

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 kegagalan *air conditioning system* dalam mengkondisikan udara di dalam pesawat.

Dalam penelitian ini menggunakan metode observasi langsung terhadap analisis proses *troubleshooting* pada Boeing 737-800 di *Line Maintenance* Bandara Syamsudin Noor. Selain itu penelitian ini juga menggunakan metode *fault tree analysis* untuk mendapatkan penyebab kegagalan pada suplai udara dingin pada sistem *air conditioning*.

Kegagalan pada sistem *air conditioning* ditandai dengan lampu indikator pada *panel P5-10* ada di dalam *cockpit*. Kerusakan yang terjadi yaitu *fan impeller* pada *air cycle machine* yang mengalami patah. Kerusakan tersebut diatasi dengan melakukan *troubleshooting* dari *visual check* dan pemeriksaan komponen. *Fan impeller* yang mengalami patah harus dilakukan penggantian. Proses *troubleshooting* mengacu pada FIM ATA 21, AMM ATA 21-51-04 untuk *removal* dan *installation fan impeller* pada *air cycle machine*. Dengan menggunakan metode *fault tree analysis*, terkait dengan permasalahan kegagalan suplai udara dingin pada sistem *air conditioning*, didapatkan beberapa penyebab dasar 13 *basic event* yaitu: (1) *Fan Impeller Patah*, (2) *Electric Source Bermasalah*, (3) Putaran Turbin Tidak Normal, (4) Putaran Kompresor Tidak Normal, (5) *Ram Air Inlet Block*, (6) *Ram Air Inlet Door Stuck*, (7) *Pipa Baffle* Mengalami kerusakan, (8) *Heat Exchanger Kotor*, (9) *Clamp Kendur*, (10) Pipa Bocor, (11) Korosi, (12) FOD, (13) *Pack Valve Stuck*.

Kata kunci: Kegagalan suplai udara dingin, *fan impeller*, *air cycle machine*.

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 air conditioning to fail to condition the air in the aircraft.

In this research, the direct observation method was used to analyze the troubleshooting process on the B737-800 in the Line Maintenance Syamsudin Noor Airport. 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 that occurs is that the fan impeller on air cycle machine is broken. The damage is overcome by performing troubleshooting from visual checks and components inspections. Broken fan impeller must be replaced. Troubleshooting refers to FIM ATA 21, AMM ATA 21-51-04 for removal and installation impeller fan from air cycle machine. With the fault tree analysis method, related to the failure of the cold air supply in the air conditioning system, found 13 basic event causes failure of the cold air supply in the air conditioning system: (1) Fan Impeller Fracture, (2) Electric Source Problem, (3) Abnormal Turbine Rotation, (4) Abnormal Compressor Rotation, (5) Ram Air Inlet Block, (6) Ram Air Inlet Door Stuck, (7) Baffle Pipe Damage, (8) Dirty Heat Exchanger, (9) Loose Clamp, (10) Pipe Leak, (11) Corrosion, (12) FOD, (13) Pack Valve Stuck.

Keyword: *failure of the cold air supply in, impeller fan, air cycle machine.*