

Johns Hopkins University Baja SAE

Spring 2006 Newsletter

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No. 1

After a long design, build, and test period, the JHU Mini Baja team traveled down to Auburn University on April 12, 2006, for the 2006 Mini Baja East competition. The static design judging and safety inspections started on the 13th, and we left extra early to allow for time to put finishing touches on the car.



Setting up early in the morning

April 13, 2006

After getting settled into our paddock area while putting on decals and miscellaneous safety features on the car, we made our way to the design judging. This year, our car placed 26th in design, significantly better than last year. The judges liked our build quality and clean looking lines, and seemed pleased with our overall design. This year's car weighed in at 467 pounds, one of the top 5 lightest cars in the field of about 60 cars. Considering the average weight of the cars was about 550 pounds and many cars were as heavy as 770 pounds, we likely had one of the top 5 fastest accelerating cars in the field. Making our way to the technical and safety inspection, we soon found out that due to a rule change about the roll cage tubing requirements, many teams had misinterpreted the tubing requirements of the 2006 roll cage rules. Unfortunately, we were among the many teams that had misinterpreted the roll cage tubing rules, and were faced with the daunting task of welding a new roll cage before the end of the next day. We were able to borrow much equipment from the teams around us who had full service support trailers, and also were fortunate enough to get all the tubing we would require (about 30 feet) from

University of Wisconsin, Embry Riddle, and University of Michigan. The entire night was spent welding a new roll cage onto the chassis, and it was nearly complete by 3AM.

April 14, 2006

After spending much of the day cutting and welding more tubes, the new roll cage was finally completed by 3PM, and the team immediately performed the mandatory inclining floatation test at the race site, 30 minutes away, in Opelika, AL. Passing this with ease, we then moved on to recompleting our technical inspection, which was also passed quickly. The brake test was performed next, in which we had to demonstrate that we could lock up all 4 wheels in straight line braking. Because the test was performed on asphalt, several teams had difficulty in passing this test, but our car passed on the first try. Unfortunately, by the time all required safety tests were completed, the dynamic events had closed down, and we would not be able to race the car until the next morning, in the 5 hour endurance race. The night was spent fine tuning various aspects of the car, and preparing it for the next day.



Working through the night

April 15, 2006

We woke up bright and early to allow for plenty of time to set up for the race, which was scheduled to start at 8:20AM. Staging for the race ended at 7:45, and we set up our paddock area and refuel pit stop while we waited for the start. The race began slightly late, but when the green flag was given, it was very clear that despite having added at least 50 extra pounds of material to the chassis, our car was one of the fastest in the field, passing 15 other cars before hitting the bottleneck just before the pits. After stopping in the pits to refuel (there was no refueling allowed outside of the pits) and fix a broken switch, it was back onto the track for the first lap. The car handled beautifully, with the suspension smoothing out all the small ruts on the course, and softening the deeper ruts and jumps with ease. This year's choice of independent rear suspension helped to smooth out the ride, and the use of Fox FLOAT AirShox on all 4 wheels helped us to

tune the spring rates correctly, and for each driver's weight. It was light and quick, topping out at 28 mph on a short uphill straightaway half way through the course. Our fiberglass reinforced floatation underneath the car also held up very well, and the internal strengthening skeleton inside worked well in distributing force across the floatation's length and width. Controlling the car was easy, as it would respond quickly to driver input, and the brake and throttle pedal feel was spot on. Despite all the positive aspects of the car's design, it would be a purchased part that would prematurely end our race. A spline interface between the steering shaft and the steering rack failed, and coming around a corner, the car failed to turn and collided with a tree, destroying the front right corner of the car. Suffering a broken air shock, rod ends, and tie rod (but no damage to the chassis or a-arms), our race was over. Luckily, the driver was not injured, but everyone on the team was disappointed at our bad luck.

Although our car only managed to make ½ a lap around an extremely difficult track, we were noticed by many important race officials and organizers, who had seen us working day and night on the car, and recognized our many hours of work at the race by giving us the Perseverance Award, also known as "The Team That Slept The Least" award. We also grabbed the attention of Michael Royce, the Chair of University Relations from SAE, who felt sympathetic for our team, and urged us to learn from the past, and never give up. In the end, our team placed 47th overall, out of the 66 teams that were registered.

With the change of the competition name from Mini Baja to Baja SAE (taking after Formula SAE) and the change from regional competitions to location based competitions (i.e. Baja SAE Morgantown instead of Mini Baja East), we are looking forward to competing in two competitions next year. The close proximity of Baja SAE Rochester and Baja SAE Morgantown will allow us to demonstrate the potential of the Baja car at both an East and a Midwest style competition (one with water, and one without). Recruiting for our 2007 team will be very important in the coming year, as seniors Peter Kuhn and Tristan Flanzer are moving on to graduate school, having been with the team from the beginning and bringing much talent to the team. Our next event will be at the US Naval Academy in Annapolis, where the Baltimore SAE chapter has invited us to demo the Baja car along with the Formula and Baja cars of the USNA and UMBC.

The 2006 JHU Mini Baja team would like to thank our sponsors for their generous donations of funding and products. Major contributors include Stewart and Stevenson in Sealy, Texas, the Alumni Association of Johns Hopkins University, Dean Nick Jones of the Whiting School of Engineering, the parents of David Chow and Bobby Ng, and the Society of Engineering Alumni. Other sponsors include the Mechanical Engineering Department, Fox Racing Shox, the CV Man (based in Jessup, Maryland), AED Motorsport, and Quality Drive Systems. With the support of these sponsors, the JHU Mini Baja team has been able to create a program in which students learn skills not taught in class including real world leadership and teamwork, as well as manufacturing, organization, and design skills that can only be learned through experience.

Look out for the JHU Baja SAE team in 2007! Our plans for the 2007 car include a custom designed gearbox, quick release features, an even lighter overall weight, and the use of digital instrumentation and data recording. With two years of solid experience under our belts, our team is aiming for perfection next year, and building upon our reputation as a hard working and committed design team.

A big thank you to all of our sponsors!
Your donations make Baja SAE at Johns Hopkins University possible!



Please visit our website at www.jhuminibaja.com for the latest updates as well as pictures and video clips. We regret to say that because we were working so hard at competition we did not have much chance to take pictures or video, but during the summer we plan on restoring the car to its original form and taking plenty of snapshots and video when we test the old car and prepare it for recruiting next year!