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The questions we have follow. If they cannot be answered by flight or ground test data, I would appreciate an answer based on your engineering analysis of the problem.

1. Assuming a 45-degree nose down attitude, how quickly in time would the glider accelerate from V_s to V_{ne}? What is the additional time to V_d. ***Schempp-Hirth answer:*** *The time to accerlate from Vs approx. 82 km/h to VNe is 8,6 sec and the additional time from VNE=825 km/h to VD=324 km/h is 1,8 sec with* ***airbrakes closed!***
2. In flight test, was there any indication of wing tip divergence above V_{ne}. ***Schempp-Hith answer****: No indication of wing tip divergence was observed during flight tests.*
3. During certification, was a Ground Vibration Test performed on the structure? ***Schempp-Hirth answer:*** *Two ground vibration tests were carried out see reports "Aeroelastic Investigation of the Motorglider Nimbus-4DT, dated June 26, 1994" and "Aeroelastic Investigation of the Motorglider Nimbus-4DM, dated June 30, 1994" from Dr-Ing. N. Niedbal followed by comprehensive flutter calculations.*
4. Is there a likelihood of outboard wing panel flutter at speeds between V_{ne} and V_d? ***Schempp-Hirth answer:*** *No negativ damping values are calculated between VNE and VD see results of the Aeroelastic Investigation reports see item 3 and the results of the flutter tests in flight up to VDF. But take in mind that VD respesctive VNE depends from the altitude see Flight Manual page 4.5.7.1 although the influence is small at 7000 to 10000 ft.*
5. We are aware that speed brake extension will probably redistribute the load outboard on the wings. Please provide the load patterns on the wings at 1 G with and without speed brakes. Will the pattern change with increasing G-loads or wing angles of attack? If so, how? Are there any points of load concentration on the wing structure with speed brakes extended at V_{ne}? How does this change with increasing angle of attack? ***Schempp-Hirth answer:*** *We need some time for the calculation of this load case at 1 G.*
6. Please supply a graph of the stick force per G from V_s to V_{ne}. ***Schempp-Hirth answer:*** *We have no information about the stick force per G in straight flight from Vs to Vne. But we have a graph at the unfavourable aft CG position "stick force versus speed" for the relevant flap settings from the measurements of the static stability. Please take in mind that the vertical axis is noted in units N=Newton with stick force 1,0 equals 0,1 N. The slope of the curves stick force versus speed are steeper than the required minimum slope 1 N / (10 km/h) according the JAR 22.173 (a)(1) requirement. Please note that at a more forward CG position the slope of the curves is more steeper. Further note: The graph of the Nimbus-4D is valid too for the Nimbus-4DM!*
7. Considering the very long wing span of this design, it is likely that a significant difference in lift generation could exist between the inside and outside wings

during turns, especially uncoordinated turns where a yaw to the inside of the turn is introduced. Do you have or can you provide a graph of the lift distribution change with increasing angle of bank and rate of turn? Can you also estimate or provide information on the effect of a 5 and 10 degree yaw on the lift distribution curve? ***Schempp-Hirth answer:*** *In a coordinated turn the air velocity over the wingspan differs as a function of the turn radius that means the inner wing has less air velocity and the outer wing more air velocity. This would result in an asymmetric lift distribution. To avoid a rolling moment the ailerons must deflected in that way to get a symmetric lift distribution that means stick deflected against the bank of the sailplane or a yaw to the* ***outside of the turn*** *produced with the rudder. In conclusion we have no graph of the asymmetric lift distribution in a turn because this is an instationary movement.*

We have one additional question related to number 5 concerning the aerodynamic effect of speedbrake deployment, particularly at high speeds near V_{ne}. Would the speedbrake location on the wing's Mean Aerodynamic Chord (MAC) create a nose up pitching moment during deployment at high speed near V_{ne}? Can you estimate the force and magnitude of any such pitching moment? Would this result in a significant increase in the load distributions across the outer wing panels?

Schempp-Hirth answer: *During the flight tests at VNE and higher speeds no significant change in the pitching moments were determined; that means too that no significant change in the longitudinal inclination and the speed occured.*

Once again, we sincerely appreciate your cooperation in this investigation. I look forward to your response.

Best regards,

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