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Comments on Separation of the Left Attached Nacelle/Pylon from CAC 0021

Questions have been asked pertaining to what accelerations/forces would be required to cause separation of the ~~complete wing from the fuselage and~~ the number one nacelle/pylon from the wing during the ground impact and subsequent motions of Ship 0021 on 4 April 1975.

First, it should be noted that no data are directly available by which to determine answers to these questions.

Second, the forces acting on the various structural components of the aircraft were complex combinations of linear and rotational accelerations, aerodynamic forces, unknown thrust and gyroscopic forces on the engines and possible discrete forces resulting from direct ground contact of various components of the aircraft.

An estimate of the inertia factors which could result in failure of the outboard pylon/wing attachment fittings has been made based on their analytical ultimate strength ~~of the~~

1. The ultimate load factors, acting separately, are estimated to be:

Fore & Aft - ± 5.8

Side - ± 2.5

Vertical - ± 10.5

2. Combinations of lower values of the above factors could result in exceedance of ultimate strength of the legs.

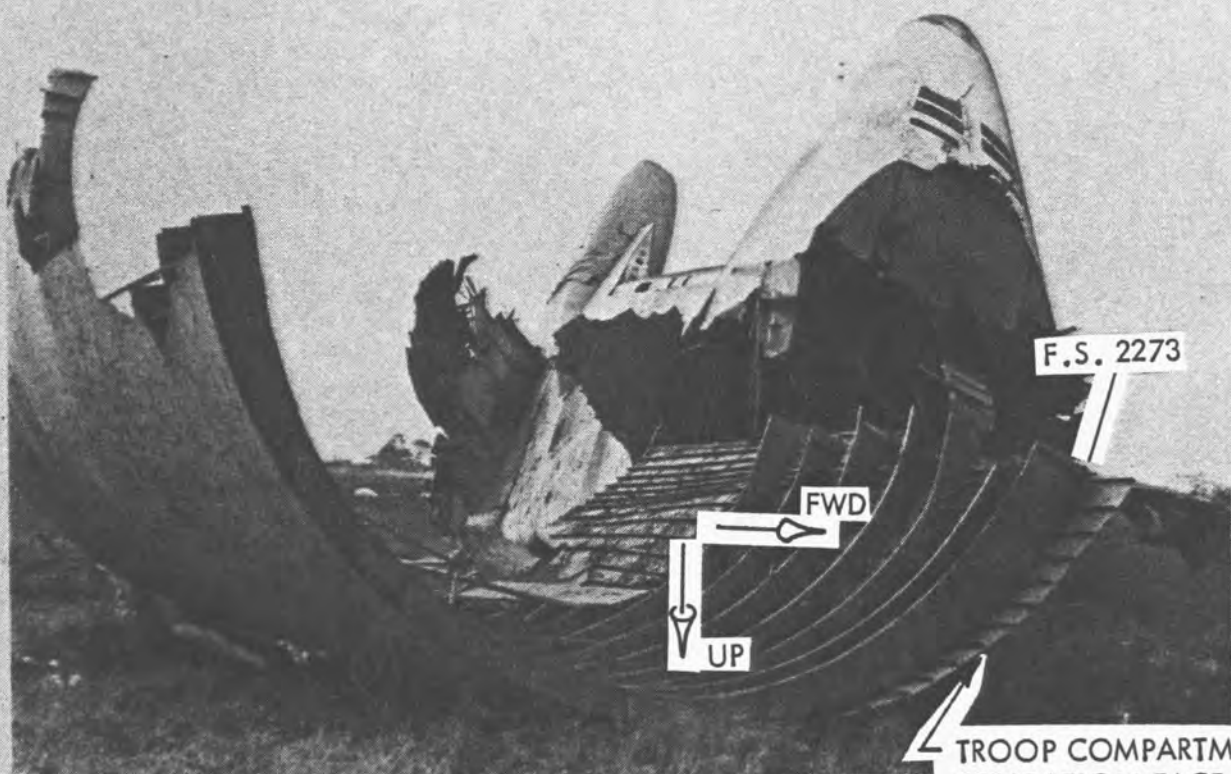
3. Aerodynamic forces on the wing, following separation from the fuselage, could have resulted in pitching acceleration on the order of $-.4$ to $-.6$ radians/second² and pitching velocities of approximately $-.3$ radians per second.

4. Engine gyroscopic forces resulting from the above angular velocity would be ~~relatively~~ insignificant as a separately

acting force but would be of some significance in a coupled force system.

5. Separation of the wing from the fuselage was probably not the result of instantaneous forces exceeding the ultimate strength of the structure but resulted from progressive failure of structural load paths as a result of structural damage to the fuselage and main frames / wing angles etc.

D.E. Disney
30 Oct 81

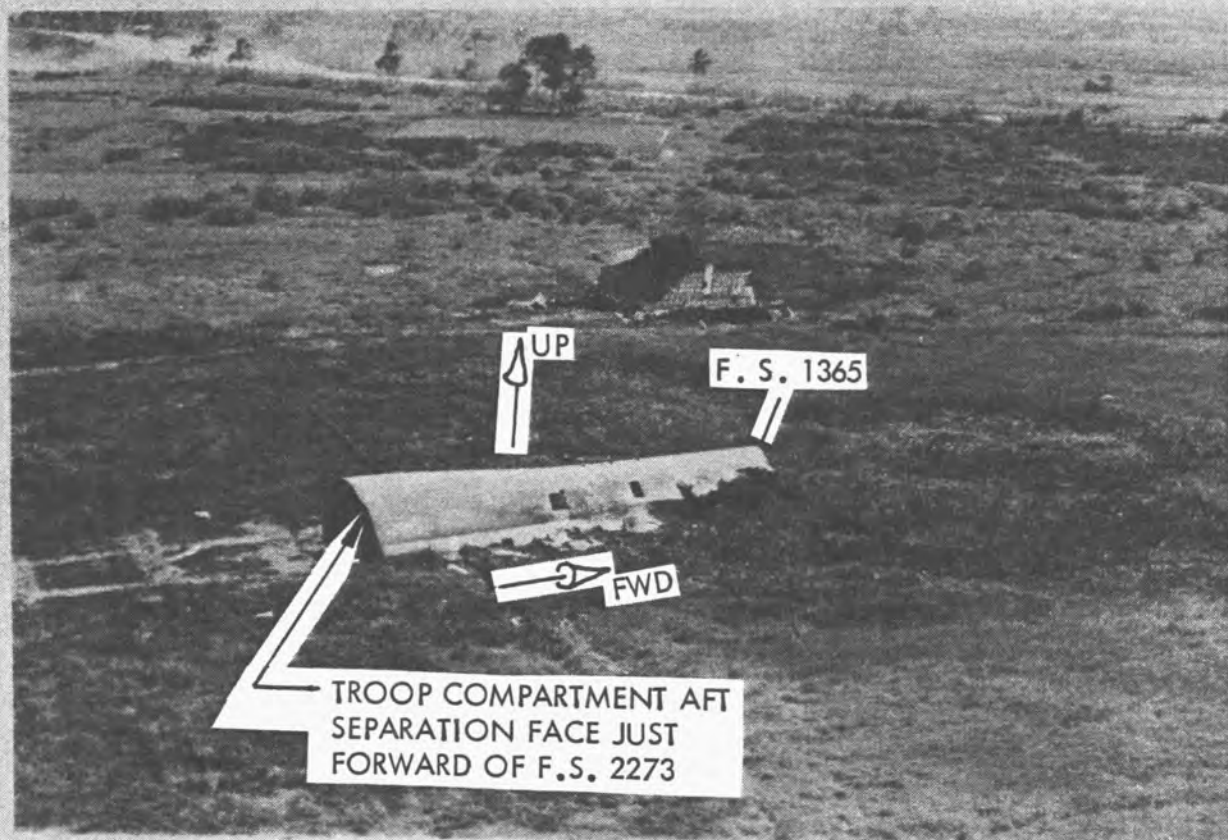


F.S. 2273

FWD

UP

TROOP COMPARTMENT AFT
SEPARATION FACE JUST
FORWARD OF F.S. 2273



UP

F. S. 1365

FWD

TROOP COMPARTMENT AFT
SEPARATION FACE JUST
FORWARD OF F.S. 2273

NOTE $\rightarrow$ +5%

\$21¹⁶ - 45 MIN.

JOHN EDWARDS — Tel Oct. 13,

1. No. wheels ON EAST SIDE —

2. CANAL ✓

3. 4 ENGINES 181925 (1) ~~181925~~ 0-75

1) 60N & 1925W — 1ea

2) 70N & 1950W — 1ea

3) 50S & 1575W — 1 (CONC.)

4) 200N & 1675W — 1ea.

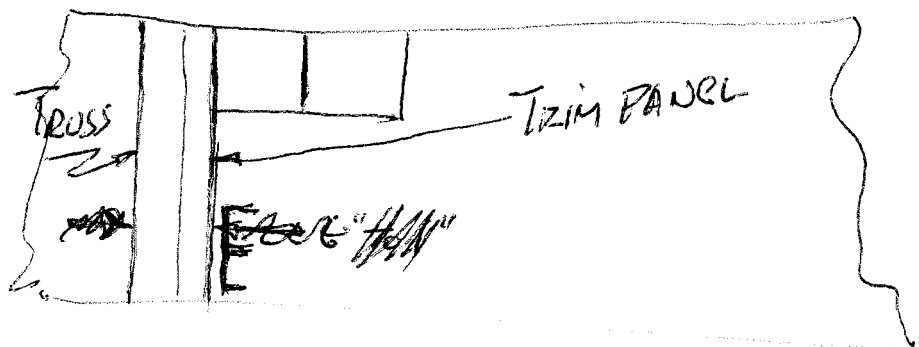
\$21¹⁶ + 5% =
42 MIN.

#1?

4. 41,000 # THRUST. MAX ENGINE THRUST

5. TRUSS - 5' BEHIND REAR SPAR ON WING
Part LDG gear support system.

6.



7. $\frac{2.5 \times 1.5}{1.25}$ G's DESIGN LOAD WING = 3.75G

8. Gear RF 175N — 1225W

LF gear 50N — 1300W west of DYKE