

ABSTRAK

Air conditioning system adalah suatu sistem yang berfungsi untuk mendukung kenyamanan dan keselamatan penumpang didalam pesawat. Didalam sistem *air conditioning* terdapat sistem pendingin yang berfungsi untuk menyediakan udara dingin didalam pesawat. kerusakan yang terjadi pada sistem pendingin dapat menyebabkan suplai udara dingin tidak berjalan dengan baik.

Dalam penelitian ini menggunakan metode observasi langsung terhadap analisis proses troubleshooting pada B737-500 di hanggar PT. Mulya Sejahtera *Technology*. Selain itu penelitian ini juga menggunakan metode *fault tree analysis* untuk mendapatkan penyebab kegagalan pada suplai udara dingin pada sistem *air conditioning*

Kegagalan pada suplai udara dingin dapat diketahui melalui lampu indikasi yang menyala pada P5-P10 *panel* pada *overhead* yang ada didalam *cockpit*, kerusakan tersebut diatasi dengan melakukan *troubleshooting* berupa pengumpulan data, *visual check* serta melakukan *operational test* sesuai arahan *aircraft maintenace manual chapter 21*. kerusakan pada *air cycle machine* dimana mengalami patah pada *fan turbine* karena bergesekan dengan *housing* dan kerusakan *seal* pada *drain plug* sehingga oli merembes keluar. Penggantian komponen penyebab kegagalan dilakukan dengan menggunakan AMM *task 21-51-11-004-001 page 401* dan AMM *task 21-51-11-404-022 page 402*. Dengan menggunakan metode *fault tree analysis*, terkait dengan permasalahan kegagalan suplai udara dingin pada sistem *iar conditioning* didapatkan 16 basic event yaitu: (1) Putaran *Turbine* Tidak Normal, (2) *Fan Crack*, (3) *Oil Low Quantity*, (4) *Seal Leakage*, (5) *Electrical Source Problem*, (6) *Shaft Bending*, (7) *Buffle Dent*, (8) *Tube Bundle Blockage*, (9) *Filter Blockage*, (10) *Sensor Trouble*, (11) *Ram Air Inlet Blockage*, (12) *Ram Air Inlet Door Stuck*, (13) *Corrosion*, (14) FOD, (15) *Pipe Leakage*, (16) *Loose Clamp*.

Kata kunci: *maintenance air conditioning system Boeing 737-500*, suplai udara dingin pada sistem *air conditioning*, *air cycle machine*, *fault tree analysis* (FTA)

ABSTRACT

Air conditioning system is a system that functions to support the comfort and safety of passengers on the plane. In the air conditioning system there is a cooling system that serves to provide cold air inside the aircraft. Damage to the cooling system can cause the cold air supply to not work properly.

In this research, the direct observation method was used to analyze the troubleshooting process on the B737-500 in the PT. Mulya Sejahtera Technology. In addition, this research also uses method fault tree analysis to find the cause of the failure of the cold air supply in the air conditioning system.

The failure of the cold air supply can be detected through the indication light that lights up on the P5-P10 panel on the overhead in the cockpit, the damage is overcome by performing troubleshooting in the form of data collection, visual checks and conducting operational tests according to the directions of the aircraft maintenance manual chapter 21. Then found damage to the air cycle machine where the fracture turbine fan due to friction with the housing and damaged seals on the drain plug so that the oil seeped out. Component replacement have been using AMM task 21-51-11-004-001 page 401 dan AMM task 21-51-11-404-022 page 402. By using fault tree analysis method, related to the failure of the cold air supply in the air conditioning system. 17 basic event were obtained, namely (1) Putaran Turbine Tidak Normal, (2) Fan Crack, (3) Oil Low Quantity, (4) Seal Leakage, (5) Electrical Source Problem, (6) Shaft Bending, (7) Baffle Dent, (8) Tube Bundle Blockage, (9) Filter Blockage, (10) Sensor Trouble, (11) Ram Air Inlet Blockage, (12) Ram Air Inlet Door Stuck, (13) Corrosion, (14) FOD, (15) Pipe Leakage, (16) Loose Clamp.

Keywords: maintenance of air conditioning system Boeing 737-500, cold air supply in air conditioning system, air cycle machine, fault tree analysis (FTA)