July 5, 1989

Mr, Larry Andriesen
F.A.A.
The Rotorcraft Directorate
Fort Worth, Tx. 76193-0110
U.S.A.

Dear Mr. Andriesen:

As a consultant for the official investigation committee of the N-15GX Gyrocopter accident, which happened here in Finland June 16,1989, I am writing this letter to ask for your opinion and policy on the experimental gyrocopter or autogyro safety considerations. I hope the matter is discussed by your rotary wing experts particularly those who have participated in the test flight program and type certification process of Umbaugh /Air & Space 18-A and McCulloch J-2 autogyros.
I am especially interested in hearing your comments on the autogyro stability requirements and the necessity of the horizontal stabilizer because there was none in the machine involved in the accident. Please, find enclosed my description of the accident and my recommendations on the matter.
I am looking forward to your comments and letter.

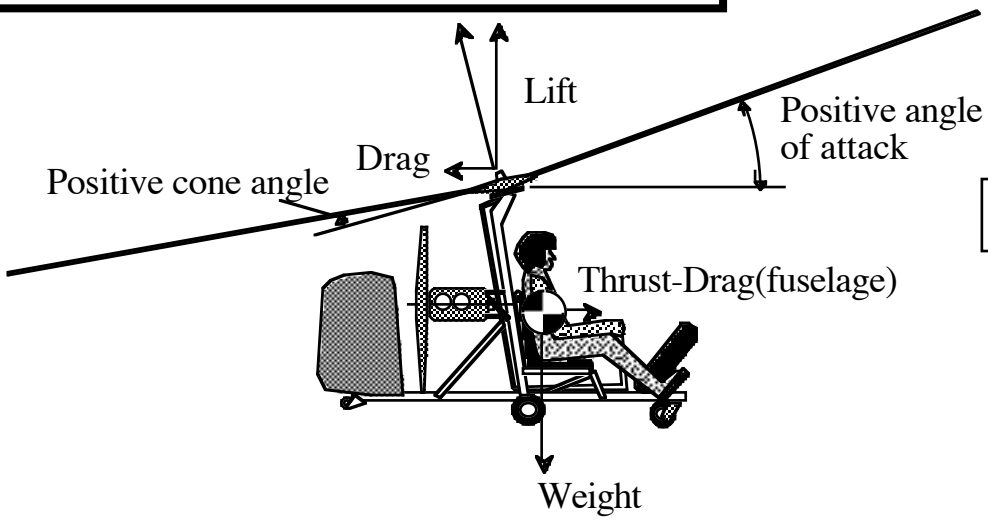
Yours very truly

Jukka Tervamäki
Harmaapaadentie 12 A
00930 Helsinki
Finland

N-15GX Gyrocopter Accident

Tampere-Pirkkala , June 16.1989

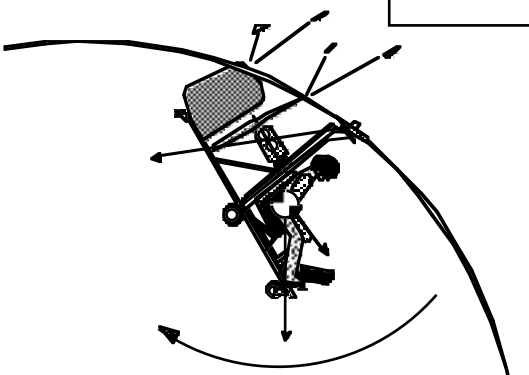
J.Tervamäki 4.7.1989

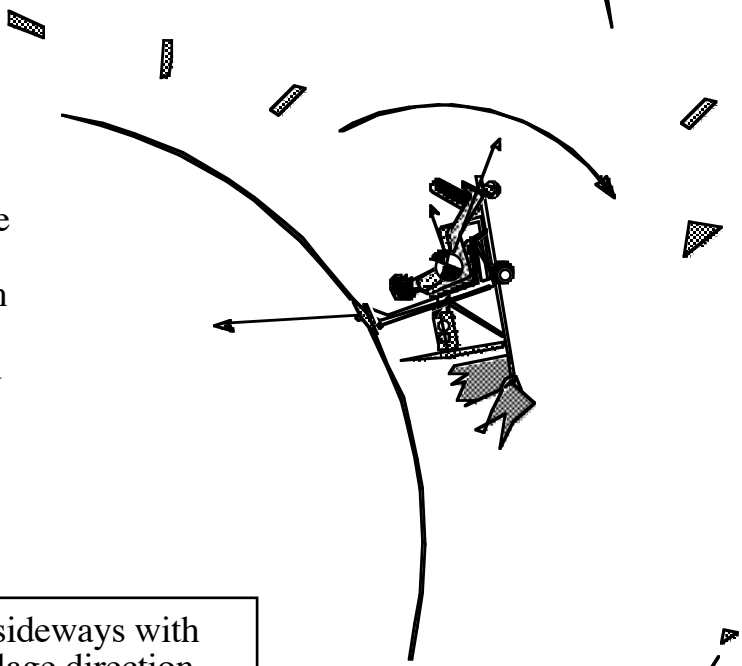


Normal cruise condition

Negative-G condition after PIO and porpoising

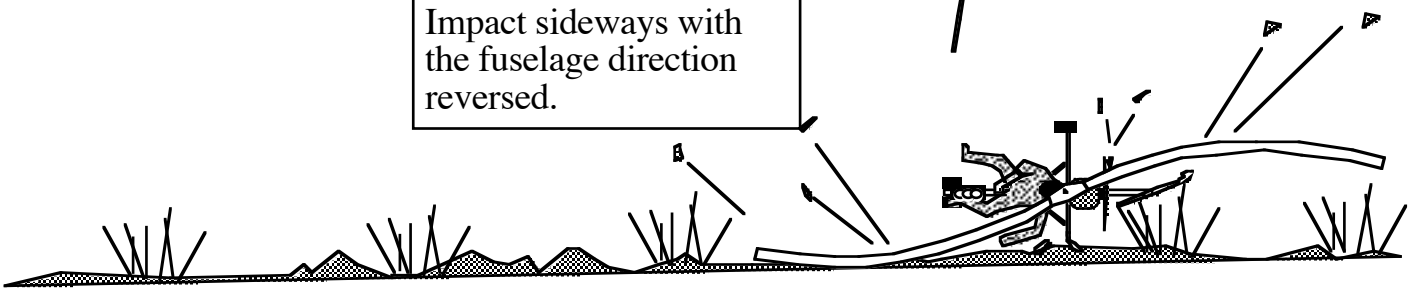
Negative angle of attack results in low RPM and large negative blade cone angle, rotor is hitting the flapping stops and finally rotor blades hit the vertical tail and propeller





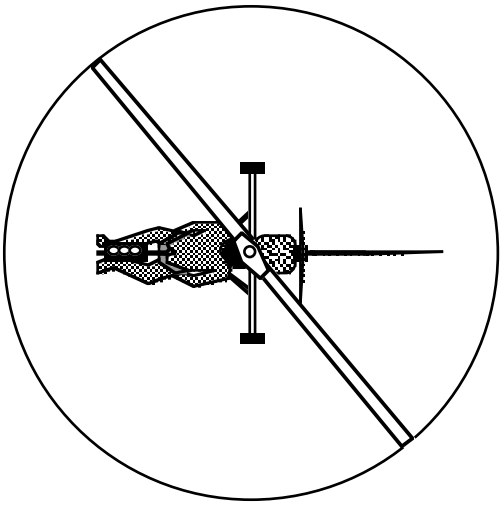
The eye witnesses were quite far and could not describe exactly the tumbling movements of the gyrocopter but in the final position the blades were bent highly upwards, a proof of low RPM and high velocity. Gyrocopter parts and pieces were scattered all around the place.

Impact sideways with the fuselage direction reversed.



Ken Brock KB-3

No horizontal tailat all!
Tail volume =0



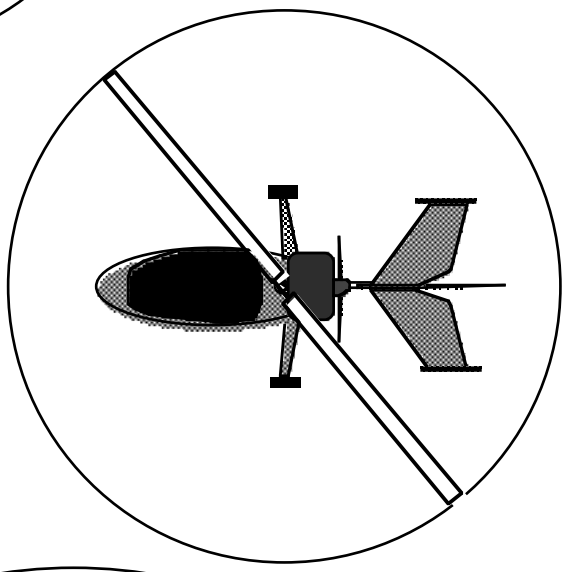
Tervamäki JT-5

Horizontal tail area 0,9 sq.meters

Tail volume about 1,2 cu.meters

Triple vertical tail adds to

the horizontal tail aspect ratio



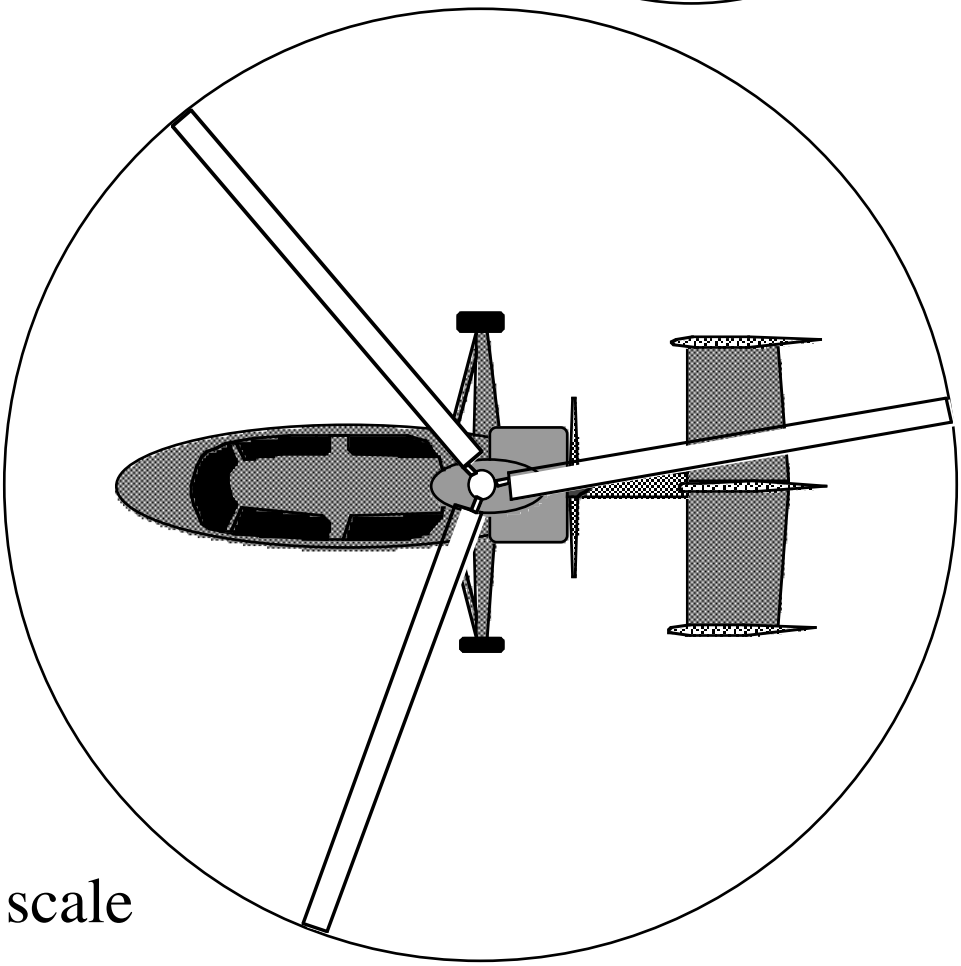
AIR & SPACE 18-A

Large horizontal tail

(No numerical data available)

Triple vertical tail adds to

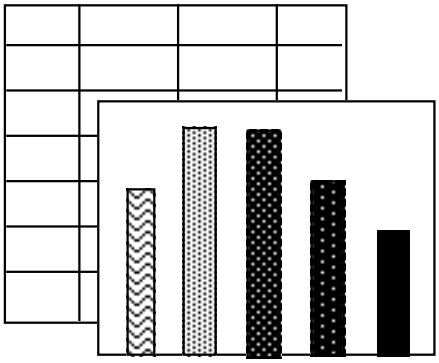
the horizontal tail aspect ratio



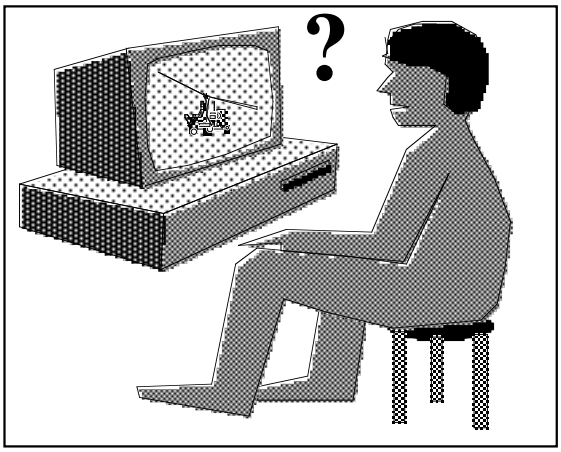
Drawings not to scale

Proposal for a Gyrocopter Stability Investigation program.

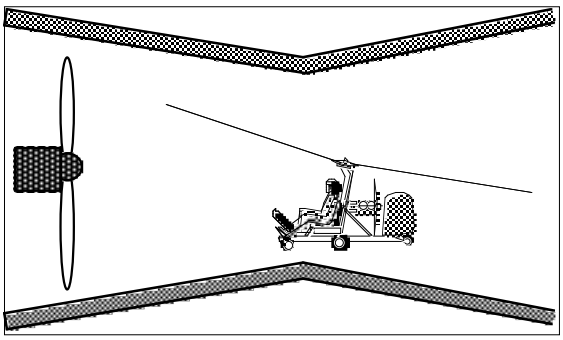
(JT 12.11.90)



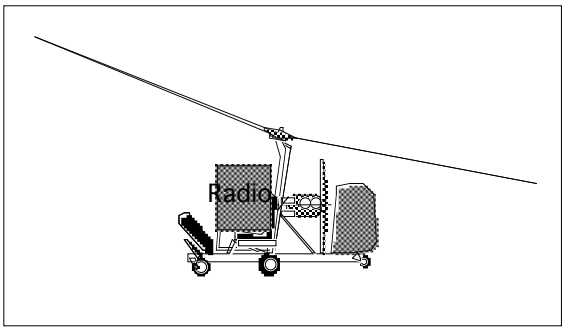
1. A throrough analysis of NTSB gyrocopter accident statistics of the past 30 years.



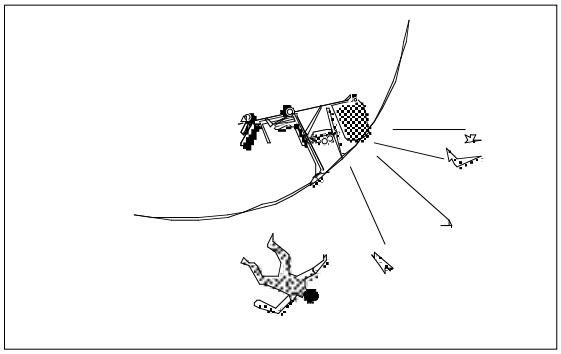
2. Computer calulation and simulation of gyrocopter stability with and without a horizontal stabiliser. A videotape or a disket of the results could be made available for homebuilders.



3. A full scale wind tunnel testing of a gyrocopter and measurements of its stability and control response with and without a horizontal stabiliser or.....



4. ...if no wind tunnels and funding are available for the purpose, test flight program with a radio controlled gyro-copter with and without a horizontal stabiliser (using a data logger and a chase plane to collect the data and make videotape of the gyrocopter response) or.....



5. ....if this is not possible, the same test flights at 10000 ft by a brave, voluntary test pilot carrying a parachute for himself and another for gyrocopter recovery.