**Roll Protection discussion 1-14**

Still between Chapters 7&8.  I have the seat belt hard points in along the lower longerons.  I'm staring at the head rest/roll over structure saying "WTF" to myself.

Almost as their last great act, RAF ended up putting out plans for a hoop (in the canopy) because the original lacked sufficient strength to be a real roll-over structure. I saw where one guy just whacked off the triangular head rest and kept the shoulder harness hard points.  I've seen all sorts of tubing (ala race car) structures.   What has been the most creative and simple solution seen in the EZ community?

I have noted that the head rest can make a nice instrument panel so the GIB isn't always asking, "Are we there yet?".

**Now you are talking to a Product Liability auto safety defense lawyer. I was involved in the decision not to put roll bars in the first generation Miata - it is pretty obvious there is no roll protection, that's the way we wanted a convertible...based on the world to that point  (however Mazda trippled the strenght of the "A" pillars...)  There are no rollbars on current vehicles, draw a line from the top of one to the hood and you'll see what I mean...  
  
After about 80% of the Long EZs were built, one guy gave me plans for a stronger head rest.   I have those available.  In fact the plans spread of the shoulder anchors, particularly in the back seat, were too far apart - it is easy in a frontal for the body to slide right out of the shoulder belts as originally designed.  As the front seat is occupied 100% of the time and the rear about 20% of the time, people put the upper anchors up on the sides of the heard restraint, reinforcing it...the rears are further apart and should be linked inboard too - and it is harder to do so - little aluminum links will just spread apart after you load them...  
  
I had a local guy build me a Mike Melvill designed canopy hoop - what's great about it is that it doesn't block the access to the rear seat, and it would be hard to hit with your head in frontal or rear impacts - and it can actually free up space if you drop the head rest, but that provides no rear end protection - a rare accident in airplanes.  I frankly couldn't find anyone to build me the stronger canopy latching parts as specifically called out in the plans - the hoop was work, but easy...I asked Rutan about the plans and he said "what plans" and then "oh you mean Melvill's rollover structure..."  I have the full set of color plans from Melvill I can send by e-mail.  
  
By the way Rutan argued with the FAA about the head rest - it's not for landing on, he told them.  What do you want? Wheels on the top so they can land upside down?    
  
In fact we've had a good number of overturns, and very few serious injuries despite panic smelling gas and being stuck...  One guy got going backwards at speed, dug in the wing tip going backwards and broke the head rest off - and he knocked himself out - didn't overturn.  Having something crushable near your head is a good thing.  His son helped him out of the plane...which was upright.  
  
I think the Melvill approach is the more elegant.    
  
As for rollbars, I don't know anyone now making them any more, but they need to be carefully anchored.**  **The roll bars confounded me because I felt the pilot must wear a helmet with them.   Recently I saw a solution to that too, let's see if I have it here...  
  
  
The firm head rest, if padded very well with hard temperfoam, would replace the helmet for protection from the roll bars - but makes the rear access even harder if you have electric nose gear and the passenger steps over from back to rear...  
  
Oh, the guys at Berkut built up their own Long EZ roll structure - in carbon.  It looked very strong and had to have some good anchoring - so the rebuilt the top of the front seat.  
  
I frankly don't think we need them based on stats and total aircraft out there - better visibility for the rear seater.    
  
The new GPS I use with the Foreflight program would provide data to up to 5 devices at once - like a mini-iPad for the back seat...so they can watch a movie when they get bored.  
  
Beagle**On 1/6/2014 2:35 PM, David Uhlmeyer wrote:

