melakukan *retraction* jika kuantitas hidrauliknya tidak sesuai kebutuhan. Penelitian ini bertujuan untuk menganalisa penyebab terjadinya *low quantity hydraulic System* dan kemungkinan penyebab kegagalan pada *retraction nose landing gear system* B737-500 yang mengalami *trouble* dan perbaikan di hanggar Merpati Maintenance Facility.

Dalam penelitian ini menggunakan metode observasi langsung terhadap analisis proses *troubleshooting* pada B737-500 di hanggar Merpati Maintenance Facility. Selain itu dalam penelitian ini juga menggunakan metode *fault tree analysis* untuk mendapatkan penyebab kegagalan pada *retraction nose landing gear system*.

Kegagalan *retraction nose landing gear system* pada B737-500 ditandai dengan *indicator display quantity hydraulic* pada reservoir sistem A yang menunjukkan angka 70%. Angka tersebut mengindikasikan bahwa jumlah *quantity* cairan dibawah standart yang ditentukan yakni 76%. Kurangnya *quantity* tersebut menyebabkan terjadinya perlambatan pada proses *retraction nose landing gear*. Dengan mengacu *Fault Isolation Manual (FIM)* B737-500 dilakukan inspeksi awal berupa *visual check* pada area *actuator*. Kebocoran pada komponen *supply hydraulic* menuju *retract actuator nose landing gear* menyebabkan berkurangnya *transfer* hidraulik *fluid* dari *reservoir* sistem A menuju ke *retract actuator*. Penggantian komponen penyebab kegagalan dilakukan berdasarkan *AMM chapter 32-00-00*. Dilanjutkan dengan menganalisis penyebab-penyebab kegagalan yang mungkin muncul menggunakan *FTA* didapatkan 10 *basic event* yang dapat menyebabkan terjadinya kegagalan pada *Top Event (TE) Retraction Nose landing gear*.

**Kata kunci:** *hydraulic system, nose landing gear, main hydraulic system, hydraulic reservoir A, fault tree analysis (FTA)*

## **ABSTRACT**

*The Boeing 737-500 aircraft is equipped with a hydraulic system for the operation of the landing gear on both the nose landing gear and the main landing gear. Hydraulic system A system is the main hydraulic system used to perform retraction and nose landing gear extension operations. If there is a leak in one of the components of the hydraulic supply system to the retract actuator, such as the connection of the hydraulic up hose and reducer, the repair should not be delayed, because it can have an impact on decelerating the nose landing gear during retraction if the hydraulic quantity is not as needed. This study aims to analyze the causes of the low quantity hydraulic system and the possible causes of failure of the retraction nose landing gear system B737-500 which had trouble and repairs at the Merpati Maintenance Facility hangar.*

*In this study, the direct observation method was used to analyze the troubleshooting process on the B737-500 at the Merpati Maintenance Facility hangar. In addition, this study also uses the fault tree analysis method to find the cause of failure in the retraction nose landing gear system.*

*The failure of the nose landing gear system retraction on the B737-500 is indicated by the hydraulic quantity display indicator on the reservoir system A which shows the figure of 70%. This figure indicates that the quantity of liquid is below the specified standard, which is 76%. This lack of quantity causes a slowdown in the nose landing gear retraction process. With reference to the Fault Isolation Manual (FIM) B737-500, an initial inspection in the form of a visual check is carried out on the actuator area. Leakage in the hydraulic supply component to the retract actuator nose landing gear causes reduced hydraulic fluid transfer from the reservoir system A to the retract actuator. Replacement of components that cause failure is carried out according to AMM chapter 32-00-00. Followed by analyzing the causes of failures that may occur using FTA, we get 10 basic events that can cause the Top Event (TE) Retraction Nose landing gear to fail.*

*Keywords: hydraulic system, nose landing gear, main hydraulic system, hydraulic reservoir A, fault tree analysis (FTA)*