ANALISIS KEKUATAN STRUKTUR *LOWER BULKHEAD* FS 446.1 PADA PESAWAT F-16 A *FIGHTING FALCON* DENGAN MENGGUNAKAN *SOFTWARE* CATIA V5R20

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ABSTRAK

F-16A/TS-1603 merupakan pesawat tempur yang mampu bermanuver dengan lincah di udara. Dalam maneuver tersebut semua beban ditanggung oleh struktur pesawat tersebut. Beban tersebut terus berulang ditanggung oleh pesawat F-16A/TS-1603 selama di operasikan, sehingga perlu dilakukan inspeksi terhadap struktur pesawat tersebut.

Inspeksi struktur pesawat F-16A/TS-1603 dilakukan setiap interval 400 jam terbang. Pada saat inspeksi pesawat tersebut mempunyai jam terbang sebesar 5.989,6 jam dan ditemukan keretakan pada *lower bulkhead* Fs 446.1 dengan panjang *crack* sebesar 106,7 mm atau 4,17 inch. Sehingga dilakukan pergantian pada struktur *lower bulkhead* Fs 446.1 karena tidak bias di *repair*.

Pemodelan dan analisis dilakukan dengan menggunakan *software* CATIA V5R20. Analisis menggunakan *software* CATIA V5R20 diperlukan untuk memperoleh nilai tegangan pada *crack lower bulkhead* Fs 446.1 dan *replacement lower bulkhead* Fs 446.1. Dari hasil tegangan tersebut maka dapat diperoleh nilai *margine of safety* dari *crack lower bulkhead* Fs 446.1 dan *replacement lower bulkhead* Fs 446.1. Dalam proses analisis pesawat disimulasikan dalam kondisi *pull up* dan *banking*.

Dari analisis dengan menggunakan *software* CATIA V5R20 didapatkan hasil bahwa struktur *bulkhead* sesuai TO dan TCTO aman. Nilai *margine of safety* tertinggi pada saat *pull up* sebesar 145,98 *crack lower bulkhead* dan 169,12 *replacement lower bulkhead*, dan adapun nilai *margine of safety* tertinggi pada saat *banking* sebesar 282,54 *crack lower bulkhead* dan 326,7 *replacement lower bulkhead*.

Kata kunci : TCTO, *Lower, Bulkhead,* CATIA V5R20, Keretakan

ANALYSIS STRENGTH OF STRUCTURE LOWER BULKHEAD FS 446.1 IN AIRCRAFT F-16 A FIGHTING FALCON USING SOFTWARE CATIA V5R20

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ABSTRACT

F-16A / TS-1603 is a fighter aircraft that is capable of maneuvering with agility in the air. In this maneuver all burden is borne by the structure of the aircraft. The load continues to be borne repeatedly by the F-16A / TS-1603 aircraft during operation, so it is necessary to inspect the aircraft structure.

Inspection of the F-16A / TS-1603 aircraft structure is carried out at 400 flight hour intervals. At the time of inspection the aircraft had 5,989.6 hours of flying time and a crack at the lower bulkhead of Fs 446.1 with a crack length of 106.7 mm or 4.17 inches was found. So a change is made to the lower bulkhead structure Fs 446.1 because it cannot be repaired.

Modeling and analysis was performed using CATIA V5R20 software. Analysis using CATIA V5R20 software is needed to obtain the value of the stress at the lower bulkhead crack Fs 446.1 and the replacement lower bulkhead Fs 446.1. From the results of these stresses it can be obtained the value of the margin of safety of the crack lower bulkhead Fs 446.1 and replacement lower bulkhead Fs 446.1. In the process of aircraft analysis, it is simulated in pull up and banking conditions.

From the analysis using CATIA V5R20 software, it was found that the bulkhead structure according to TO and TCTO was safe. The highest margin of safety value at the time of pull-up was 145.98 crack lower bulkhead and 169.12 replacement lower bulkhead, and the highest margin of safety at banking was 282.54 crack lower bulkhead and 326.7 replacement lower bulkhead.

Keywords: TCTO, *Lower*, *Bulkhead*, CATIA V5R20, *Cracks*