

## RELEASE, WAIVER & HOLD HARMLESS

**IMPORTANT NOTICE:** read carefully before signing. You may be giving up important legal rights or claims by signing this document if injury and/or death or damage occurs in connection with the operation of the aircraft or aircraft kit you are building.

The undersigned competent adult (“YOU”) hereby acknowledge that YOU have joined the Zenith Builders Analysis Group (“THE GROUP”) of YOUR own free will, with the intention of building, assembling, repairing and operating an aircraft, and flying it for educational, sport and personal pleasure in the experimental, ultralight, or light sport plane categories. YOU are the final authority on the suitability of the design of YOUR aircraft. YOU understand that flying any aircraft, including experimental, ultralight, and light sport aircraft, involves risk of serious personal injury and even death. The risk of serious injury and death always exists despite proper flight training and despite properly designed, manufactured, constructed, and maintained aircraft.

**DANGER:** THE GROUP recommends that all persons operating any experimental, ultralight, or light sport aircraft have the required pilots license and medical certificate with complete aircraft training, in type, from a certified flight instructor. The aircraft must be built, repaired, maintained and operated in accordance with all federal, state, and local laws.

YOU understand that THE GROUP will not allow YOU to participate in their analysis program unless YOU freely acknowledge the risk involved and knowingly release any and all members of THE GROUP and their contractors from any and all claims that YOU and/or YOUR heirs might assert on any theory of law including but not limited to negligence, faulty analysis, and improper design of possible changes to the Zenith CH601XL design. YOU freely and voluntarily release, discharge and covenant not to sue the members of THE GROUP and their contractors from any and all claims which YOU, or anyone else claiming through YOU, might have for property damage and for personal injuries or death suffered as a result of YOUR use of the analysis and/or possible design changes suggested by THE GROUP during YOUR attempt to build, ride, fly, or otherwise operate or sell any aircraft. YOU understand that the sole purpose of THE GROUP is to develop and disseminate design information to confirm or improve upon the safety of the Zenith 601XL aircraft. YOU understand and agree that because of the experimental nature of the information developed by THE GROUP that no expressed or implied warranties accompany such information.

By signing this Release, Waiver & Hold Harmless, YOU agree to assume all the risks associated with the use of YOUR aircraft and to indemnify and hold harmless the members of THE GROUP and their contractors from all such claims.

Injury or death may result from the construction and operation of aircraft. YOU are making the final determination that information from THE GROUP is fit and safe for the construction and operation of YOUR aircraft.

YOU agree that THE GROUP have made no representation or promise, upon which YOU have relied, that YOU will be successful in safely building or safely flying YOUR aircraft. YOU agree that this entire agreement shall be binding on YOUR estate, personal representatives, heirs, assigns and transferees.

I have carefully read and considered the terms and provisions of this Release, Waiver & Hold Harmless, and accept all provisions as stated herein, and make this Release, Waiver & Hold Harmless a part of every transaction with THE GROUP now and in the future. THE GROUP is authorized to make this document public at any time.

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Signature

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Date

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Print Name

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Zenith Builder No.

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City, State, Country

GOAL: The goal of this analysis is to analyze the wing design of the CH601XL:

1. Review the information available about the accidents which have occurred that may have involved in-flight breakup of the aircraft structure. The purpose of this review is to discover information that might guide the analysis of the wing.
2. [1]To attempt to determine whether the structure (including the skin), as designed, has adequate strength to meet the published design loads of  $\pm 6G$ .

Assuming that the analysis shows that the structure, as designed probably has adequate strength, then

3. [MDS-3] Evaluate the susceptibility to flutter of the wings, including flaps and ailerons. If the analysis shows that flutter is a possible occurrence when a CH601XL is flown within the design envelope, then evaluate possible modifications to minimize or eliminate the flutter.
4. Consider, to the extent possible given time and budget constraints, the effect of design options on the ability of the wing to meet design standards:
  - a. [7, MDS-8]Hinged vs. skin flex hinge aileron attachment.
  - b. [3, MDS-2]Aileron trim tab option.
  - c. [2, MDS-6]Wing locker option.
  - d. Landing light option.
  - e. Thirty gallon vs. 24 gallon fuel tanks.
  - f. ???
5. Consider, to the extent possible given time and budget constraints, the effect of "typical" builder mistakes, e.g.,
  - a. [5, MDS-4]Wrong size or kind of rivets used at high stress location.
  - b. [4, MDS-5]Missing, loose, or wrong sized bolts.
  - c. [6, MDS-7]Mis-placed or wrong sized openings, e.g., the hole for the aileron control rod, holes in ribs for wiring, fuel lines, pitot lines, etc.
  - d. Effects of substitution of substandard materials
  - e. Two or three piece nose skin
  - f. ???
6. At the completion of the investigation, the engineer will submit a written report covering the results and recommendations, if any, for changes to the aircraft design to reduce the possibility of in-flight breakup.

Regarding the possible causes of the accidents in question, you'll get about as many opinions as there are contributors to the Matronics Zenith-List. Some aspects of the design which have been mentioned are:

- the spacing of the ribs
- the wing storage lockers
- the torque from the flaps
- the angle between the wings and the fuselage
- the possibility of flutter over the wings or ailerons
- the rivet spacing on the main spar
- the thickness of the wing skin (originally .019, now .025)
- the proximity to the rear spar flange of the hole for the aileron control rod
- distortions of the wing skin under load
- poor hole drilling and/or deburring
- scratching the spar
- slight wing twist
- loose rear spar bolt

- loose main spar bolt
- lack of nose ribs in gas tank region
- failure of the aileron horn attachment rivets
- flap actuator rod disengaging from flap
- probably several items that I have forgotten.

At the completion of the investigation, the engineer will submit a written report covering the results and recommendations, if any, for changes to the aircraft design to reduce the possibility of in-flight breakup.

**Note:** TTP's estimate of priorities are given in [ ]'s. I expect the contracting engineer to return his own estimate of the priorities, and I believe we should discuss to reach agreement.

Note: MDS estimate of priorities (where different from TTP) are shown in [ ]'s with 'MDS' prefix.

May 8, 2008

TO: Zenith Builders Analysis Group  
Terry Phillips, Chairman (?)

FROM: Mark D. Sensmeier, Ph.D., P.E. (AZ)

RE: Cost Estimate for Draft Statement of Work for Zenith CH601XL Independent Engineering Analysis

<b>Item #</b>	<b>Description</b>	<b>Est Cost</b>	<b>Type</b>
1	Review of relevant accident information	\$500	Base
2	Basic structural assessment of wing design (includes preliminary report)	\$3500	Base
3	Basic flutter analysis	\$700	Option
4	Evaluation of design options (e.g. aileron trim tab option, wing locker option, etc.)	\$500/item	Option
5	Evaluation of "typical" builder mistakes (wrong size or missing connectors, etc.)	\$500/item	Option
6	Completion of written report of analysis results and recommendations	\$800	Base

NOTES:

7. I would rely on you to provide sources for relevant accident information.
8. From above estimates, you can see that the "Base" cost for reviewing previous accident information, performing the basic wing structural assessment, and reporting results back to the Zenith Builders Analysis Group would be approximately \$4800 without options.
9. The cost estimates for the various design and builder mistakes could vary per item. At this point, I do not have enough information to make an informed estimate for each potential item. Based on initial results, we can discuss those items at a later date.