

# ULTRALIGHT BACKCAT

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## Project Description

Packrafting has emerged as the means of combining backpacking and river rafting. Existing portable cataracts currently exist but weight in excess of 25 pounds and are very bulky.



(Credit: Bill Hatcher, www.billhatcher.com)

Our solution is to design and manufacture a hybrid, ultralight cataract/backpack system that can support the weight of a single person and his or her backpacking gear, as well as having the ability to convert into a backpack when not being used as a raft.



## Weight Analysis

### Competitor

Cataract currently available	= 25 lbs.
Ultralight backpack	= 2 lbs.
<b>subtotal</b>	<b>= 27 lbs.</b>

### Ultra-light Backcat

Inflatable tubes	= 6 lbs.
Frame and Foot bar	= 2.3 lbs.
Backpack	= 1.6 lbs.
<b>subtotal</b>	<b>= 9.9 lbs.</b>



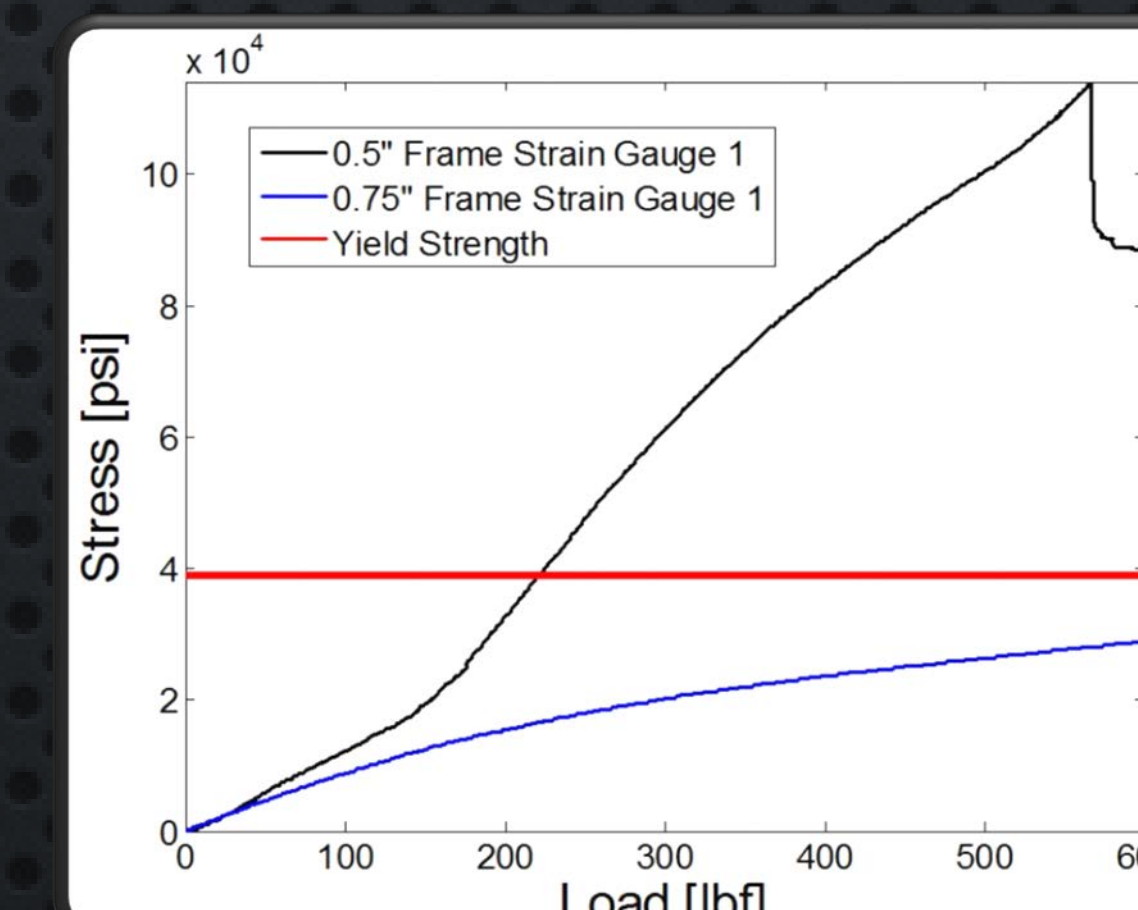
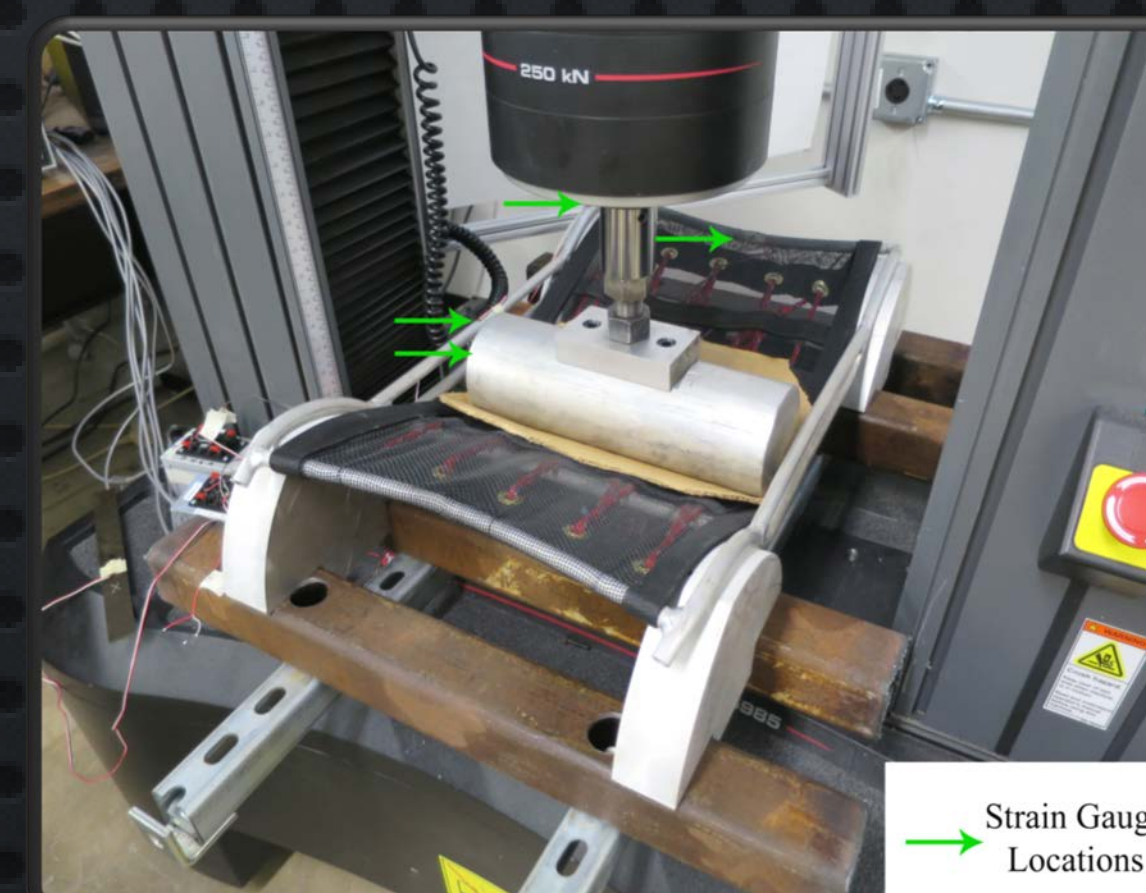
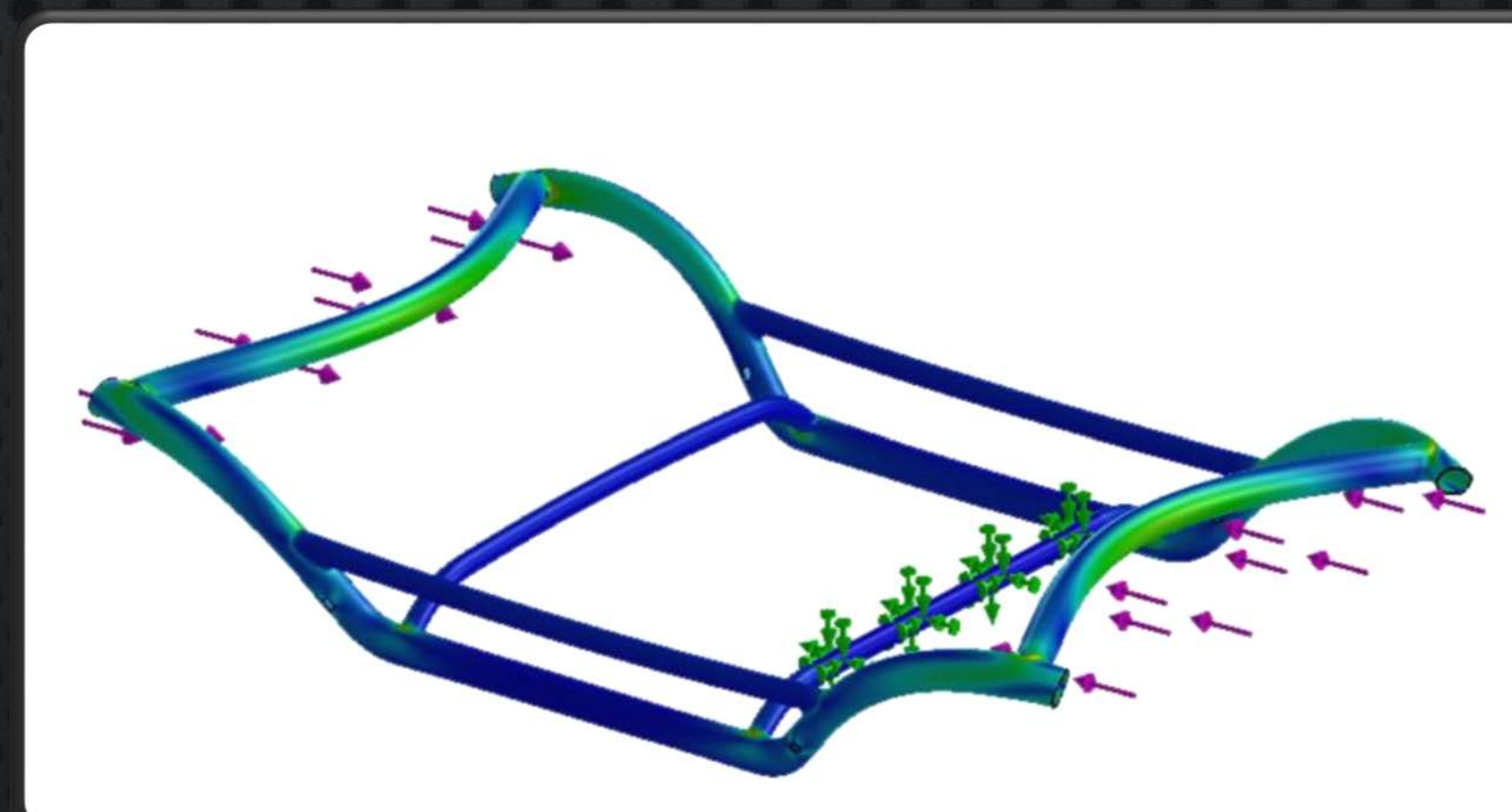
## Objectives

The main objectives and specifications for the cataract are as follows:

- **Ultra-lightweight** – maximum total weight of less than 10 pounds.
- **Load Capacity** – maximum operational load of 300 pounds.
- **Multi-functional** – the ability to interchange between a backpack and a cataract.
- **Durable** – Capable of withstanding light abuse as a backpack as well as whitewater rapids as a raft.

## Testing

### Load Testing of the Central frame:



A static load test was performed on two frames, one made of .75\"/>

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