

ABSTRAK

Propeller system merupakan komponen aerodinamis yang mengubah energi rotasi yang berasal dari *turboprop engine* menjadi daya dorong. Pada *propeller control system* pesawat ATR 72-600 terdapat *propeller electronic control (PEC)* berupa *dual channel* yang mengatur *close loop* pada *propeller pitch change system* dan melakukan sinkronisasi *propeller* dan *Propeller interface unit (PIU)* sebagai penghubung antara PEC dan *fault signalization PEC*. Kegagalan pada PEC *channel* diindikasikan melalui *emergency and warning display (EWD)* yang terdapat pada kokpit. Permasalahan ini akan mengakibatkan hilangnya kemampuan untuk mengatur *blade angle* secara *automatic*, mensinkronkan kedua *propeller* dan menghambat pengiriman data.

Penelitian ini dilaksanakan dengan metode observasi secara langsung guna mengamati dan menganalisis terjadinya kegagalan menggunakan *metode fault tree analysis* dan melakukan penanganan perawatan *propeller* pesawat ATR 72-600 di *engine shop* PT Merpati Maintenance Facility. Penelitian ini dilakukan dengan mengacu pada Aircraft Maintenance Manual (AMM), Troubleshooting Manual (TSM) dan Job Instruction Card (JIC).

Hasil dari penelitian tentang *single channel failure indicating* pada *propeller control system* pesawat ATR 72-600 terkonfirmasi terjadi kegagalan pada PEC *channel* disebabkan oleh PEC dan PIU mengalami *fault*. Permasalahan tersebut terselesaikan dengan melaksanakan penanganan dan penggantian komponen dilakukan berdasarkan AMM JIC 61-21-63 RAI 10040-002, AMM JIC 61-21-63 OPT 10020-001, AMM JIC 61-21-63 PRO 10020-001, AMM JIC 61-21-82 RAI 10000-002. Dengan menggunakan metode *fault tree analysis*, terkait dengan permasalahan pada *propeller control system failure*, didapatkan 19 *basic event* yang mungkin menjadi penyebab kegagalan yaitu *Protection valve problem, Engine condition lever trouble, Engine power lever trouble, Electro hydraulic valve fault, Blade angle feedback failure, Secondary low pitch stop retrac selenoid fault, Electrical feather selenoid fault, Sensor for propeller speed measurement failure, Sensor for synchropasing failure, Sensor for propeller dynamic balancing failure, Auto feather problem, Automatic take off power control system fault, Power management selector switch fault, Condition lever problem, Power lever problem, Realief valve trouble, Check valve trouble, Regulating valve trouble, Check valve trouble*.

Kata kunci : *propeller system, single channel, fault*

ABSTRACT

The propeller system is an aerodynamic component that converts rotational energy from the turboprop engine into thrust. In the propeller control system of the ATR 72-600 aircraft there is a propeller electronic control (PEC) in the form of a dual channel that regulates the close loop on the propeller pitch change system and synchronizes the propeller and the Propeller interface unit (PIU) as a liaison between the PEC and the PEC fault signalization. Failure on the PEC channel is indicated through the emergency and warning display (EWD) located in the cockpit. This problem will result in the loss of the ability to adjust the blade angle automatically, synchronize the two propellers and hinder data transmission.

This research was carried out by direct observation method to observe and analyze the occurrence of failures using the fault tree analysis method and to carry out the maintenance of the ATR 72-600 aircraft propeller at the PT Merpati Maintenance Facility engine shop. This research was conducted with reference to the Aircraft Maintenance Manual (AMM), Troubleshooting Manual (TSM) and Job Instruction Card (JIC).

The results of the research on single channel failure indicating the propeller control system of the ATR 72-600 aircraft confirmed that there was a failure on the PEC channel caused by the PEC and PIU experiencing a fault. The problem was resolved by handling and replacing components based on AMM JIC 61-21-63 RAI 10040-002, AMM JIC 61-21-63 OPT 10020-001, AMM JIC 61-21-63 PRO 10020-001, AMM JIC 61 -21-82 RAI 10000-002. By using the fault tree analysis method, related to problems with the propeller control system failure, 19 basic events that may be the cause of failure are obtained, namely Protection valve problem, Engine condition lever trouble, Engine power lever trouble, Electro hydraulic valve fault, Blade angle feedback failure, Secondary low pitch stop retrac solenoid fault, Electrical feather solenoid fault, Sensor for propeller speed measurement failure, Sensor for synchropasing failure, Sensor for propeller dynamic balancing failure, Auto feather problem, Automatic take off power control system fault, Power management selector switch fault, Condition lever problem, Power lever problem, Realief valve trouble, Check valve trouble, Regulating valve trouble, Check valve trouble.

Keyword : propeller system, single channel, fault